REPORT

MCCARTHY QUARRY

2022 Permit To Take Water Compliance Report

Submitted to:

Chris Hyde

Ontario Ministry of Environment, Conservation and Parks
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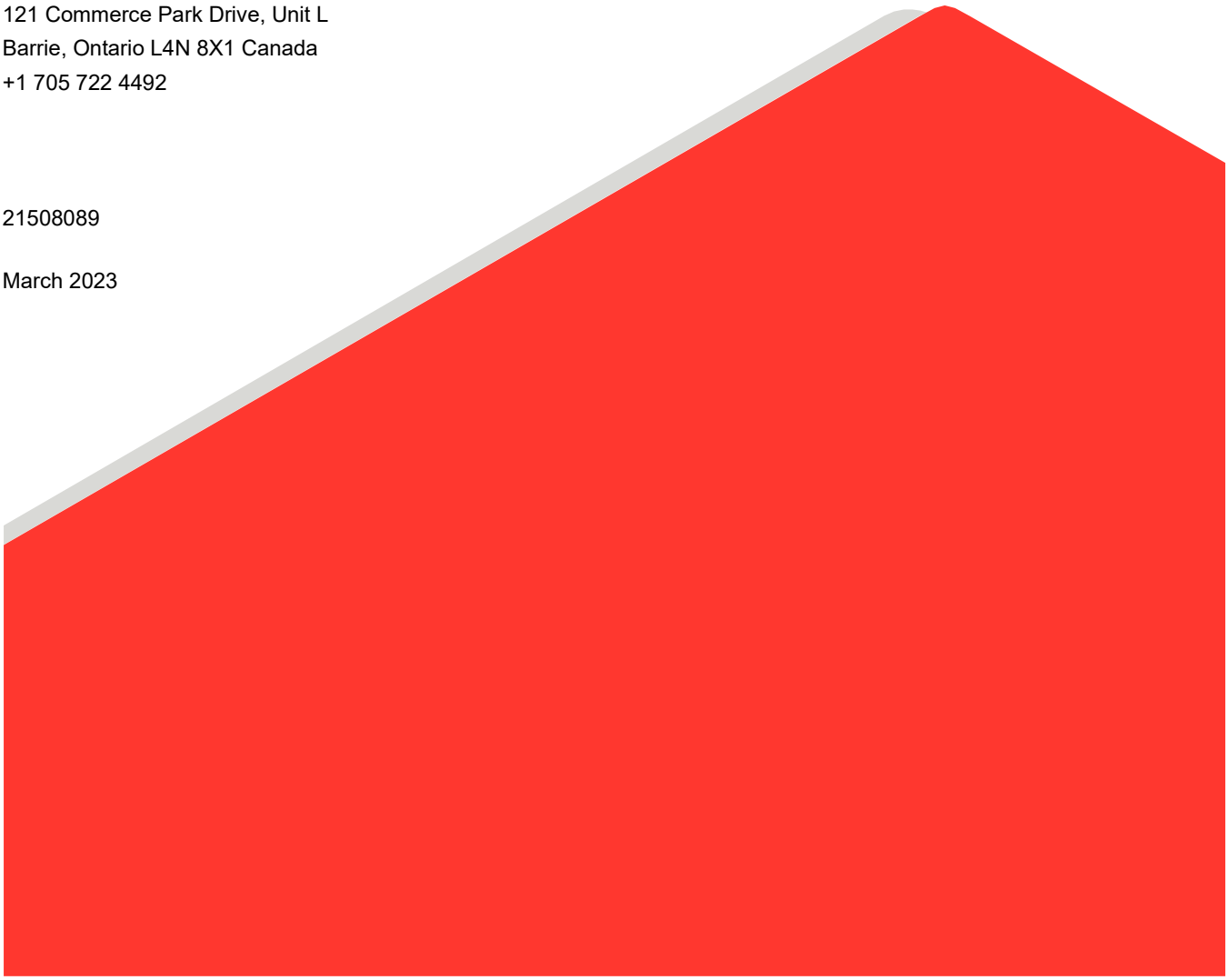
21508089

March 2023



Distribution List

E-copy - Ontario MECP Barrie District Office

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TABLES

APPENDICES

1.0 INTRODUCTION

WSP Canada Inc. (WSP) was retained by QBJR/Green Infrastructure Partners Inc. (Green) to prepare the annual Permit To Take Water (PTTW) report for the McCarthy Quarry (the Site) located in the Township of Ramara, County of Simcoe (Figure 1). The monitoring activities documented in this report were conducted as a requirement of Permit To Take Water (PTTW) No. 1603-BKTPQH (the 'Permit'; Appendix A). The Permit is in place from January 31, 2020 to January 31, 2025. Disposal of water from the Site is governed by Environmental Compliance Approval (ECA) No. ECA No. 7737-BH6QEA, issued on October 22, 2019.

2.0 PHYSICAL SETTING

2.1 Site Development and Land Use

The Site is located approximately six kilometres south-east of the Community of Brechin at Lot 1, Concession 1, Township of Ramara former Mara, Simcoe County (Figure 1). The Site began operations with the advancement of the sinking cut on March 15, 2013. Currently, the quarry floor is approximately 22 metres below (historic) ground level (mbgl) or 233 metres above sea level (masl). The current quarry footprint is approximately 430 m by 260 m (11.2 ha) (Figure 2). The ultimate quarry extent is expected to be approximately 30 ha.

Land use surrounding the Site is primarily rural, consisting of woodlots, pasture and scattered single-family homes. To the south and east along the Talbot River and Canal Lake are seasonal and year-round residences.

2.2 Geology

The elevation of the land the vicinity of the Site ranges from 250 masl to 255 masl, with the higher elevations on the western potion of the property. The overburden thickness on the Site ranges from 0.3 m in the north (OW9) to approximately 8 m in the south (OW4) (Figure 3 and Figure 4).

The quarry is located in a broad, arching, low relief upland area within a clay and limestone plain typical of the physiography to the east of Lake Simcoe (Chapman & Putman, 1984). Underlying the overburden material are Middle Ordovician aged limestone deposits including, from bedrock surface down: Verulam, Bobcaygeon and Gull River Formations.

The Verulam Formation consists of thinly bedded limestone and shale or shaley limestone and is relatively thin at the Site (0 to 4 m in thickness).

The Bobcaygeon Formation consists of thin to medium bedded limestones and ranges in thickness from approximately 31 m (OW6) to 40 m (OW9) (Figures 3 and 4). Quarrying at the Site is primarily within the Bobcaygeon Formation.

The Gull River Formation consists of fine-grained limestone with minor interbeds of shale or shaley limestone with an approximate thickness of 16 m. The Gull River Formation remains intact at the Site.

2.3 Aquifers and Local Water Use

Overburden aquifer deposits within the vicinity of the Site, where sufficiently thick, likely provide sufficient water for domestic purposes as evidenced by the presence of dug and bored wells in the area. A review of measured overburden water levels suggest the flow system approximately mimics topographic trends and thus flow in a generally south to southeast direction towards the Talbot River.

Wells constructed in the bedrock are generally completed within the Bobcaygeon or Gull River Formations. As indicated above, quarrying at the Site is primarily within the Bobcaygeon Formation. The regional groundwater flow direction in the Bobcaygeon Formation is generally to the southwest towards Lake Simcoe (Figure 5).

The Ministry of Environment, Conservation and Parks (MECP) water well database was reviewed to identify accessible private water wells located in the vicinity of the Site. Nine wells, three dug and six drilled, were located within 1,000 m of Site. Seven wells are on Concession Road 1 and two wells are on the Mara-Eldon Boundary Road (Figure 1).

2.4 Quarry Dewatering

The Permit authorizes a maximum daily water taking volume of 6,544,800 L/day with a maximum of 250 days of taking. The maximum annual water taking is capped at 196,500,000 L/year.

Groundwater and precipitation entering the quarry is collected in a sump in the quarry floor. The sump is equipped with a pump with a maximum discharge rate of 35 L/sec which is attached to a 4-inch (101 mm) diameter discharge line. The water is pumped from the quarry floor up the quarry face via the discharge line to a 4-inch (101 mm) diameter pipeline that directs the water to a ditch that runs southward through the McCarthy property to the 14,000 m^3 settling pond. The water in the settling pond discharges via a Hickenbottom control structure to the roadside ditches along Concession Road 1. The water in the roadside ditch travels eastward along the north side of Concession Road 1 to a municipal drain and eventually discharges to the Talbot River, which in turn discharges to Lake Simcoe.

3.0 MONITORING PROGRAM AND RESULTS

The monitoring program for the Site, which is outlined in Section 4 of the Permit (Appendix A), directs Green to record daily water takings, monitor groundwater levels in 22 monitoring wells and seven residential wells and analyze groundwater quality in select monitoring and residential wells. Green is also required to maintain a publicly accessible internet site containing the required monitoring data and reporting and to establish a Public Liaison Committee (PLC) that is to meet once every four months.

3.1 Quarry Operations Update

The current quarry footprint is approximately 430 m by 260 m (11.2 hectares) with the ultimate limit of extraction (30 ha) shown in Figure 2. Green staff reported there they resumed aggregate extraction in 2021 after no extraction was completed in 2020.

3.2 Monitoring Condition 4.1: Water Level Monitoring of Sump

Condition 4.1 of the Permit stipulates that the water level in the quarry cannot be lowered below an elevation of 232.0 masl. Green staff indicated the sump pump is installed such that water level in the quarry remains above 232.0 masl.

3.3 Monitoring Condition 4.2, 4.3 and 4.4: Groundwater Elevations

Water level monitoring has been ongoing at the Site since the early stages of quarry development in 2002. Both on-Site observation wells and off-Site residential wells have been incorporated into the monitoring program in order to meet the requirements of Conditions 4.2, 4.3 and 4.4 of the Permit. Groundwater elevation readings at the Site are collected though a combination of monthly manual water level measurements at all the wells, and

pressure transducers installed in select wells for automated daily monitoring. The wells included in the 2022 monitoring program are listed in Table 1 and shown on Figure 1 and Figure 2.

Table 1: Groundwater Monitoring Locations and Measurement Frequency

	Daily Monitoring **	Monthly Monitoring
Monitoring Wells	OW4-1, OW4-2, OW5-1, OW6-1, OW6-2, OW8-3, OW9-2, Bored, CKL-1	AM1b, AMx-R, TW1-1, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-1, OW6-2, OW6-3, OW7-1, OW7-2, OW7-3, OW8-1, OW8-2, OW8-3, OW9-1, OW9-2, Bored, CKL-1 and CKL-2
Residential Wells	-	DW3, DW1, DW2, DW4, DW6*, DW7* and DW8*

*Monitored at least once every two months
**Daily monitoring completed with a pressure transducer

Table 3 presents the manual groundwater level readings collected at each of the monitoring locations. Groundwater hydrographs are presented in Figures 6 through 10 and include data from 2014 through 2022. Appendix B provides groundwater hydrographs at each of the wells over the period from 2006 through 2021. Due to the Covid-19 pandemic, private residential wells were not monitored between April and July of 2020. Starting in August of 2020, WSP attempted to contact each homeowner to confirm they still wanted to be included in the monitoring program during the Covid-19 pandemic. As of the start of 2021, WSP has been unable to reach the homeowners of DW3 and DW7. The homeowner of DW3 had previously requested they be contacted via telephone before each monitoring round. Multiple unreturned voice mails were left for the resident and the resident was not home at the time of each monitoring round. Permission to continue monitoring at DW7 was received in April 2021 and permission to continue monitoring at DW3 was received in June 2021.

In 2022 most of the monitoring wells displayed a pattern of rising groundwater levels through the spring period with subsequent decline in the summer. This pattern is consistent with historical behaviour at the Site. In addition, the measured maxima and minima of 2022 groundwater elevations were generally within historical ranges for most wells. Exceptions to historical trends include:

- Well DW4 (Overburden): The groundwater levels at DW4 have decreased slightly since 2018 in comparison to historical norms. It is noted the decline in water levels is most significant in the summer months. Water levels increased at DW4 towards the end of 2021 and appears to have stabilized in 2022.
- Well AMx-R (Verulam Formation): Well AMx was monitored until April 2015 when it was removed due to the advance of the south quarry face. Well AMx-R was installed as a replacement for AMx along the western property boundary between the quarry face and OW4 in late 2017; water level monitoring started in April 2018. Groundwater levels at AMx-R rose by approximately 10 m between April 2018 and August 2021; thereafter groundwater levels appeared to stabilize (Figure 7).
- Wells OW9-1 and OW9-2 (Bobcaygeon Formation): The groundwater level at OW9-1 has declined approximately 12 m since 2014 and this location is now generally dry. The water level at OW9-2 has declined approximately 15 m since 2014 (Figure 7). The groundwater level at this location has almost declined below the bottom of the well.

- Well OW6-3 (Gull River Formation): Groundwater levels have risen by approximately 10 m since the start of 2014 (Figure 9).
- Well OW8-3 (Gull River Formation): Groundwater levels have declined by approximately 4 m at OW8-3 since the start of 2017 (Figure 9). Following this decline, water levels fluctuated in 2019 and 2020, but appear to have stabilized since July of 2020, albeit below the historic levels reported before 2017.

A review of the results described above provides for the following inferences:

- Wells where the 2022 groundwater levels were consistent with historical trends are inferred to be beyond the influence of dewatering activities at the quarry. It is particularly noted that no private wells displayed evidence of quarry impact. Based on the water level monitoring results, drawdown is currently limited to a distance of not more than 150 m from the quarry face (see below comments on OW9).
- Well DW4: Given that this well is located approximately 850 m from the current quarry face, the transitory lower water levels noted during the summer months since 2018 are not considered to be related to quarrying operations.
- Well AMx-R: The gradual rise and stabilization of the groundwater levels at this well is attributed to the water level reaching “static” conditions following installation. The relatively long time period for stabilization is assumed to be due to the low conductivity of the surrounding bedrock.
- Well OW9-1 and OW9-2: the decline in water levels at both OW9-1 and OW9-2 is attributed to the on-going dewatering operations at the Site. OW9 was installed after extraction had begun at the quarry; therefore, there are no pre-extraction water level data; however water levels were stable until the quarry face reached approximately 150 m from OW9. The OW9 wells are currently approximately 10 m from the working face of the quarry and the water levels in the lower screen have declined approximately 15 m since 2014 in response to the lowering of the groundwater table in the quarry footprint.
- Wells OW6-3 and OW8-3: each of these wells are completed in the Gull River Formation, which is located more than 30 m below the current quarry bottom. Based on the vertical separation and the presence of (thin) shale and shaley limestone layers within the formation it is assumed that the Gull River Formation is hydraulically isolated from the quarry dewatering operations and the measured water level fluctuations are unrelated to quarry development.

3.4 Monitoring Condition 4.5 and 4.6: Groundwater Quality

Groundwater quality sampling is typically conducted on a semi-annual basis at both on-Site monitoring wells and off-Site residential wells. No sampling was completed at OW5-2 in 2020 (and until June 2021) as a result of a suspected pipe offset. Green staff had planned to repair this OW5-2 before the end of 2020, however access to well was limited due to implement weather and repair of OW5-2. The repair was completed in the June 2021 and two samples at OW5-2 were collected in 2022. A summary of the sampled parameters and the wells included in the sampling program are provided in Table 2.

Table 2: Groundwater Quality Sampling Program

	Monitoring Locations	Water Quality Parameters
Monitoring Wells	AM1b, AMx, TW1-1, Bored, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-2, OW7-1, OW7-2, OW8-1, OW8-2, OW9-1, and OW9-2	pH, alkalinity, bicarbonate, fluoride, chloride, magnesium, calcium, sodium, potassium, ammonia, sulphate, nitrate, nitrite, phosphate, phosphorous, conductivity, DOC, colour, TDS, hardness
Residential Wells	DW1, DW2 and DW3	pH, alkalinity (CaCO3), bicarbonate, conductivity, fluoride, chloride, nitrate, nitrite, chromium, tannins, sulphate, magnesium, calcium, sodium, potassium, ammonia (N), phosphate, phosphorous, anion sum, cation sum, DOC, colour, turbidity, aluminium, arsenic, barium, boron, cadmium, ion ratio, % difference, copper, iron, lead, manganese, selenium, zinc, hardness (CaCO3), TDS (iron sum calc.), Langelier Index

The laboratory analytical results for the 2022 sampling events are provided in Appendix C, and the results are summarized in Table 4 (Residential Wells) and Table 5 (Monitoring Wells). Tables 4 and 5 provide a comparison of the laboratory results to Ontario Drinking Water Standards (ODWS).

The water quality at residential wells DW1, DW2 and DW3 met the ODWS for the 2022 sampling events for the parameters tested with the exception of total dissolved solids (TDS) at DW1 and hardness (as $CaCO_3$) at all three locations. None of these exceedances are attributed to the effects of the dewatering activities but are instead considered a reflection of background water quality (see below). It is noted that during transportation, one of the containers for the DW1 spring sample broke resulting in several parameters not being analyzed. The fall sampling event was able to analyze the missed parameters in the spring.

The water quality at the on-Site monitoring wells for the 2022 sampling events, notably elevated hardness and TDS, was consistent with the pre-quarry conditions (Whitewater Hydrogeology Ltd., 2013).

3.5 Monitoring Condition 4.8 Water Taking Measurements and Reporting

The rate and volume of groundwater extraction and discharge from the quarry are provided to WSP by McCarthy Quarry staff. The pumping records for January 2022 to December 2022 are presented in Table 6. The daily discharge rate (L/min) between January 1, 2022 and December 31, 2022, ranged from 0 to 792,000 L/day (Table 6). These water taking rates were below the permitted rate of 4,545 L/min (6,544,800 L/day). The total volume of water removed (34,236,000 L) was less than the maximum taking of 196,500,000 L/year. Pumping was conducted on a total of 62 days in 2022, which was less than the maximum of 250 days per year. The predicted dewatering activities over the next twelve months are expected to remain consistent with those in 2022.

The McCarthy Quarry dewatering system includes a sump located in the northwest corner of the quarry floor which collects groundwater and surface water (hereafter referred to as “quarry discharge”) accumulating at the base of the quarry. The sump is equipped with a pump which is rated for a maximum discharge rate of up to 2,100 L/min (35 L/sec) and is attached to a discharge line. Water is pumped from the quarry floor up the quarry face via the discharge line to a pipeline that directs the water to a 14,000 m^3 settling pond (Figure 1). QBJR finalized set-up of a new sump location in March 2022 and started utilized this new sump location for pumping in April 2022. The initial sump location was creating operational issues as QBJR was not able to properly dewater the southern portion of the quarry. In addition, the previous set up was very inefficient due to the length of piping

required from the sump to the horse-shoe shaped settling pond. QBJR has also adjusted the discharge piping that runs from the pump to the horse-shoe shaped settling pond. No changes were made to the discharge pond. The settling pond is equipped with a Hickenbottom control structure via which the water discharges to the roadside ditch along Concession Road 1. The water flows eastward along the north side of Concession Road 1 to a municipal drain and eventually discharges to the Talbot River approximately 1.1 km downstream of the Quarry, which eventually discharges into Lake Simcoe.

The proportion of surface water and groundwater contributions to quarry inflow may be inferred by performing a simple water budget. First, the total surface water contribution to the quarry is estimated by calculating the direct surplus contribution over the 11.2 ha quarry area plus the additional contributing runoff from the surrounding 5 ha catchment area (i.e., the stripped area). A surplus value of 501 mm/yr for the quarry footprint and runoff value of 250 mm/yr for the stripped area was applied based on meteorological data from the Meteorological Service of Canada Thornthwaite water budgets (Orillia Brain MET station in Orillia, Ontario between 1993 to 2016).

The volume of water entering the quarry from direct surplus was calculated as 56,111,200 L and the volume of water entering the quarry from surrounding runoff was calculated as 12,500,000 L; thus the total contribution of surface water to the overall water taking was approximately 68,611,200 L. As the total volume of water pumped form the quarry from January 1 to December 31, 2022 was 34,236,000 L, it is inferred that the reduced pumping volumes were due to lower contribution of surface water to the quarry than estimated. The change in pumping rates and volumes from the new sump location will continue to be evaluated based on future monitoring at this stage.

3.6 Condition 4.11 Publicly Accessible Internet Site

The water quality and quantity monitoring data that is required by the PTTW is available at: www.cocoaggregates.com

To access the reports for the McCarthy Quarry click “Documents” on the homepage.

3.7 Condition 4.12 Public Liaison Committee

A Public Liaison Committee have been maintained in previous years and there was a single meeting held in 2022 due to the Covid-19 pandemic; the meeting was held on May 18, 2022.

4.0 CONCLUSIONS

Based on the 2022 Monitoring Program established under PTTW No. 1603-BKTPQH, the following is concluded:

- In 2022. most of the monitoring wells displayed a pattern of rising groundwater levels through the spring period with subsequent decline in the summer. This pattern is consistent with historical behaviour at the Site.
- Wells where the 2022 groundwater levels were consistent with historical trends are inferred to be beyond the influence of dewatering activities at the quarry. It is particularly noted that no private wells displayed evidence of quarry impact. Based on the water level monitoring results, drawdown is currently limited to a distance of not more than 150 m from the quarry face.
- The daily discharge rate between January 1, 2022 and December 31, 2022, ranged from 0 to 792,000 L/day, which is below the permitted rate of 6,544,800 L/day. The total volume of water removed (34,236,000 L) was less than the maximum taking of 196,500,000 L/year.

5.0 LIMITATIONS AND USE OF REPORT

The services performed as described in this report were conducted in a manner consistent with the level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. WSP accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

This report is based on data and information collected during the hydrogeological and hydrological assessment of the Site conducted by WSP. The assessment is based solely on the Site conditions encountered at the time of the assessment, supplemented by other information and data obtained by WSP as described in this report. No assurance is made regarding changes in conditions at the Site subsequent to the time of the assessment. Furthermore, and as with all subsurface investigations, this study necessarily utilizes information at a relatively small number of discrete locations (for example, monitoring wells) to infer geologic and groundwater conditions across the Site and for areas where no such information exists.

In evaluating the Site, WSP has, in part, relied in good faith on information provided by Green and their agents. WSP has assumed that the information is factual and accurate. No responsibility is accepted by WSP for any deficiencies, misstatements or inaccuracies contained in this report as a result of errors, omissions, misinterpretations or misrepresentations related to the information provided by Green and their agents.

6.0 CLOSURE

In closure, we recommend that the groundwater monitoring continue as outlined in PTTW No. 1603-BKTPQH. We trust that this report meets your needs at the present time. If you have any questions or require clarification, please do not hesitate to contact the undersigned.

Signature Page

WSP Canada Inc.

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Geo-Environmental Consultant

Sean McFarland, PhD, PGeo
Senior Principal/Fellow, Senior Hydrogeologist

CSI/SM/lb

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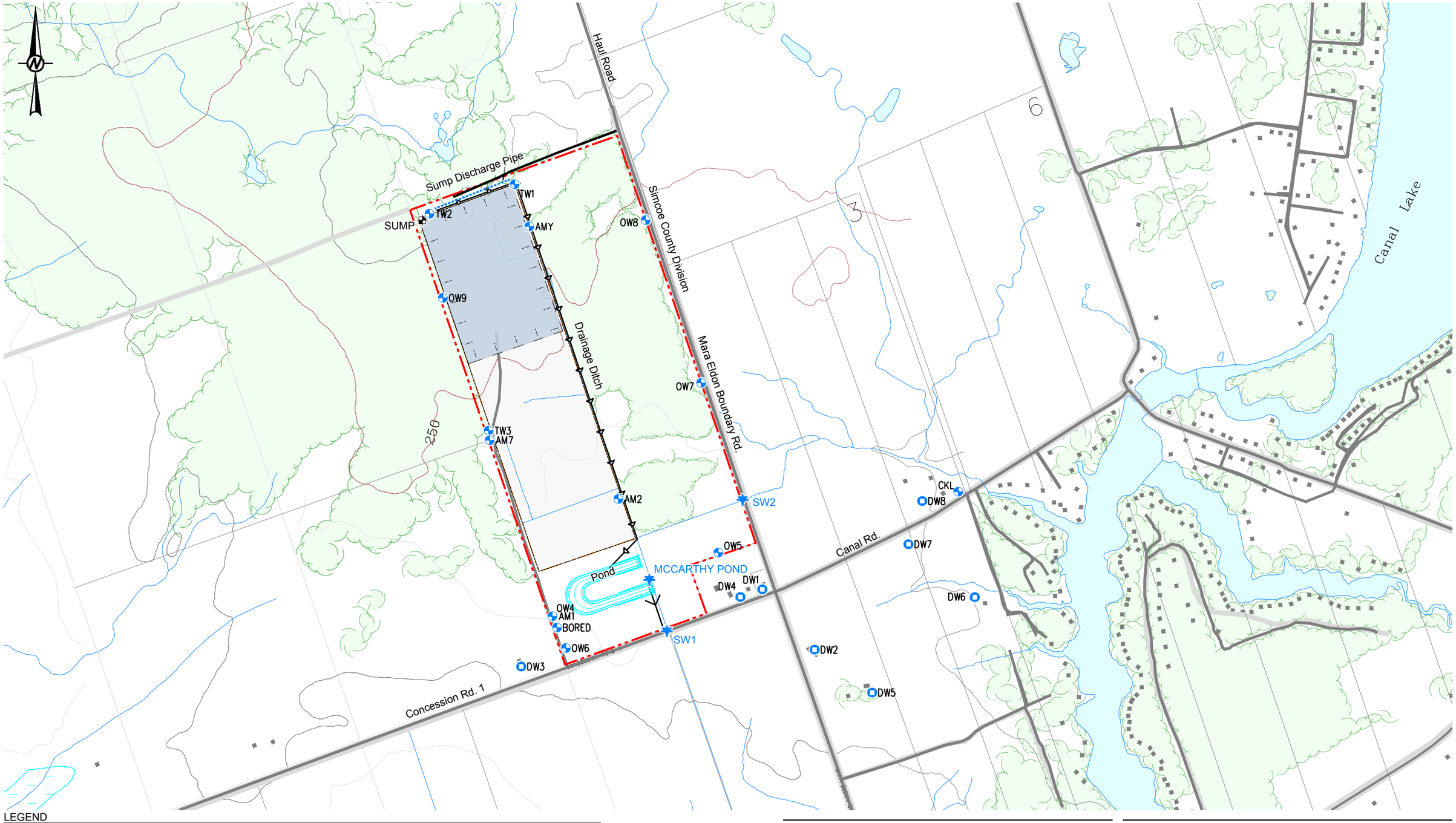
Figures



LEGEND

- Property Boundary
- Approximate Licenced Boundary
- Approximate Extent of Quarry
- Private Well Monitoring Location
- Observation Well Monitoring Location
- Surface Water Sampling Location

REFERENCES AND NOTES

1. Projection UTM NAD83 Zone 17
2. Mapping based on ESRI Geography Network OBM Features and 2012 Road Network
3. All Mapped features are Approximate and Not to Scale

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CLIENT
GREEN INFRASTRUCTURE PARTNERS INC. / QBJR

CONSULTANT
wsp

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PREPARED	JPR
DESIGN	
REVIEW	JEB/CI
APPROVED	

PROJECT
STAN McCARTHY QUARRY
2022 ANNUAL MONITORING REPORT

TITLE
LOCATION MAP

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LEGEND

- Property Boundary
- Limit of Extraction
- Swales and Drainage Plan
- Approximate Extent of Quarry
- Surface Water Sampling Location
- Private Dug Well
- Private Drilled Well
- Standpipe
- Observation Well

NOTES

1. Test Well AM7 inaccessible
2. DW1 Formally Degroot
3. DW2 Formally Southwell
4. DW3 Formally Lamarre
5. DW4 Formally McCarthy
6. AMX decommissioned replaced with AMX-R

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PREPARED	JPR
REVIEWED	JEB/CI
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PROJECT
STAN McCARTHY QUARRY
2022 ANNUAL MONITORING REPORT

TITLE
SITE PLAN

PROJECT NO.	CONTROL	REV.	FIGURE
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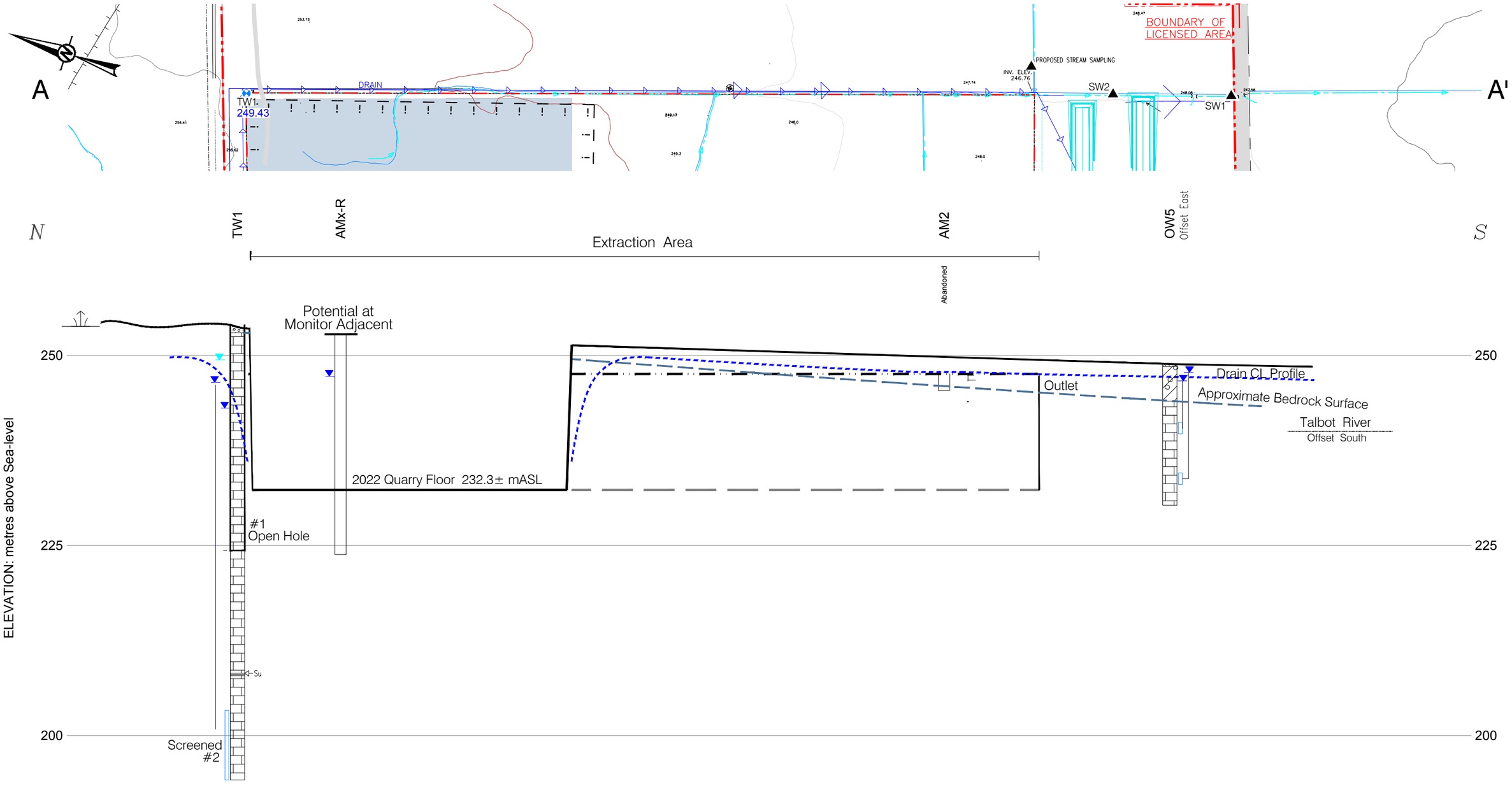

On all sections, boundaries between soil strata have been determined only at well and test well locations. Between the wells and test wells, boundaries are not proven but are assumed from geological evidence.

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GREEN INFRASTRUCTURE PARTNERS INC. / QBJR

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PROJECT
STAN McCARTHY QUARRY
2022 ANNUAL MONITORING REPORT

TITLE
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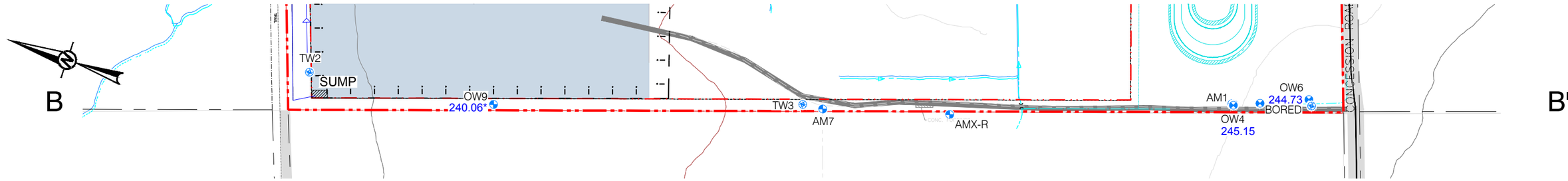

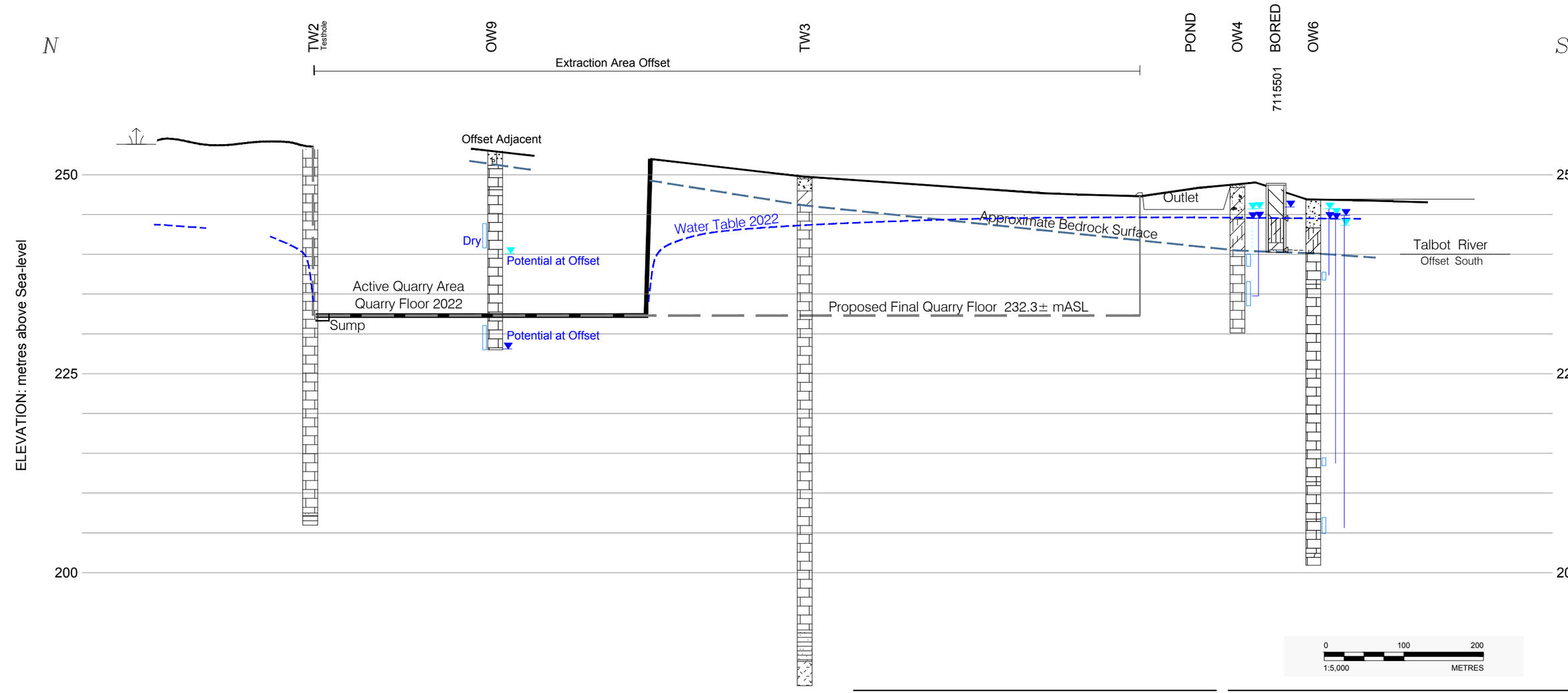

On all sections, boundaries between soil strata have been determined only at well and test well locations. Between the wells and test wells, boundaries are not proven but are assumed from geological evidence.

Depth of Quarry measured in offset Blast Hole drilling 2014 and reflecting maximum depth

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STAN McCARTHY QUARRY
2022 ANNUAL MONITORING REPORT

TITLE
'SITE SECTION B - B

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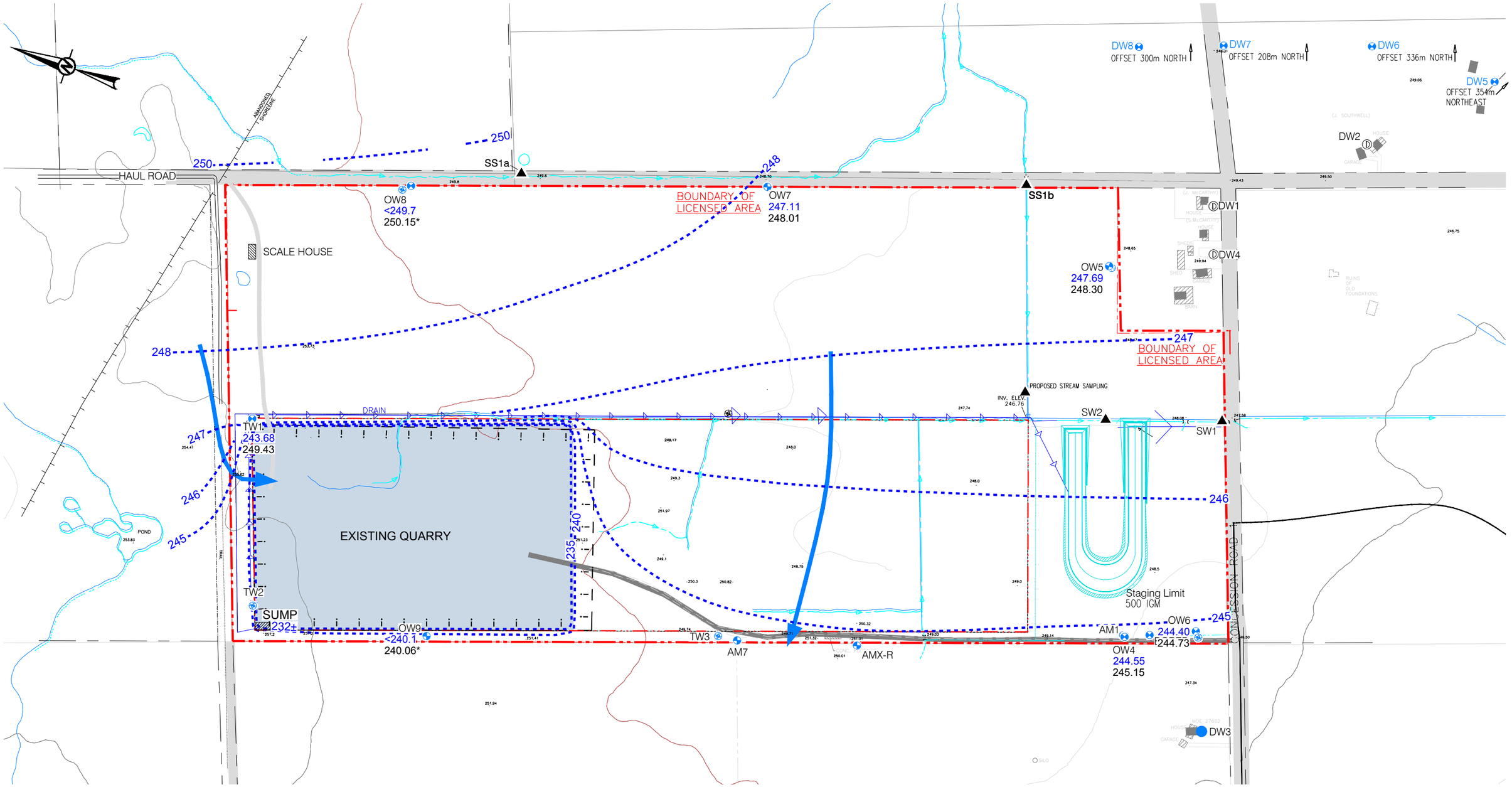

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- Quarry Boundary
- Limit of Extraction
- Swales and Drainage Plan
- 245.67 Static Water Level (September 2022)
- Equipotential Line (masl)
- Inferred Groundwater Flow (Upper Bobcaygeon)
- ▲ Surface Water Sampling Location
- Ⓓ Private Dug Well
- ● Private Drilled Well
- ■ Standpipe
- ◕ Test Well

NOTES:

1. Test Well AM7 inaccessible
2. DW1 Formally Degroot
3. DW2 Formally Southwell
4. DW3 Formally Lamarre
5. DW4 Formally McCarthy
6. AMX decommissioned replaced with AMX-R
7. Static levels taken September 2022

0 100 200
1:5,000 METRES

CLIENT
GREEN INFRASTRUCTURE PARTNERS INC. / QBJR

CONSULTANT
wsp

YYYY-MM-DD	2023-01-10
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REVIEWED	JEB/CI
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PROJECT
STAN McCARTHY QUARRY
2022 ANNUAL MONITORING REPORT

TITLE
GROUNDWATER FLOW BOBCAYGEON FORMATION

PROJECT NO.	CONTROL	REV.	FIGURE
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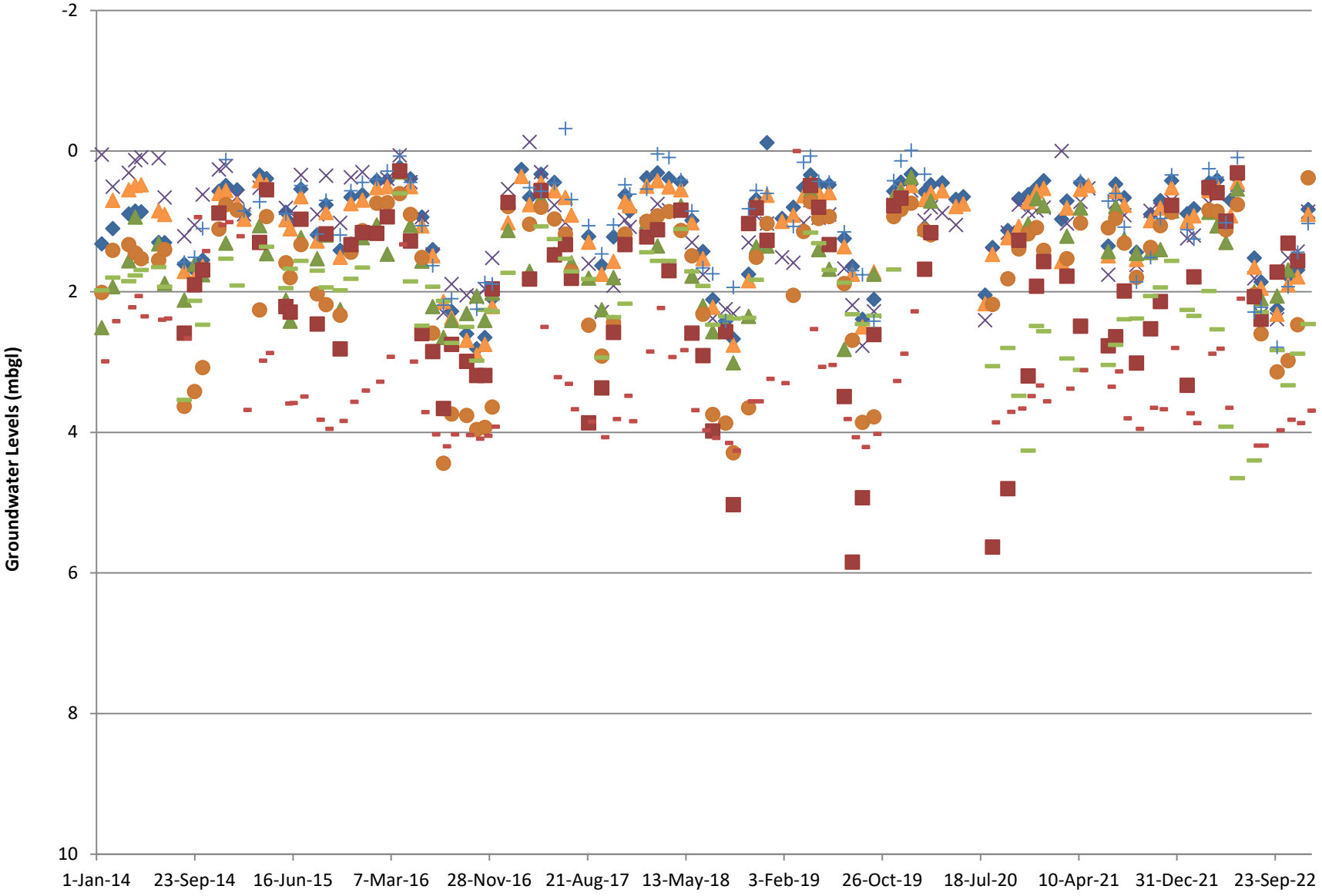


◆ Bored ✕ OW5-1 ▲ AM1b

▲ DW1 ● DW2 ■ DW4

– DW6 + DW7 - DW8

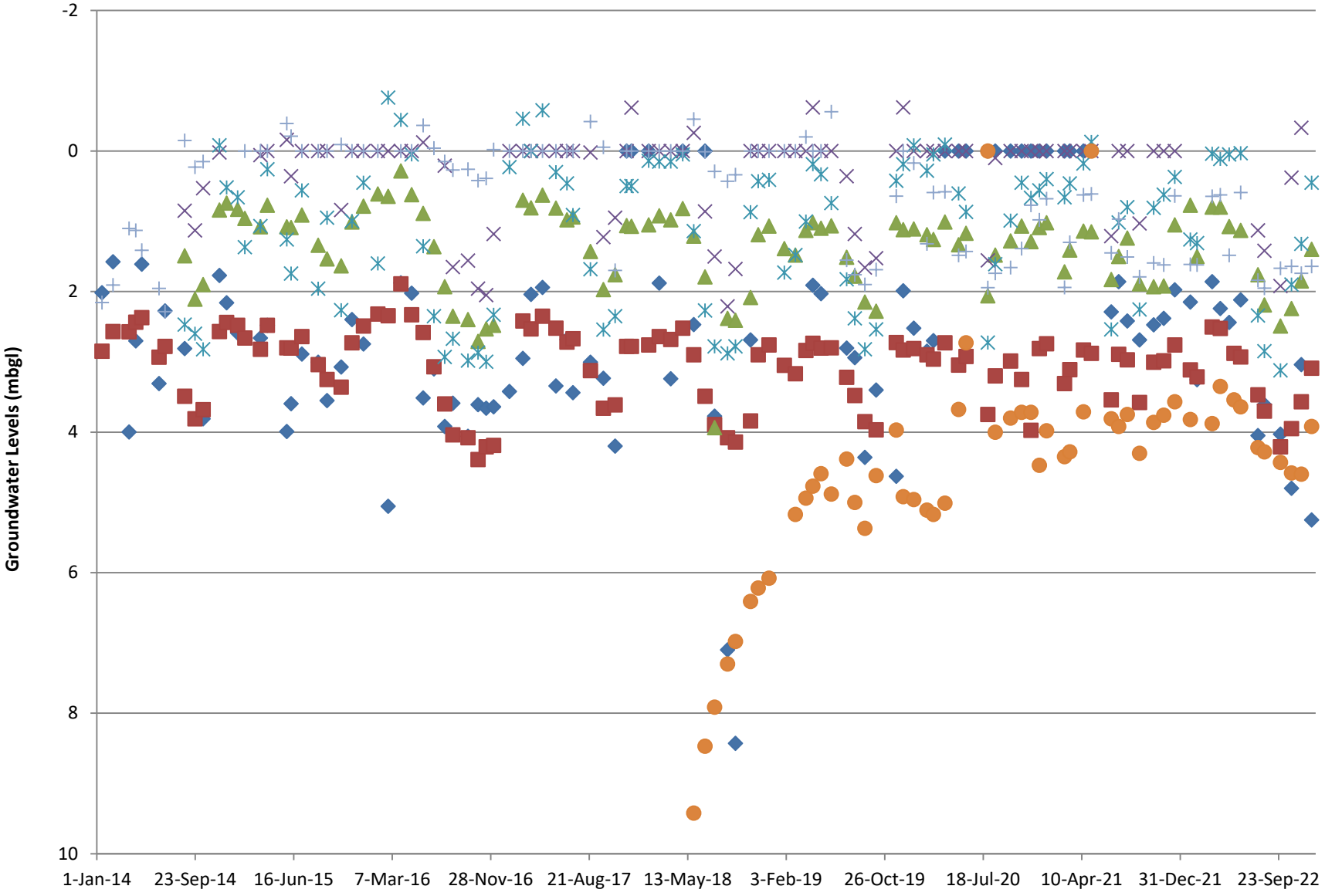
wsp

SCALE:	NTS
DATE:	9-Jan-23
CAD:	CSI
FILE No.	
TEST:	
PROJECT No.	21508089
REVIEW:	SM

McCarthy Quarry
Overburden Monitoring Wells
Groundwater Levels

QBJR/Green Infrastructure Partners Inc.
2022 Annual Monitoring Report

FIGURE No
6



DW3 OW4-1 OW6-1
OW7-1 OW8-1 Amx-R
CKL-1

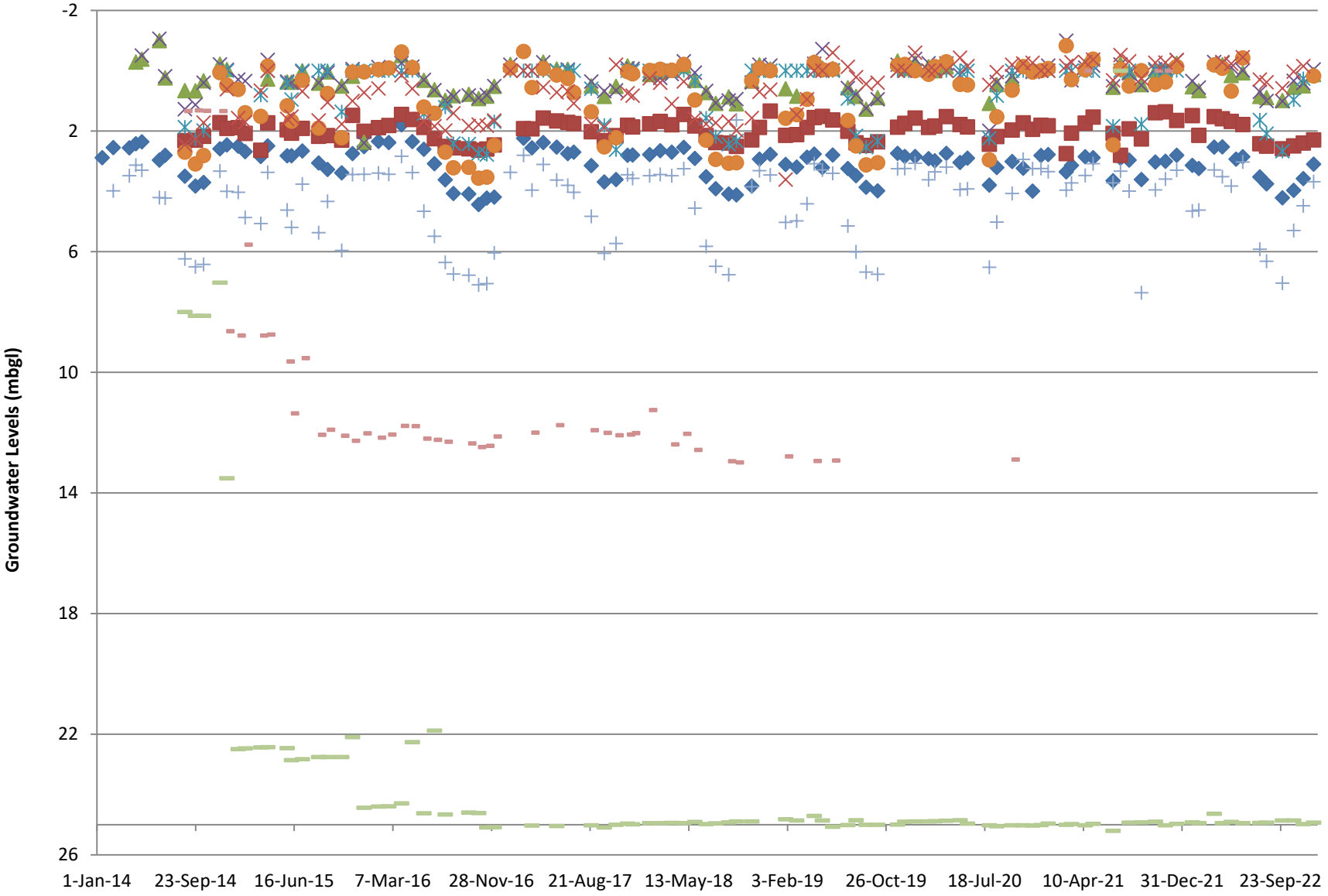
SCALE:	NTS
DATE:	9-Jan-23
CAD:	CSI
TEST:	
REVIEW:	SM

FILE No.
PROJECT No. 21508089

McCarthy Quarry
Verulam Monitoring Wells
Groundwater Levels

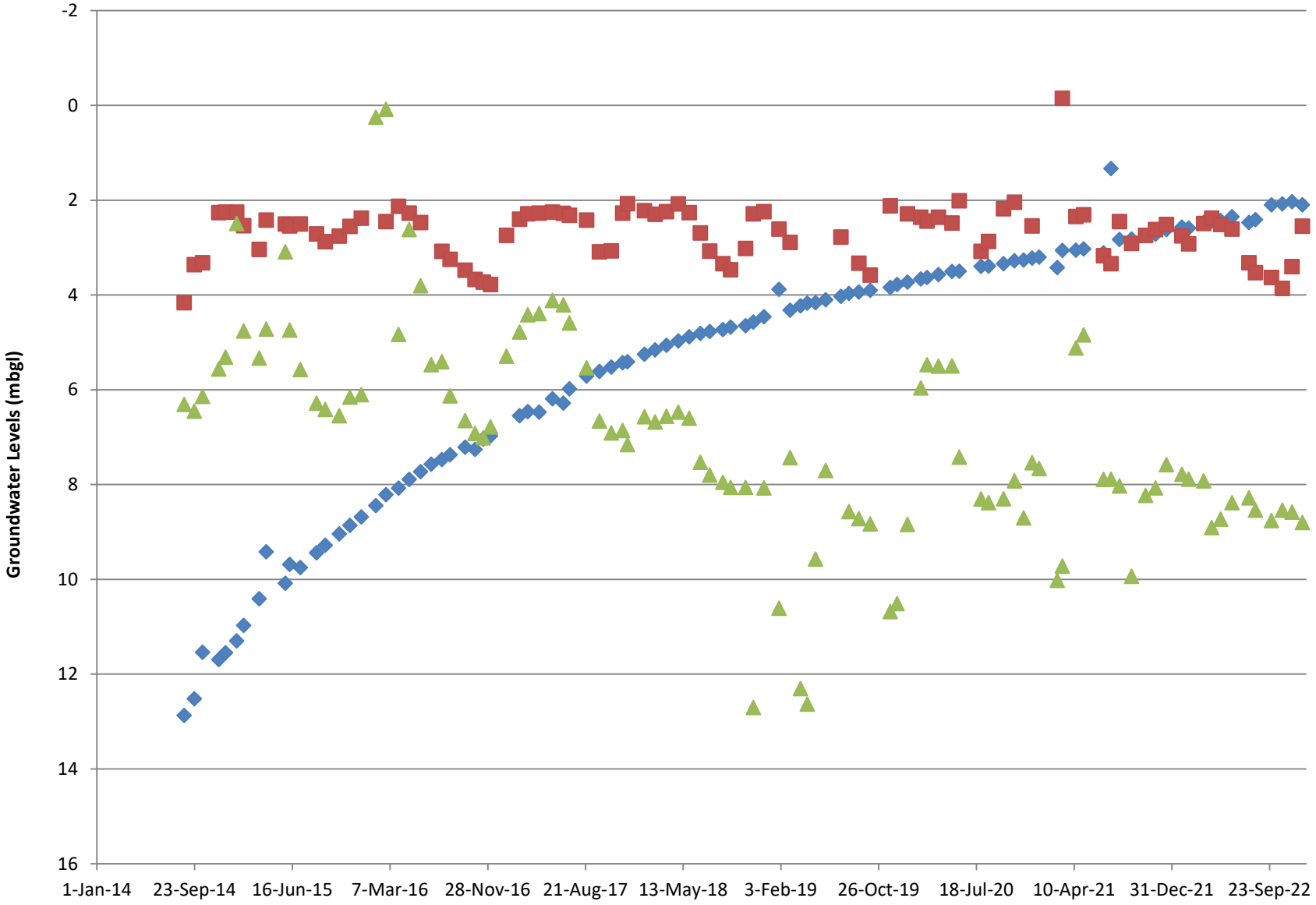
QBJR/Green Infrastructure Partners Inc.
2022 Annual Monitoring Report

FIGURE No
7



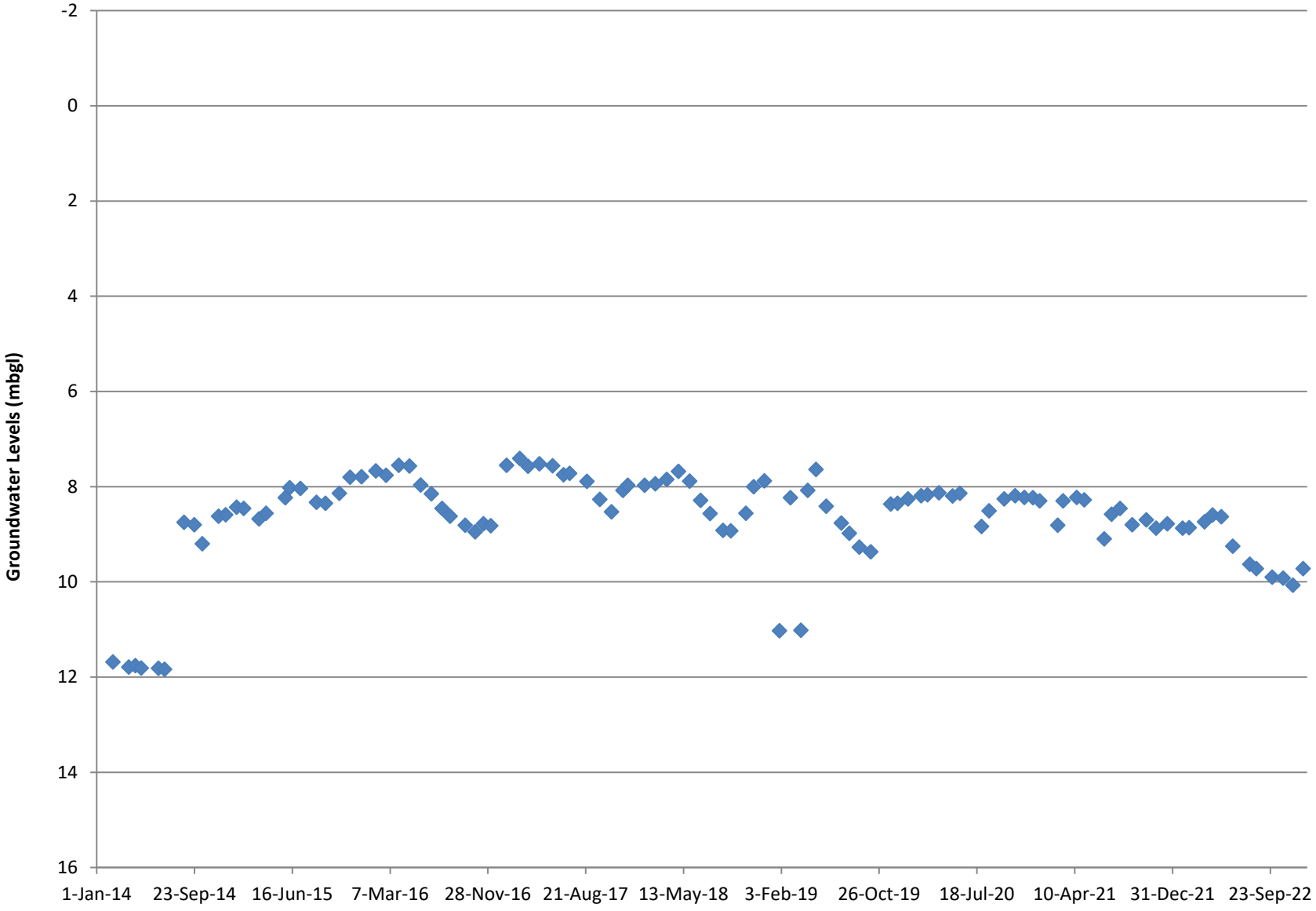
◆ OW4-2 ■ OW6-2 ▲ OW5-2		SCALE: NTS	**McCarthy Quarry**
× OW5-3 ✳ OW7-2 ● OW8-2		DATE: 9-Jan-23	**Bobcaygeon Monitoring Wells**
+ TW1-1 - OW9-1 — OW9-2		CAD: CSI	**Groundwater Level**
× CLK-2	FILE No.	TEST:	QBJR/Green Infrastructure Partners Inc.
	PROJECT No. 21508089	REVIEW: SM	2022 Annual Monitoring Report

FIGURE No **8**



◆ OW6-3
■ OW7-3
▲ OW8-3

	SCALE:	NTS	**McCarthy Quarry** **Gull River Monitoring Wells** **Groundwater Level**
	DATE:	9-Jan-23	
	CAD:	CSI	
FILE No.	TEST:		QBJR/Green Infrastructure Partners Inc. 2022 Annual Monitoring Report
PROJECT No. 21508089	REVIEW:	SM	FIGURE No **9**



◆ TW1-2

	SCALE: NTS	**McCarthy Quarry**	
	DATE: 9-Jan-23	**Precambrian Monitoring Wells**	
	CAD: CSI	**Groundwater Level**	
FILE No.	TEST:	QBJR/Green Infrastructure Partners Inc.	FIGURE No
PROJECT No. 21508089	REVIEW: SM	2022 Annual Monitoring Report	**10**

Tables

Well	Unit	Elevation (masl)	Stick up (m)	28-Jan-22	15-Feb-22	28-Mar-22	19-Apr-22	13-May-22	26-May-22	13-Jun-22	29-Jul-22	16-Aug-22	28-Sep-22	28-Oct-22	23-Nov-22	21-Dec-22
				Water Levels (mbgl)												
DW3	Verulam	246.52	0.46	2.15	3.26	1.86	2.24	2.44		2.12	4.05	3.61	4.03	4.80	3.04	5.25
OW4-1	Verulam	249.57	0.88	3.12	3.22	2.51	2.53	cows	2.88	2.93	3.47	3.70	4.21	3.95	3.57	3.09
OW4-2	Bobcaygeon	249.62	0.86	3.14	3.24	2.54	2.53	cows	2.93	2.85	3.52	3.75	4.21	3.97	3.58	3.10
Bored	Overburden	248.86	0.66	0.89	0.82	0.45	0.41	cows	0.70	0.32	1.52	1.86	2.25	1.78	1.69	0.83
OW6-1	Verulam	247.60	0.61	0.77	1.50	0.80	0.80	1.08		1.13	1.76	2.19	2.49	2.24	1.85	1.40
OW6-2	Bobcaygeon	247.52	0.53	1.49	2.14	1.52	1.59	1.68		1.78	2.42	2.50	2.59	2.49	2.40	2.29
OW6-3	Gull River	247.46	0.47	2.57	2.59	2.47	2.44	2.43		2.35	2.47	2.41	2.10	2.08	2.03	2.10
DW4	Overburden	250.19	0.24	3.33	1.79	0.52	0.59	1.00		0.31	2.07	2.39	1.72	1.31	1.56	Frozen Lid
DW1	Overburden	249.83	0.3	Frozen Lid	Frozen Lid	0.87	1.07	1.30		0.54	2.00	2.10	2.06	1.69	1.54	Frozen Lid
OW5-1	Overburden	249.84	0.8	1.24	1.20	0.74	0.61	1.07		0.48	1.81	2.32	2.39	1.52	1.43	0.86
OW5-2	Bobcaygeon	249.76	1.0	0.53	0.66	Frozen	-0.20	0.16		0.07	0.85	0.89	0.99	0.55	0.50	0.13
OW5-3	Bobcaygeon	249.70	1.0	0.34	0.56	-0.29	-0.26	-0.11		-0.01	0.70	1.00	1.01	0.33	0.41	-0.04
DW2	Overburden	247.50	0.8	Frozen Lid	Frozen Lid	0.84	0.86	1.12		0.76	2.04	2.60	3.14	2.98	2.47	0.38
DW7	Overburden		0.32	1.12	1.25	0.25	0.37	1.02		0.09	2.29	2.22	2.79	1.93	1.44	1.03
DW8	Overburden			3.73	3.87	2.88	2.81	3.65		2.10	4.19	4.19	3.97	3.82	3.87	3.69
DW6	Overburden		0.5	2.26	2.35	1.99	2.54	3.92		4.65	4.40	2.29	2.83	3.33	2.88	2.46
OW7-1	Verulam	249.80	0.62	Frozen	Frozen	Flowing	Flowing	Flowing		Flowing	1.13	1.42	1.92	0.38	-0.33	Frozen
OW7-2	Bobcaygeon	249.78		Frozen	Frozen	Flowing	Flowing	Flowing		Flowing	1.63	2.09	2.67	0.96	0.26	Frozen
OW7-3	Gull River	249.74	0.61	2.76	2.92	2.49	2.38	2.51		2.61	3.32	3.53	3.63	3.86	3.40	2.55
OW8-1	Verulam	251.47	0.76	1.26	1.31	0.04	0.12	0.05		0.03	2.34	2.85	3.12	1.90	1.32	0.45
OW8-2	Bobcaygeon	251.44	0.83	Dry	Dry	-0.19	-0.08	0.68		-0.42	Dry	Dry	Dry	Dry	Dry	0.17
OW8-3	Gull River	251.40	0.8	7.79	7.89	7.92	8.91	8.73		8.38	8.28	8.54	8.76	8.54	8.58	8.80
TW1-1	Bobcaygeon	254.10	0.6	4.65	4.62	3.29	3.51	3.82		3.03	5.92	6.32	7.04	5.30	4.48	3.68
TW1-2	Precambrian	254.10	0.52	8.87	8.86	8.74	8.60	8.63		9.25	9.63	9.72	9.90	9.92	10.07	9.72
OW9-1	Bobcaygeon	253.40	0.41	dry	dry	dry	dry	dry		dry	dry	dry	dry	dry	dry	dry
OW9-2	Bobcaygeon	253.31	0.35	24.92	24.95	24.64	24.95	24.91		24.95	24.94	24.93	24.86	24.86	24.98	24.93
CKL-1	Verulam		0.6	1.62	1.62	0.65	0.63	1.49		0.59	1.84	1.95	1.67	1.64	1.74	1.64
CKL-2	Bobcaygeon		0.65	Frozen	Frozen	Frozen	-0.29	-0.24		-0.45	0.29	0.38	0.58	0.03	-0.15	Frozen
AM1b	Overburden	249.45	0.2	1.00	0.92	0.56	0.50	cows	0.92	0.44	1.65	1.95	2.32	1.90	1.79	0.90
AMX-R	Verulam			3.82	Buried	3.88	3.35	cows	3.54	3.64	4.22	4.28	4.43	4.58	4.60	3.92

Notes:

1. Highlighted cells represent groundwater measurements in terms of meters above sea level (masl)

2. Not Accessible (NA)

3. Not Measured (NM)

		Sample	DW1									DW2								
		Date	30-May-18	31-Oct-18	09-May-19	04-Oct-19	30-Oct-20	07-May-21	21-Oct-21	22-May-13	28-Oct-22	30-May-18	31-Oct-18	09-May-19	04-Oct-19	30-Oct-20	07-May-21	21-Oct-21	22-May-13	28-Oct-22
		ODWS																		
Anion Sum	Sum		12.7	12.1	10.7	12.6	12.8	7.21	13.4		15.3	8.33	11.6	7.59	11.2	8.5	8.53	8.49	8.50	9.04
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		320	320	340	320	320	260	330	330	340	350	330	320	310	330	340	370	360	330
Calculated TDS	mg/L	500 (AO)	**690**	**650**	**570**	**690**	**700**	380	**730**		**850**	430	**610**	390	**590**	460	450	450	450	500
Cation Sum	Sum		13.2	12.2	10.8	13.2	13.7	7.12	13.7		16.8	7.65	11.3	7.11	11.4	8.93	8.48	8.46	8.73	9.93
Hardness (CaCO3)	mg/L	80-100 (OG)	**560**	**510**	**470**	**550**	**580**	**320**	**570**	**580**	**690**	**340**	**480**	**330**	**490**	**400**	**390**	**380**	**390**	**450**
Ion Balance (% Difference)	%		1.80	0.410	0.440	2.31	3.33	0.630	1.29		4.68	4.21	1.32	3.24	1.02	2.43	0.320	0.160	1.36	4.68
Langelier Index (@ 20C)	NA		1.06	0.725	0.874	0.847	0.977	0.983	1.20		0.862	1.04	0.665	0.920	0.821	0.989	1.04	1.02	0.969	0.987
Langelier Index (@ 4C)	NA		0.815	0.478	0.627	0.600	0.73	0.734	0.949		0.616	0.791	0.418	0.671	0.574	0.741	0.794	0.771	0.720	0.740
Saturation pH (@ 20C)	NA		6.76	6.84	6.81	6.79	6.76	6.96	6.74		6.68	6.85	6.99	6.87	6.98	6.83	6.79	6.79	6.77	6.83
Saturation pH (@ 4C)	NA		7.01	7.09	7.05	7.04	7.01	7.21	6.99		6.92	7.09	7.23	7.12	7.22	7.08	7.04	7.04	7.02	7.08
Total Ammonia-N	mg/L		0.086	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.084	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Colour	TCU	5 (AO)	<2	3	2	<2	<2	**8**	<2	<2	<2	<2	3	4	<2	3	4	3	2	<2
Conductivity	uS/cm		1400	1200	1000	1300	1300	680	1400	1500	1500	780	1100	720	1100	820	780	760	800.0	780
Fluoride (F-)	mg/L	1.5	<0.10	0.12	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	<0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Organic Carbon	mg/L	5 (AO)	1.1	0.93	2.0	1.0	1.2	3.2	1.1	1.5	1.4	3.0	2.0	3.2	1.6	2.8	3.6	2.8	3.2	1.8
Orthophosphate (P)	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.83	7.57	7.68	7.64	7.74	7.95	7.94	7.55	7.54	7.88	7.65	7.79	7.80	7.82	7.83	7.81	7.74	7.82
Dissolved Sulphate (SO4)	mg/L	500 (AO)	32	32	20	33	29	8.6	30	28	32	25	54	19	40	31	28	26	28	68
Tannins & Lignins	mg/L		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Turbidity	NTU	5	0.1	<0.1	<0.1	<0.1	0.2	0.6	0.3	0.1	0.2	0.6	<0.1	<0.1	2.3	0.5	0.2	0.3	0.3	0.8
Alkalinity (Total as CaCO3)	mg/L	30-500 (OG)	320	320	340	320	320	270	330	330	340	350	330	320	310	340	340	370	360	330
Dissolved Chloride (Cl)	mg/L	250 (OG)	200	180	120	200	200	59	220	250	270	27	140	26	140	41	41	17	23	35
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	0.025	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	0.40	0.24	0.83	<0.10	<0.10	0.47	0.25	0.29	0.23	<0.10	2.05	0.13	1.77	<0.10	<0.10	<0.10	<0.10	0.19
Nitrate + Nitrite	mg/L	10	0.40	0.24	0.83	0.12	<0.10	0.47	0.25	0.29	0.23	<0.10	2.05	0.13	1.77	<0.10	<0.10	<0.10	<0.10	0.19
Dissolved Aluminum (Al)	mg/L	0.1 (OG)	<0.005	<0.005	<0.005	<0.005	<0.005	14	<4.9	<4.9	5.8	<0.005	<0.005	<0.005	0.0056	<0.005	0.0067	<4.9	<4.9	7.0
Dissolved Antimony (Sb)	ug/L	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Arsenic (As)	ug/L	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	1000	190	170	150	190	180	63	190	180	210	71	220	50	230	69	56	71	66	86
Dissolved Beryllium (Be)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.40	<0.40	<0.40	<0.40	<0.40	<0.50	<0.50	<0.50	<0.50	<0.40	<0.40	<0.40	<0.40	<0.40
Dissolved Boron (B)	ug/L	5000	25	40	27	37	39	11	41	22	48	37	33	55	26	19	21	22	27	19
Dissolved Cadmium (Cd)	ug/L	5	<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090	<0.090	<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090	<0.090
Dissolved Calcium (Ca)	mg/L		170	140	140	160	170	110	180	170	210	120	98	110	100	130	140	120	130	130
Dissolved Chromium (Cr)	ug/L	50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Cobalt (Co)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Copper (Cu)	ug/L	1000 (AO)	100	62	69	42	44	1.7	43	39	25	3.7	5.0	3.5	1.5	<0.90	<0.90	1.7	1.3	2.4
Dissolved Iron (Fe)	mg/L	0.3 (AO)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Lead (Pb)	ug/L	10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	mg/L		32	37	28	37	36	10	33	30	42	12	58	10	56	20	11	16	15	29
Dissolved Manganese (Mn)	ug/L	50 (AO)	<2.0	<2.0	<2.0	31	**240**	<2.0	44	20	35	9.5	5.1	<2.0	7.7	4.8	3.7	5.1	19	50
Dissolved Molybdenum (Mo)	ug/L		<0.50	<0.50	<0.50	0.60	0.64	<0.50	<0.50	<0.50	<0.50	<0.50	1.0	<0.50	1.0	0.71	<0.50	<0.50	<0.50	0.56
Dissolved Nickel (Ni)	ug/L		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<100	100	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11
Dissolved Potassium (K)	mg/L		2.0	2.3	1.6	2.3	2.2	1.3	2.1	1.5	2	11.0	3.4	5.2	3.2	4.4	5.3	7.9	7.2	5.9
Dissolved Selenium (Se)	ug/L	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Silicon (Si)	mg/L		7.0	8.9	7.2	9	8.8	3.9	8.5	6.6	9.8	4.6	9.0	3.4	9.4	6.1	3.8	5.9	4.2	7.7
Dissolved Silver (Ag)	ug/L		<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090	<0.090	<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090	<0.090
Dissolved Sodium (Na)	mg/L	200 (OG)	45	46	33	48	47	15	51	44	66	14	36	11	35	19	13	17	15	19
Dissolved Strontium (Sr)	mg/L		0.620	0.570	0.510	0.620	0.68	0.280	0.610	0.560	0.67	0.300	0.590	0.270	0.580	0.350	0.310	0.330	0.340	0.440
Dissolved Thallium (Tl)	mg/L		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000050	<0.000050	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Dissolved Titanium (Ti)	ug/L		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Uranium (U)	mg/L	0.02	0.0015	0.0015	0.0013	0.0016	0.0015	0.00064	0.0015	0.0013	0.0015	0.00030	0.00260	0.00028	0.00260	0.00043	0.00031	0.00034	0.00036	0.00072
Dissolved Vanadium (V)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	0.64	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Zinc (Zn)	ug/L	5000 (AO)	17	16	5.6	7.7	18	<5.0	34	20	10	10	7.0	<5.0	<5.0	<5.0	<5.0	5.4	<5.0	11

		Sample	MOE 5727662 (DW3)							
		Date	30-May-18	31-Oct-18	09-May-19	08-Oct-19	29-Jun-21	21-Oct-21	22-May-13	28-Oct-22
		ODWS								
Anion Sum	Sum		8.77	10.7	8.73	9.01	11.1	8.53	8.69	8.81
Bicarb. Alkalinity (calc. as CaCO3)	mg/L		230	230	220	220	320	230	220.00	240.00
Calculated TDS	mg/L	500 (AO)	470	**580**	480	490	**620**	450	480.00	490.00
Cation Sum	Sum		8.68	10.7	8.97	8.86	12.5	8.13	9.20	9.58
Hardness (CaCO3)	mg/L	80-100 (OG)	**190**	**190**	**200**	**190**	**530**	**180**	**200.00**	**190.00**
Ion Balance (% Difference)	%		0.520	0.310	1.33	0.820	5.85	2.43	2.88	4.19
Langelier Index (@ 20C)	NA		0.393	0.404	0.358	0.512	0.955	0.478	0.426	0.574
Langelier Index (@ 4C)	NA		0.145	0.157	0.110	0.264	0.708	0.230	0.178	0.326
Saturation pH (@ 20C)	NA		7.56	7.58	7.57	7.59	6.77	7.60	7.59	7.56
Saturation pH (@ 4C)	NA		7.81	7.83	7.82	7.84	7.02	7.85	7.83	7.81
Total Ammonia-N	mg/L		0.51	<0.050	<0.050	0.33	<0.050	0.38	0.42	0.31
Colour	TCU	5 (AO)	<2	5	<2	<2	2	<2	<2	<2
Conductivity	uS/cm		880	1100	930	970	1100	870	930.00	890.00
Fluoride (F-)	mg/L	1.5	0.70	0.73	0.71	0.69	0.16	0.75	0.75	0.80
Dissolved Organic Carbon	mg/L	5 (AO)	<0.50	0.67	0.50	0.69	1.5	0.41	<0.4	0.51
Orthophosphate (P)	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	6.5-8.5 (OG)	7.95	7.99	7.93	8.10	7.72	8.08	8.01	8.14
Dissolved Sulphate (SO4)	mg/L	500 (AO)	5.0	<1.0	7.3	1.2	20	5.2	4.70	2.5
Tannins & Lignins	mg/L		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Turbidity	NTU	5	1.3	<0.1	<0.1	0.2	0.1	<0.1	0.40	0.3
Alkalinity (Total as CaCO3)	mg/L	30-500 (OG)	240	240	230	220	320	230	220.00	240
Dissolved Chloride (Cl)	mg/L	250 (OG)	140	210	140	160	150	130	140.00	140
Nitrite (N)	mg/L	1	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	10	<0.10	<0.10	<0.10	<0.10	0.21	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	10	<0.10	<0.10	<0.10	<0.10	0.21	<0.10	<0.10	<0.10
Dissolved Aluminum (Al)	mg/L	0.1 (OG)	<0.005	<0.005	<0.005	<5.0	9.0	<4.9	<4.9	<4.9
Dissolved Antimony (Sb)	ug/L	6	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Arsenic (As)	ug/L	25	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Barium (Ba)	ug/L	1000	200	200	200	220	160	210	210	220
Dissolved Beryllium (Be)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.40	<0.40	<0.40	<0.40
Dissolved Boron (B)	ug/L	5000	780	610	840	730	24	800	750	870
Dissolved Cadmium (Cd)	ug/L	5	<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090
Dissolved Calcium (Ca)	mg/L		34	34	34	34	160	31	34	33
Dissolved Chromium (Cr)	ug/L	50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Cobalt (Co)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Copper (Cu)	ug/L	1000 (AO)	2.6	43	13	23	1.3	2.4	0.94	1.8
Dissolved Iron (Fe)	mg/L	0.3 (AO)	0.190	<0.1	<0.1	<0.1	<0.1	<0.1	<100	<100
Dissolved Lead (Pb)	ug/L	10	<0.50	<0.50	<0.50	1.1	<0.50	<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	mg/L		26	26	27	25	29	24	27	25
Dissolved Manganese (Mn)	ug/L	50 (AO)	5.5	<2.0	<2.0	3.3	19	4.6	5.2	3.6
Dissolved Molybdenum (Mo)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Nickel (Ni)	ug/L		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		7.2	7.2	7.1	7.1	1.9	6.9	7.3	7.6
Dissolved Selenium (Se)	ug/L	50	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Dissolved Silicon (Si)	mg/L		5.6	5.0	5.6	4.8	7.3	5.3	5.5	5.8
Dissolved Silver (Ag)	ug/L		<0.10	<0.10	<0.10	<0.10	<0.090	<0.090	<0.090	<0.090
Dissolved Sodium (Na)	mg/L	200 (OG)	110	150	110	110	44	100	120	130
Dissolved Strontium (Sr)	mg/L		2.3	2.6	2.5	3	0.61	2.2	2.4	2.5
Dissolved Thallium (Tl)	mg/L		<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.000050	<0.000050
Dissolved Titanium (Ti)	ug/L		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dissolved Uranium (U)	mg/L	0.02	<0.0001	<0.0001	<0.0001	<0.0001	0.0012	<0.0001	<0.00010	<0.00010
Dissolved Vanadium (V)	ug/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dissolved Zinc (Zn)	ug/L	5000 (AO)	8.9	630	130	170	<5.0	10	5.1	41

		Sample	AM1B										BORED WELL									
		Date	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20	06-May-21	21-Oct-21	13-Jun-22	28-Oct-22	30-May-18	31-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20	06-May-21	21-Oct-21	13-Jun-22	28-Oct-22
Parameter	Units	ODWS																				
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		220	240	230	250	230	240	220	250	240	280	260	240	260	250	280	270	270	230	250	270
Total Ammonia-N	mg/L		0.17	0.098	0.11	0.12	0.11	0.088	<0.050	0.19	0.096	0.094	0.084	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Colour	TCU	**5 (AO)**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Conductivity	uS/cm		480	480	480	510	500	499	496	448	520	550	540	500	550	520	570	562	551	461	530	550
Total Dissolved Solids	mg/L	**500 (AO)**	290	290	340	300	290	300	300	320	310	350	310	300	320	310	330	330	320	290	310	350
Fluoride (F-)	mg/L	**1.5**	0.21	0.20	0.23	0.22	0.23	0.22	0.21	0.24	0.23	0.20	0.15	0.14	0.13	0.13	0.13	0.13	0.15	0.13	0.12	0.14
Dissolved Organic Carbon	mg/L	**5 (AO)**	0.75	0.75	0.71	0.69	0.7	1.2	0.62	0.80	0.75	0.81	1.1	0.99	0.88	1.0	0.92	1.0	1.0	1.1	1.0	0.98
Hardness	mg/L	**80-100 (OG)**	250	260	340	260	240	250	250	260	270	320	250	230	270	240	270	270	270	220	260	300
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	8.02	8.08	7.98	8.09	7.97	7.85	8.09	7.90	7.91	7.96	8.07	8.25	8.12	8.26	7.98	8.00	8.18	8.24	8.02	8.12
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	41	30	44	32	39	40	43	43	39	33	28	28	28	26	28	28	31	28	32	32
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	220	240	230	250	230	240	220	250	240	280	260	240	270	260	290	280	270	240	260	280
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	2.3	2.4	2.0	1.9	1.5	2.5	1.8	2.2	1.7	1.8	2.1	2.3	2.1	1.7	1.4	1.9	2.5	2.4	1.6	1.7
Nitrite (N)	mg/L	**1**	<0.010	<0.010	0.011	<0.010	<0.010	<0.010	0.010	0.023	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.33	0.29	0.30	0.32	0.25	0.26	0.22	0.35	0.24	0.18
Nitrate + Nitrite	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.33	0.29	0.30	0.32	0.25	0.26	0.22	0.35	0.24	0.18
Dissolved Calcium (Ca)	mg/L		47	53	84	52	47	47	49	52	53	67	56	52	64	54	63	62	62	47	58	69
Dissolved Magnesium (Mg)	mg/L		31	31	32	32	31	32	32	32	33	37	26	25	28	25	28	28	29	25	27	31
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	0.13	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		2.3	2.4	2.4	2.2	2.2	2.3	2.3	2.4	2.3	2.6	7.1	8.8	6.0	7.6	5.0	6.2	5.4	8.7	4.7	0.11
Dissolved Sodium (Na)	mg/L	**200 (AO)**	6.7	6.3	6.8	6.2	6.0	7.0	6.8	7.0	6.2	5.9	15	16	14	19	12	16	13	21	14	20

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

		Sample	OW4-I										OW4-II									
		Date	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20	06-May-21	21-Oct-21	13-Jun-22	28-Oct-22	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20	06-May-21	30-Oct-21	13-Jun-22	28-Oct-22
Parameter	Units	ODWS																				
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		240	240	210	230	220	220	220	260	240	220	250	230	230	230	240	240	250	250	250	240
Total Ammonia-N	mg/L		1.2	1.3	1.0	1.4	0.98	1.3	1.2	1.2	1.0		1.2	1.2	1.2	1.2	1	1.1	0.95	0.94	0.95	1.30
Colour	TCU	**5 (AO)**	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Conductivity	uS/cm		1400	1300	1300	1400	1300	1390	1220	1160	1200	1200	1600	1800	1600	1800	1500	1740	1470	1280	1400	1700
Total Dissolved Solids	mg/L	**500 (AO)**	**690**	**700**	**630**	**680**	**670**	**720**	**630**	**670**	**640**	**630**	**810**	**920**	**840**	**920**	**740**	**880**	**780**	**770**	**710**	**960**
Fluoride (F-)	mg/L	**1.5**	1.0	1.1	1.0	0.99	1	0.99	1.1	1.1	1.2	1.1	0.98	0.90	0.96	0.88	1	0.91	1.0	1.0	1.2	0.95
Dissolved Organic Carbon	mg/L	**5 (AO)**	1.7	2.7	2.4	1.8	1.7	1.6	1.1	2.0	1.5	1.3	1.1	1.2	1.0	1.1	0.99	1.1	1.1	0.97	1.3	1.10
Hardness	mg/L	**80-100 (OG)**	140	170	140	140	150	160	150	150	140	130	210	240	230	260	180	230	200	200	170	280
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	8.19	8.42	8.40	8.39	8.11	8.11	8.51	8.22	8.23	8.24	8.05	8.29	8.03	8.21	8	7.94	8.13	8.07	8.00	8.05
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	7.5	2.8	2.9	6.9	2.6	2.9	2.7	2.9	1.3	13.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	240	250	220	240	220	220	220	260	240	220	250	240	240	230	250	240	250	250	250	240
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**270**	**260**	250	**260**	**260**	**300**	230	230	240	230	**340**	**430**	**350**	**400**	**290**	**390**	**310**	**300**	**270**	**410**
Nitrite (N)	mg/L	**1**	<0.010	<0.010	<0.010	0.010	<0.010	<0.010	<0.010	0.025	<0.010	0.016	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.052
Nitrate (N)	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	0.15	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		28	33	27	27	30	30	29	28	26	25	39	47	43	49	35	45	38	37	32	53
Dissolved Magnesium (Mg)	mg/L		18	21	18	18	19	21	19	19	17	17	27	31	30	34	24	30	25	26	23	36
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	0.1
Dissolved Potassium (K)	mg/L		7.0	7.8	6.4	6.8	7.7	7.2	7.4	7.7	7.2	6.6	9.3	9.8	9.7	11	8.7	9.8	9.5	9.1	8.4	11.0
Dissolved Sodium (Na)	mg/L	**200 (AO)**	200	**220**	180	200	**210**	**210**	200	**210**	190	**200**	**230**	**260**	**250**	**270**	**220**	**250**	**240**	**230**	**210**	**290**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

Table 5 - Onsite Observation Well Water Quality Results

		Sample	OW5-I										OW5-II							
		Date	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	06-May-21	21-Oct-21	13-Jun-22	28-Oct-22	30-May-18	30-Oct-18	08-May-19	04-Oct-19	19-Jul-21	21-Oct-21	13-May-22	28-Oct-22
Parameter	Units	ODWS																		
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		260	260	270	260	280	320	290	320	310	330	110	110	110	120	120	130	120	120
Total Ammonia-N	mg/L		0.75	0.72	0.54	0.62	0.39	0.52	0.46	0.59	0.62	0.65	12	9.9	8.6	9.1	15	8.1	8.8	10.0
Colour	TCU	**5 (AO)**	<2	2	<2	<2	<2	<2	<2	<2	<2	<2	**6**	**34**	<2	**12**	**12**	**48**	**6**	<2
Conductivity	uS/cm		710	690	740	620	740	737	728	635	730	710	28000	25000	27000	26000	32000	18100	25000	24000
Total Dissolved Solids	mg/L	**500 (AO)**	390	390	460	360	410	430	420	440	420	450	**18000**	**16000**	**16000**	**15000**	**17000**	**14000**	**14000**	**16000**
Fluoride (F-)	mg/L	**1.5**	0.65	0.73	0.56	0.70	0.56	0.63	0.55	0.62	0.59	0.61	0.42	0.44	0.40	0.41	0.40	0.44	0.44	0.45
Dissolved Organic Carbon	mg/L	**5 (AO)**	1.3	1.3	1.2	1.5	1	1.4	1.3	1.5	1.4	1.5	0.51	0.62	0.57	<0.50	0.99	23	3.00	0.66
Hardness	mg/L	**80-100 (OG)**	210	200	330	190	260	230	240	250	260	270	7900	6300	6000	5800	5900	5200	5900	6500
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.031	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	8.01	8.28	7.97	8.20	7.93	7.87	8.04	8.12	8.14	7.89	7.31	7.69	7.35	7.58	7.12	7.02	7.35	7.46
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	35	35	44	36	45	41	47	48	45	52	<1.0	<1.0	5.3	5.3	14	<1.0	<1.0	<1.0
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	260	260	270	260	280	320	300	320	310	330	110	110	110	120	130	130	120	120
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	46	43	52	26	39	34	31	26	23	20	**10000**	**9700**	**10000**	**9400**	**10000**	**8600**	**7700**	**9700**
Nitrite (N)	mg/L	**1**	<0.010	0.086	<0.010	0.046	0.046	0.057	0.011	0.025	0.128	0.024	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	0.43	0.26	0.59	0.26	0.46	0.29	0.46	0.51	0.22	0.26	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**	0.43	0.34	0.59	0.31	0.5	0.35	0.47	0.53	0.35	0.29	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		39	37	84	33	50	44	45	48	49	52	1600	1300	1200	1200	1200	1100	1200	1300
Dissolved Magnesium (Mg)	mg/L		27	25	29	25	32	29	31	32	34	34	920	750	720	690	720	630	730	760
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	0.17	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.5	<0.5	<0.5	0.56	<0.5	0.87	<0.5	<0.5
Dissolved Potassium (K)	mg/L		6.9	7.5	6.6	6.8	6.5	7.7	6.6	8	7	7.9	77	70	66	67	67	74	78	75
Dissolved Sodium (Na)	mg/L	**200 (AO)**	66	70	66	59	59	65	62	63	58	61	**4400**	**4000**	**3400**	**3800**	**4100**	**3300**	**3800**	**4100**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

		Sample	OW5-III										OW6-II									
		Date	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	06-May-21	21-Oct-21	13-Jun-22	28-Oct-22	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	29-Jun-21	21-Oct-21	13-May-22	28-Oct-22
Parameter	Units	ODWS																				
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		130	100	110	110	88	120	110	120	110	110	150	150	140	150	140	160	150	160	150	170
Total Ammonia-N	mg/L		9.6	9.4	9.7	9.5	8.2	10	9.0	9.3	9.5	9.9	0.12	1.2	<0.050	1.4	<0.050	1.8	0.88	1.4	1.20	2.0
Colour	TCU	**5 (AO)**	3	**12**	<2	4	**32**	**16**	<2	3	<2	<2	<2	3	<2	<2	<2	<2	<2	3	<2	4
Conductivity	uS/cm		31000	21000	29000	28000	21000	31600	25700	18000	28000	26000	6500	6100	6500	6400	6400	6670	6500	4710	6300	6000
Total Dissolved Solids	mg/L	**500 (AO)**	**18000**	**13000**	**17000**	**16000**	**13000**	**18000**	**15000**	**15000**	**16000**	**16000**	**4100**	**4000**	**4000**	**4000**	**4000**	**4100**	**3900**	**3800**	**3800**	**4100**
Fluoride (F-)	mg/L	**1.5**	0.39	0.34	0.40	0.39	0.35	0.41	0.42	0.43	0.47	0.43	0.57	0.60	0.62	0.63	0.69	0.76	0.97	0.85	0.89	0.94
Dissolved Organic Carbon	mg/L	**5 (AO)**	0.85	2.8	0.99	0.79	1.3	1.2	0.90	1.2	0.61	0.58	0.58	0.66	0.58	0.57	0.56	0.83	1.8	0.44	0.63	0.45
Hardness	mg/L	**80-100 (OG)**	6300	5300	6700	6200	5900	7500	6600	6600	6300	7000	1600	1600	1600	1700	1700	1700	1600	1700	1600	1800
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.35	7.17	7.39	7.53	7.22	7.21	7.50	7.22	7.32	7.46	7.67	8.00	7.69	7.86	7.66	7.69	7.48	7.69	7.65	7.84
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	79	2.8	34	11	<1.0	79	8.7	41	1.3	1.5	**1100**	**990**	**960**	**930**	**960**	**1000**	**980**	**870**	**890**	**980**
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	130	100	110	110	88	120	110	120	110	110	150	160	140	150	140	170	150	160	150	170
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**12000**	**7500**	**10000**	**10000**	**7300**	**11000**	**9200**	**8800**	**9500**	**9400**	**1600**	**1600**	**1500**	**1600**	**1600**	**1600**	**1500**	**1400**	**1500**	**1600**
Nitrite (N)	mg/L	**1**	<0.010	0.180	<0.010	<0.010	<0.010	0.021	<0.010	<0.010	<0.010	0.012	0.164	0.077	<0.010	0.072	<0.010	0.024	0.425	0.034	0.041	0.050
Nitrate (N)	mg/L	**10**	<0.10	0.64	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.80	0.20	0.95	<0.10	1.34	<0.10	0.44	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**	<0.10	0.82	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.97	0.27	0.95	<0.10	1.34	<0.10	0.86	<0.10	0.12	<0.10
Dissolved Calcium (Ca)	mg/L		1300	1100	1400	1300	1200	1600	1300	1400	1300	1400	320	330	340	330	340	360	310	340	320	360
Dissolved Magnesium (Mg)	mg/L		760	630	770	730	700	880	790	770	770	820	200	190	190	200	200	210	190	200	190	210
Dissolved Phosphorus (P)	mg/L		<0.5	<0.5	<1	0.62	<1	0.57	<0.5	<0.5	<0.5	0.64	<0.1	<0.1	<0.1	0.10	<0.1	0.11	<0.1	<0.5	<0.5	<0.5
Dissolved Potassium (K)	mg/L		69	59	68	68	59	71	74	73	72	76	17	17	18	19	18	20	79	19	19	19
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**3800**	**3300**	**4000**	**3800**	**3800**	**4600**	**4000**	**4100**	**3900**	**4000**	**760**	**800**	**810**	**800**	**780**	**840**	**740**	**800**	**790**	**860**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

		Sample	OW7-I										OW7-II									
		Date	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	06-May-21	21-Oct-21	13-May-22	28-Oct-22	30-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	06-May-21	21-Oct-21	13-May-22	28-Oct-22
Parameter	Units	ODWS																				
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		280	260	290	210	300	290	300	250	260	200	280	230	290	270	300	290	290	260	250	270
Total Ammonia-N	mg/L		3.0	3.1	2.0	1.8	2.4	2.4	2.3	3.0	2.8	3.0	2.2	2.8	2.4	1.6	2.1	2.3	2.0	2.6	2.6	2.6
Colour	TCU	**5 (AO)**	**190**	**17**	<2	**17**	**33**	**27**	2	**61**	**150**	**240**	<2	<2	<2	<2	<2	<2	<2	2	5	<2
Conductivity	uS/cm		6400	6500	6400	720	6400	6810	6190	7180	8300	2800	6800	7300	6200	2200	6500	7300	6350	6630	8500	5600
Total Dissolved Solids	mg/L	**500 (AO)**	**3400**	**3800**	**3500**	430	**3400**	**4000**	**3400**	**5000**	**4400**	**1700**	**3800**	**4300**	**3400**	**1100**	**3400**	**3900**	**3300**	**4600**	**4600**	**3200**
Fluoride (F-)	mg/L	**1.5**	**2.2**	1.1	**2.1**	0.46	**2.1**	**1.9**	**2.1**	1.5	**1.7**	0.54	**2.1**	1.1	**2.1**	0.75	**2.2**	**1.9**	**2.0**	**1.6**	**1.7**	**1.0**
Dissolved Organic Carbon	mg/L	**5 (AO)**	1.0	1.3	0.84	1.9	0.56	0.86	0.66	0.88	0.57	2.10	1.0	1.4	0.77	2.4	0.56	0.81	0.69	0.68	0.75	2.00
Hardness	mg/L	**80-100 (OG)**	830	1300	910	320	860	1000	860	1600	1300	920	1100	1400	830	500	910	1000	800	1600	1400	1300
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.85	7.98	7.83	8.05	7.78	7.74	7.87	7.62	7.71	7.44	7.74	7.77	7.89	8.07	7.78	7.76	7.83	7.69	7.62	7.80
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	14	32	25	73	20	28	15	22	24	290	28	28	20	43	21	26	31	25	33	58
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	280	260	290	210	300	290	300	250	260	200	280	230	300	270	300	290	290	260	250	270
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**2000**	**2200**	**1900**	47	**1900**	**2300**	**1800**	**2800**	**2400**	**680**	**2200**	**2600**	**1900**	**490**	**2000**	**2200**	**1900**	**2400**	**2600**	**1800**
Nitrite (N)	mg/L	**1**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate + Nitrite	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L		160	270	190	63	180	200	180	340	260	220	220	290	180	100	180	210	170	340	270	260
Dissolved Magnesium (Mg)	mg/L		100	150	100	39	100	120	100	190	160	88	130	160	95	60	110	120	94	180	170	150
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.1	0.11	<0.1	0.10	<0.1	<0.1	<0.1	<0.1	<0.1	0.13
Dissolved Potassium (K)	mg/L		14	22	16	13	15	18	18	24	22	18	16	22	15	12	17	18	16	23	22	19
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**890**	**950**	**1000**	50	**980**	**1100**	**1000**	**1500**	**1300**	250	**1000**	**1100**	**960**	**250**	**950**	**1100**	**980**	**1500**	**1400**	**780**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

		Sample	OW8-I										OW8-II						
		Date	29-May-18	30-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	06-May-21	29-Oct-21	13-May-22	28-Oct-22	29-May-18	30-Oct-18	08-May-19	04-Oct-19	06-May-21	21-Oct-21	13-May-22
Parameter	Units	ODWS																	
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		290	300	250	300	310	300	290	300	280	300	300	290	300	310	290	290	270
Total Ammonia-N	mg/L		0.84	0.43	1.1	0.84	0.55	0.37	0.31	0.49	0.38	1.10	0.51	0.95	0.39	0.87	0.28	0.26	<0.050
Colour	TCU	**5 (AO)**	**7**	<2	<2	<2	<2	<2	<2	2	<2	<2	4	<2	<2	<2	<2	2	2
Conductivity	uS/cm		1300	770	2000	1600	1000	847	733	818	890	2,400	810	2500	760	2100	722	648	700
Total Dissolved Solids	mg/L	**500 (AO)**	**780**	450	**1200**	**880**	**560**	470	440	**520**	**510**	**1400**	450	**1400**	440	**1100**	430	420	420
Fluoride (F-)	mg/L	**1.5**	0.91	0.69	1.1	0.86	1.3	0.95	0.57	0.91	0.65	0.84	0.47	0.90	0.60	0.94	0.49	0.49	0.51
Dissolved Organic Carbon	mg/L	**5 (AO)**	1.5	1.5	1.5	1.5	1.5	1.6	1.5	1.5	1.3	1.3	1.7	1.4	1.7	1.4	1.9	1.7	2.6
Hardness	mg/L	**80-100 (OG)**	500	290	450	390	300	290	330	290	350	640	320	480	300	430	330	330	330
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.85	7.81	8.04	7.98	7.88	7.8	7.69	7.75	7.79	7.77	7.76	7.96	7.85	7.99	7.71	8.03	8.01
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	46	54	58	38	38	45	57	52	57	35	60	22	51	22	55	53	57
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	290	300	250	300	310	300	290	300	280	300	310	300	300	310	290	290	280
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	240	36	**470**	**310**	110	65	31	93	85	610	44	**630**	33	**460**	28	27	29
Nitrite (N)	mg/L	**1**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Nitrate (N)	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	0.30
Nitrate + Nitrite	mg/L	**10**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	<0.10	0.30
Dissolved Calcium (Ca)	mg/L		140	86	120	100	85	86	100	83	110	170	96	130	89	110	100	100	100
Dissolved Magnesium (Mg)	mg/L		39	18	39	34	22	19	19	20	21	52	18	41	18	38	18	18	18
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1
Dissolved Potassium (K)	mg/L		5.7	4.3	8.5	7.0	4.6	4.1	3.9	4.6	3.8	8.9	3.9	8.5	4.0	7.2	3.7	3.7	3.7
Dissolved Sodium (Na)	mg/L	**200 (AO)**	130	57	**330**	200	96	68	36	80	53	**280**	36	**340**	51	**250**	34	31	34

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

		Sample	OW9-I			OW9-II			
		Date	23-May-17	26-Oct-17	29-May-18	08-May-19	14-May-20	21-Oct-21	28-Oct-22
Parameter	Units	ODWS							
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		170	130	200	170	160	140	130
Total Ammonia-N	mg/L		18	21	18	0.11	0.27	0.15	2.10
Colour	TCU	**5 (AO)**	**110**	**49**	**14**	3	3	**6**	**6**
Conductivity	uS/cm		81000	88000	73000	39000	50000	62200	60000
Total Dissolved Solids	mg/L	**500 (AO)**	**58000**	**57000**	**46000**	**23000**	**32000**	**39000**	**47000**
Fluoride (F-)	mg/L	**1.5**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Dissolved Organic Carbon	mg/L	**5 (AO)**	**12**	**9.1**	**8.7**	**7.8**	**8.1**	**8.5**	**9.0**
Hardness	mg/L	**80-100 (OG)**	27000	25000	22000	12000	17000	21000	26000
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	6.73	6.95	6.93	7.09	7.13	7.15	7.15
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	180	160	120	**880**	**1000**	**1200**	**1300**
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	170	130	200	170	160	140	130
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**37000**	**39000**	**30000**	**13000**	**20000**	**24000**	**28000**
Nitrite (N)	mg/L	**1**	<0.10	<0.010	<0.050	0.013	0.033	<0.010	<0.10
Nitrate (N)	mg/L	**10**	<1.0	<0.10	<0.50	0.51	0.99	2.19	1.60
Nitrate + Nitrite	mg/L	**10**	<1.0	<0.10	<0.50	0.52	1.02	2.19	1.60
Dissolved Calcium (Ca)	mg/L		5700	5000	4600	2900	3800	4800	5800
Dissolved Magnesium (Mg)	mg/L		3200	3100	2500	1200	1700	2100	2800
Dissolved Phosphorus (P)	mg/L		<2	<1	<1	<0.1	<1	<1	<1
Dissolved Potassium (K)	mg/L		140	140	120	69	92	110	130
Dissolved Sodium (Na)	mg/L	**200 (AO)**	**11000**	**10000**	**9000**	**4200**	**5800**	**6600**	**9000**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

		Sample	TW1-1										AMx-R								
		Date	30-May-18	31-Oct-18	08-May-19	04-Oct-19	14-May-20	29-Oct-20	06-May-21	21-Oct-21	13-May-22	28-Oct-22	31-Oct-18	08-May-19	04-Oct-19	14-May-20	30-Oct-20	06-May-21	21-Oct-21	13-Jun-22	28-Oct-22
Parameter	Units	ODWS																			
Bicarb. Alkalinity (calc. as $CaCO_3$)	mg/L		290	280	280	280	280	260	280	250	220	200	100	66	39	1.6	22	14	5.1	4	3.6
Total Ammonia-N	mg/L		0.80	0.62	0.68	1.2	0.95	0.73	0.79	0.63	0.64	1.40	6.4	6.0	5.8	5.7	5.4	6.0	5.3	5.6	6.0
Colour	TCU	**5 (AO)**	<2	2	<2	<2	<2	<2	<2	3	<2	<2	<2	<2	**18**	<2	**260**	<2	**22**	**22**	**4**
Conductivity	uS/cm		1900	1800	1900	3100	2800	2460	2530	2260	2800	3400	22000	20000	21000	18000	18500	22500	12600	17000	15000
Total Dissolved Solids	mg/L	**500 (AO)**	**950**	**930**	**1000**	**1700**	**1400**	**1300**	**1300**	**1400**	**1500**	**1900**	**14000**	**11000**	**12000**	**10000**	**9800**	**12000**	**9500**	**9300**	**9300**
Fluoride (F-)	mg/L	**1.5**	0.49	0.49	0.51	0.50	0.5	0.47	0.48	0.56	1.10	**1.90**	0.61	0.58	0.57	0.56	0.6	0.61	0.62	0.69	0.65
Dissolved Organic Carbon	mg/L	**5 (AO)**	1.6	1.8	1.6	1.6	1.6	1.7	1.5	1.6	1.3	0.78	3.6	2.7	2.6	2	2.2	1.9	2.1	1.9	1.7
Hardness	mg/L	**80-100 (OG)**	450	490	490	830	610	540	580	630	610	720	5700	4800	4700	3800	3600	4900	3800	3400	3700
Phosphate	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
pH	units	**6.5-8.5 (OG)**	7.83	8.10	7.78	7.99	7.84	7.91	8.00	7.89	7.87	7.83	7.66	7.13	7.12	**6.06**	**6.39**	**6.43**	**5.82**	**5.77**	5.70
Dissolved Sulphate (SO_4)	mg/L	**500 (AO)**	27	24	28	33	30	29	38	39	80	160	53	29	37	<1.0	4.8	35	<1.0	<1.0	<1.0
Alkalinity (Total as $CaCO_3$)	mg/L	**30-500 (OG)**	290	280	280	280	290	260	280	260	220	200	100	67	39	1.6	22	14	5.1	4	3.6
Dissolved Chloride (Cl)	mg/L	**250 (AO)**	**420**	**390**	**420**	**830**	**660**	**610**	**600**	**700**	**700**	**910**	**9200**	**7200**	**7800**	**6300**	**6400**	**7400**	**6000**	**5900**	**5600**
Nitrite (N)	mg/L	**1**	<0.010	<0.010	<0.010	0.030	<0.010	0.023	<0.010	0.039	0.039	0.021	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.024	0.031	0.032
Nitrate (N)	mg/L	**10**	<0.10	<0.10	0.18	0.14	<0.10	0.25	<0.10	0.46	1.31	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.1	<0.10
Nitrate + Nitrite	mg/L	**10**	<0.10	<0.10	0.18	0.17	<0.10	0.27	<0.10	0.50	1.34	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	<0.10
Dissolved Calcium (Ca)	mg/L		100	120	110	180	130	100	130	130	130	140	1100	920	910	680	690	920	710	660	700
Dissolved Magnesium (Mg)	mg/L		48	50	52	91	68	68	64	73	70	140	720	610	600	510	460	620	480	440	460
Dissolved Phosphorus (P)	mg/L		<0.1	<0.1	<0.1	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	87	<0.5	<0.5	0.64	<0.5	0.54	<0.5	<0.1	<0.1	0.6
Dissolved Potassium (K)	mg/L		7.7	7.1	8.6	13	10	11	11	13	11	13	56	49	50	48	42	56	45	43	46
Dissolved Sodium (Na)	mg/L	**200 (AO)**	160	160	**210**	**400**	**290**	**290**	**280**	**320**	**340**	**480**	**3200**	**2600**	**2600**	**2400**	**2200**	**2900**	**2200**	**2200**	**2300**

Notes:
AO: aesthetic objective
OG: operational guideline
Exceedances of the OWDS (operational guidelines excluded)
are shown in bold.

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
1-Jan-22	NO PUMP		0	0	-	-	-
2-Jan-22	NO PUMP		0	0	-	-	-
3-Jan-22	NO PUMP		0	0	-	-	-
4-Jan-22	NO PUMP		0	0	-	-	-
5-Jan-22	NO PUMP		0	0	-	-	-
6-Jan-22	NO PUMP		0	0	-	-	-
7-Jan-22	NO PUMP		0	0	-	-	-
8-Jan-22	NO PUMP		0	0	-	-	-
9-Jan-22	NO PUMP		0	0	-	-	-
10-Jan-22	NO PUMP		0	0	-	-	-
11-Jan-22	NO PUMP		0	0	-	-	-
12-Jan-22	NO PUMP		0	0	-	-	-
13-Jan-22	NO PUMP		0	0	-	-	-
14-Jan-22	NO PUMP		0	0	-	-	-
15-Jan-22	NO PUMP		0	0	-	-	-
16-Jan-22	NO PUMP		0	0	-	-	-
17-Jan-22	NO PUMP		0	0	-	-	-
18-Jan-22	NO PUMP		0	0	-	-	-
19-Jan-22	NO PUMP		0	0	-	-	-
20-Jan-22	NO PUMP		0	0	-	-	-
21-Jan-22	NO PUMP		0	0	-	-	-
22-Jan-22	NO PUMP		0	0	-	-	-
23-Jan-22	NO PUMP		0	0	-	-	-
24-Jan-22	NO PUMP		0	0	-	-	-
25-Jan-22	NO PUMP		0	0	-	-	-
26-Jan-22	NO PUMP		0	0	-	-	-
27-Jan-22	NO PUMP		0	0	-	-	-
28-Jan-22	NO PUMP		0	0	-	-	-
29-Jan-22	NO PUMP		0	0	-	-	-
30-Jan-22	NO PUMP		0	0	-	-	-
31-Jan-22	NO PUMP		0	0	-	-	-
1-Feb-22	NO PUMP		0	0	-	-	-
2-Feb-22	NO PUMP		0	0	-	-	-
3-Feb-22	NO PUMP		0	0	-	-	-
4-Feb-22	NO PUMP		0	0	-	-	-
5-Feb-22	NO PUMP		0	0	-	-	-
6-Feb-22	NO PUMP		0	0	-	-	-
7-Feb-22	NO PUMP		0	0	-	-	-
8-Feb-22	NO PUMP		0	0	-	-	-
9-Feb-22	NO PUMP		0	0	-	-	-
10-Feb-22	NO PUMP		0	0	-	-	-
11-Feb-22	NO PUMP		0	0	-	-	-
12-Feb-22	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
13-Feb-22	NO PUMP		0	0	-	-	-
14-Feb-22	NO PUMP		0	0	-	-	-
15-Feb-22	NO PUMP		0	0	-	-	-
16-Feb-22	NO PUMP		0	0	-	-	-
17-Feb-22	NO PUMP		0	0	-	-	-
18-Feb-22	NO PUMP		0	0	-	-	-
19-Feb-22	NO PUMP		0	0	-	-	-
20-Feb-22	NO PUMP		0	0	-	-	-
21-Feb-22	NO PUMP		0	0	-	-	-
22-Feb-22	NO PUMP		0	0	-	-	-
23-Feb-22	NO PUMP		0	0	-	-	-
24-Feb-22	NO PUMP		0	0	-	-	-
25-Feb-22	NO PUMP		0	0	-	-	-
26-Feb-22	NO PUMP		0	0	-	-	-
27-Feb-22	NO PUMP		0	0	-	-	-
28-Feb-22	NO PUMP		0	0	-	-	-
1-Mar-22	NO PUMP		0	0	-	-	-
2-Mar-22	NO PUMP		0	0	-	-	-
3-Mar-22	NO PUMP		0	0	-	-	-
4-Mar-22	NO PUMP		0	0	-	-	-
5-Mar-22	NO PUMP		0	0	-	-	-
6-Mar-22	NO PUMP		0	0	-	-	-
7-Mar-22	NO PUMP		0	0	-	-	-
8-Mar-22	NO PUMP		0	0	-	-	-
9-Mar-22	NO PUMP		0	0	-	-	-
10-Mar-22	NO PUMP		0	0	-	-	-
11-Mar-22	NO PUMP		0	0	-	-	-
12-Mar-22	NO PUMP		0	0	-	-	-
13-Mar-22	NO PUMP		0	0	-	-	-
14-Mar-22	NO PUMP		0	0	-	-	-
15-Mar-22	NO PUMP		0	0	-	-	-
16-Mar-22	NO PUMP		0	0	-	-	-
17-Mar-22	NO PUMP		0	0	-	-	-
18-Mar-22	NO PUMP		0	0	-	-	-
19-Mar-22	NO PUMP		0	0	-	-	-
20-Mar-22	NO PUMP		0	0	-	-	-
21-Mar-22	NO PUMP		0	0	-	-	-
22-Mar-22	NO PUMP		0	0	-	-	-
23-Mar-22	NO PUMP		0	0	-	-	-
24-Mar-22	NO PUMP		0	0	-	-	-
25-Mar-22	NO PUMP		0	0	-	-	-
26-Mar-22	NO PUMP		0	0	-	-	-
27-Mar-22	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
28-Mar-22	NO PUMP		0	0	-	-	-
29-Mar-22	NO PUMP		0	0	-	-	-
30-Mar-22	NO PUMP		0	0	-	-	-
31-Mar-22	NO PUMP		0	0	-	-	-
1-Apr-22	NO PUMP		0	0	-	-	-
2-Apr-22	NO PUMP		0	0	-	-	-
3-Apr-22	NO PUMP		0	0	-	-	-
4-Apr-22	7:00	4:00	32400	540	648,000	20	1,200
5-Apr-22	7:00	4:00	32400	540	648,000	20	1,200
6-Apr-22	7:00	4:00	32400	540	648,000	20	1,200
7-Apr-22	7:00	4:00	32400	540	648,000	20	1,200
8-Apr-22	7:00	4:00	32400	540	648,000	20	1,200
9-Apr-22	NO PUMP		0	0	-	-	-
10-Apr-22	NO PUMP		0	0	-	-	-
11-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
12-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
13-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
14-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
15-Apr-22	NO PUMP		0	0	-	-	-
16-Apr-22	NO PUMP		0	0	-	-	-
17-Apr-22	NO PUMP		0	0	-	-	-
18-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
19-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
20-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
21-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
22-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
23-Apr-22	NO PUMP		0	0	-	-	-
24-Apr-22	NO PUMP		0	0	-	-	-
25-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
26-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
27-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
28-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
29-Apr-22	6:30	5:30	39600	660	792,000	20	1,200
30-Apr-22	NO PUMP		0	0	-	-	-
1-May-22	NO PUMP		0	0	-	-	-
2-May-22	NO PUMP		0	0	-	-	-
3-May-22	NO PUMP		0	0	-	-	-
4-May-22	10:00	5:00	25200	420	504,000	20	1,200
5-May-22	12:00	5:00	18000	300	360,000	20	1,200
6-May-22	7:00	5:00	36000	600	720,000	20	1,200
7-May-22	NO PUMP		0	0	-	-	-
8-May-22	NO PUMP		0	0	-	-	-
9-May-22	7:00	5:00	36000	600	720,000	20	1,200

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
10-May-22	7:00	5:00	36000	600	720,000	20	1,200
11-May-22	NO PUMP		0	0	-	-	-
12-May-22	NO PUMP		0	0	-	-	-
13-May-22	NO PUMP		0	0	-	-	-
14-May-22	NO PUMP		0	0	-	-	-
15-May-22	NO PUMP		0	0	-	-	-
16-May-22	NO PUMP		0	0	-	-	-
17-May-22	NO PUMP		0	0	-	-	-
18-May-22	8:00	5:00	32400	540	648,000	20	1,200
19-May-22	NO PUMP		0	0	-	-	-
20-May-22	8:00	5:00	32400	540	648,000	20	1,200
21-May-22	NO PUMP		0	0	-	-	-
22-May-22	NO PUMP		0	0	-	-	-
23-May-22	NO PUMP		0	0	-	-	-
24-May-22	NO PUMP		0	0	-	-	-
25-May-22	NO PUMP		0	0	-	-	-
26-May-22	12:00	5:00	18000	300	360,000	20	1,200
27-May-22	7:00	5:00	36000	600	720,000	20	1,200
28-May-22	NO PUMP		0	0	-	-	-
29-May-22	NO PUMP		0	0	-	-	-
30-May-22	NO PUMP		0	0	-	-	-
31-May-22	7:00	5:00	36000	600	720,000	20	1,200
1-Jun-22	NO PUMP		0	0	-	-	-
2-Jun-22	NO PUMP		0	0	-	-	-
3-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
4-Jun-22	NO PUMP		0	0	-	-	-
5-Jun-22	NO PUMP		0	0	-	-	-
6-Jun-22	NO PUMP		0	0	-	-	-
7-Jun-22	NO PUMP		0	0	-	-	-
8-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
9-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
10-Jun-22	NO PUMP		0	0	-	-	-
11-Jun-22	NO PUMP		0	0	-	-	-
12-Jun-22	2:00	6:00	14400	240	288,000	20	1,200
13-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
14-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
15-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
16-Jun-22	NO PUMP		0	0	-	-	-
17-Jun-22	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
18-Jun-22	NO PUMP		0	0	-	-	-
19-Jun-22	NO PUMP		0	0	-	-	-
20-Jun-22	7:00	5:00	36000	600	-	-	-
21-Jun-22	NO PUMP		0	0	-	-	-
22-Jun-22	NO PUMP		0	0	-	-	-
23-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
24-Jun-22	NO PUMP		0	0	-	-	-
25-Jun-22	NO PUMP		0	0	-	-	-
26-Jun-22	NO PUMP		0	0	-	-	-
27-Jun-22	7:00	5:00	36000	600	720,000	20	1,200
28-Jun-22	NO PUMP		0	0	-	-	-
29-Jun-22	NO PUMP		0	0	-	-	-
30-Jun-22	NO PUMP		0	0	-	-	-
1-Jul-22	NO PUMP		0	0	-	-	-
2-Jul-22	NO PUMP		0	0	-	-	-
3-Jul-22	NO PUMP		0	0	-	-	-
4-Jul-22	7:00	5:00	36000	600	720,000	20	1,200
5-Jul-22	NO PUMP		0	0	-	-	-
6-Jul-22	NO PUMP		0	0	-	-	-
7-Jul-22	NO PUMP		0	0	-	-	-
8-Jul-22	NO PUMP		0	0	-	-	-
9-Jul-22	NO PUMP		0	0	-	-	-
10-Jul-22	NO PUMP		0	0	-	-	-
11-Jul-22	7:00	9:00	7200	120	144,000	20	1,200
12-Jul-22	NO PUMP		0	0	-	-	-
13-Jul-22	NO PUMP		0	0	-	-	-
14-Jul-22	NO PUMP		0	0	-	-	-
15-Jul-22	NO PUMP		0	0	-	-	-
16-Jul-22	NO PUMP		0	0	-	-	-
17-Jul-22	NO PUMP		0	0	-	-	-
18-Jul-22	7AM	8:00 AM	3600	60	72,000	20	1,200
19-Jul-22	NO PUMP		0	0	-	-	-
20-Jul-22	NO PUMP		0	0	-	-	-
21-Jul-22	NO PUMP		0	0	-	-	-
22-Jul-22	NO PUMP		0	0	-	-	-
23-Jul-22	NO PUMP		0	0	-	-	-
24-Jul-22	NO PUMP		0	0	-	-	-
25-Jul-22	7AM	9:00 AM	7200	120	144,000	20	1,200
26-Jul-22	NO PUMP		0	0	-	-	-
27-Jul-22	NO PUMP		0	0	-	-	-
28-Jul-22	NO PUMP		0	0	-	-	-
29-Jul-22	NO PUMP		0	0	-	-	-
30-Jul-22	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
31-Jul-22	NO PUMP		0	0	-	-	-
1-Aug-22	NO PUMP		0	0	-	-	-
2-Aug-22	NO PUMP		0	0	-	-	-
3-Aug-22	NO PUMP		0	0	-	-	-
4-Aug-22	NO PUMP		0	0	-	-	-
5-Aug-22	NO PUMP		0	0	-	-	-
6-Aug-22	NO PUMP		0	0	-	-	-
7-Aug-22	NO PUMP		0	0	-	-	-
8-Aug-22	7am	5pm	36000	600	720,000	20	1,200
9-Aug-22	NO PUMP		0	0	-	-	-
10-Aug-22	NO PUMP		0	0	-	-	-
11-Aug-22	NO PUMP		0	0	-	-	-
12-Aug-22	NO PUMP		0	0	-	-	-
13-Aug-22	NO PUMP		0	0	-	-	-
14-Aug-22	NO PUMP		0	0	-	-	-
15-Aug-22	NO PUMP		0	0	-	-	-
16-Aug-22	NO PUMP		0	0	-	-	-
17-Aug-22	7AM	5PM	36000	600	720,000	20	1,200
18-Aug-22	NO PUMP		0	0	-	-	-
19-Aug-22	NO PUMP		0	0	-	-	-
20-Aug-22	NO PUMP		0	0	-	-	-
21-Aug-22	NO PUMP		0	0	-	-	-
22-Aug-22	NO PUMP		0	0	-	-	-
23-Aug-22	7AM	5PM	36000	600	720,000	20	1,200
24-Aug-22	NO PUMP		0	0	-	-	-
25-Aug-22	NO PUMP		0	0	-	-	-
26-Aug-22	NO PUMP		0	0	-	-	-
27-Aug-22	NO PUMP		0	0	-	-	-
28-Aug-22	NO PUMP		0	0	-	-	-
29-Aug-22	NO PUMP		0	0	-	-	-
30-Aug-22	NO PUMP		0	0	-	-	-
31-Aug-22	NO PUMP		0	0	-	-	-
1-Sep-22	NO PUMP		0	0	-	-	-
2-Sep-22	NO PUMP		0	0	-	-	-
3-Sep-22	NO PUMP		0	0	-	-	-
4-Sep-22	NO PUMP		0	0	-	-	-
5-Sep-22	NO PUMP		0	0	-	-	-
6-Sep-22	NO PUMP		0	0	-	-	-
7-Sep-22	7:00 AM	10:00 AM	10800	180	216,000	20	1,200
8-Sep-22	NO PUMP		-3	-0.05	-	-	-
9-Sep-22	NO PUMP		-2	-0.033333	-	-	-
10-Sep-22	NO PUMP		-1	-0.016667	-	-	-
11-Sep-22	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
12-Sep-22	NO PUMP		0	0	-	-	-
13-Sep-22	NO PUMP		0	0	-	-	-
14-Sep-22	NO PUMP		0	0	-	-	-
15-Sep-22	NO PUMP		0	0	-	-	-
16-Sep-22	NO PUMP		0	0	-	-	-
17-Sep-22	NO PUMP		0	0	-	-	-
18-Sep-22	NO PUMP		0	0	-	-	-
19-Sep-22	NO PUMP		0	0	-	-	-
20-Sep-22	7AM	9AM	7200	120	144,000	20	1,200
21-Sep-22	NO PUMP		0	0	-	-	-
22-Sep-22	7AM	10:30AM	12600	210	252,000	20	1,200
23-Sep-22	NO PUMP		0	0	-	-	-
24-Sep-22	NO PUMP		0	0	-	-	-
25-Sep-22	NO PUMP		0	0	-	-	-
26-Sep-22	NO PUMP		0	0	-	-	-
27-Sep-22	NO PUMP		0	0	-	-	-
28-Sep-22	7AM	9AM	7200	120	144,000	20	1,200
29-Sep-22	NO PUMP		0	0	-	-	-
30-Sep-22	NO PUMP		0	0	-	-	-
1-Oct-22	NO PUMP		0	0	-	-	-
2-Oct-22	NO PUMP		0	0	-	-	-
3-Oct-22	NO PUMP		0	0	-	-	-
4-Oct-22	NO PUMP		0	0	-	-	-
5-Oct-22	NO PUMP		0	0	-	-	-
6-Oct-22	NO PUMP		0	0	-	-	-
7-Oct-22	NO PUMP		0	0	-	-	-
8-Oct-22	NO PUMP		0	0	-	-	-
9-Oct-22	NO PUMP		0	0	-	-	-
10-Oct-22	NO PUMP		0	0	-	-	-
11-Oct-22	NO PUMP		0	0	-	-	-
12-Oct-22	NO PUMP		0	0	-	-	-
13-Oct-22	7AM	10AM	10800	180	216,000	20	1,200
14-Oct-22	NO PUMP		0	0	-	-	-
15-Oct-22	NO PUMP		0	0	-	-	-
16-Oct-22	NO PUMP		0	0	-	-	-
17-Oct-22	NO PUMP		0	0	-	-	-
18-Oct-22	7AM	10AM	10800	180	216,000	20	1,200
19-Oct-22	7AM	11AM	14400	240	288,000	20	1,200
20-Oct-22	NO PUMP		0	0	-	-	-
21-Oct-22	NO PUMP		0	0	-	-	-
22-Oct-22	NO PUMP		0	0	-	-	-
23-Oct-22	NO PUMP		0	0	-	-	-
24-Oct-22	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
25-Oct-22	NO PUMP		0	0	-	-	-
26-Oct-22	NO PUMP		0	0	-	-	-
27-Oct-22	7AM	10AM	10800	180	216,000	20	1,200
28-Oct-22	NO PUMP		0	0	-	-	-
29-Oct-22	NO PUMP		0	0	-	-	-
30-Oct-22	NO PUMP		0	0	-	-	-
31-Oct-22	NO PUMP		0	0	-	-	-
1-Nov-22	NO PUMP		0	0	-	-	-
2-Nov-22	NO PUMP		0	0	-	-	-
3-Nov-22	NO PUMP		0	0	-	-	-
4-Nov-22	NO PUMP		0	0	-	-	-
5-Nov-22	NO PUMP		0	0	-	-	-
6-Nov-22	NO PUMP		0	0	-	-	-
7-Nov-22	NO PUMP		0	0	-	-	-
8-Nov-22	7:00 AM	12:00 PM	18000	300	360,000	20	1,200
9-Nov-22	NO PUMP		0	0	-	-	-
10-Nov-22	NO PUMP		0	0	-	-	-
11-Nov-22	NO PUMP		0	0	-	-	-
12-Nov-22	NO PUMP		0	0	-	-	-
13-Nov-22	NO PUMP		0	0	-	-	-
14-Nov-22	NO PUMP		0	0	-	-	-
15-Nov-22	7AM	12PM	18000	300	360,000	20	1,200
16-Nov-22	NO PUMP		0	0	-	-	-
17-Nov-22	NO PUMP		0	0	-	-	-
18-Nov-22	NO PUMP		0	0	-	-	-
19-Nov-22	NO PUMP		0	0	-	-	-
20-Nov-22	NO PUMP		0	0	-	-	-
21-Nov-22	NO PUMP		0	0	-	-	-
22-Nov-22	7AM	12PM	18000	300	360,000	20	1,200
23-Nov-22	NO PUMP		0	0	-	-	-
24-Nov-22	NO PUMP		0	0	-	-	-
25-Nov-22	NO PUMP		0	0	-	-	-
26-Nov-22	NO PUMP		0	0	-	-	-
27-Nov-22	NO PUMP		0	0	-	-	-
28-Nov-22	7:00 AM	12:00 PM	18000	300	360,000	20	1,200
29-Nov-22	NO PUMP		0	0	-	-	-
30-Nov-22	NO PUMP		0	0	-	-	-
1-Dec-22	7:00 AM	12:00 PM	18000	300	360,000	20	1,200
2-Dec-22	NO PUMP		0	0	-	-	-
3-Dec-22	NO PUMP		0	0	-	-	-
4-Dec-22	NO PUMP		0	0	-	-	-
5-Dec-22	NO PUMP		0	0	-	-	-
6-Dec-22	NO PUMP		0	0	-	-	-

Table 6: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,544,800**	**76**	**4,545**
7-Dec-22	NO PUMP		0	0	-	-	-
8-Dec-22	7:00 AM	12:00 PM	18000	300	360,000	20	1,200
9-Dec-22	NO PUMP		0	0	-	-	-
10-Dec-22	NO PUMP		0	0	-	-	-
11-Dec-22	NO PUMP		0	0	-	-	-
12-Dec-22	NO PUMP		0	0	-	-	-
13-Dec-22	7:00 AM	11:00 AM	14400	240	288,000	20	1,200
14-Dec-22	NO PUMP		0	0	-	-	-
15-Dec-22	NO PUMP		0	0	-	-	-
16-Dec-22	7:00 AM	12:00 PM	18000	300	360,000	20	1,200
17-Dec-22	NO PUMP		0	0	-	-	-
18-Dec-22	NO PUMP		0	0	-	-	-
19-Dec-22	NO PUMP		0	0	-	-	-
20-Dec-22	NO PUMP		0	0	-	-	-
21-Dec-22	NO PUMP		0	0	-	-	-
22-Dec-22	NO PUMP		0	0	-	-	-
23-Dec-22	NO PUMP		0	0	-	-	-
24-Dec-22	NO PUMP		0	0	-	-	-
25-Dec-22	NO PUMP		0	0	-	-	-
26-Dec-22	NO PUMP		0	0	-	-	-
27-Dec-22	NO PUMP		0	0	-	-	-
28-Dec-22	NO PUMP		0	0	-	-	-
29-Dec-22	NO PUMP		0	0	-	-	-
30-Dec-22	NO PUMP		0	0	-	-	-
31-Dec-22	NO PUMP		0	0	-	-	-

APPENDIX A

PTTW No. 1603-BKTPQH

PERMIT TO TAKE WATER
Ground Water
NUMBER 1603-BKTPQH

Pursuant to Section 34.1 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

QBJR Aggregates Inc.
949 Wilson Ave
Toronto, Ontario, M3K 1G2
Canada

For the water taking from: Quarry Sump, McCarthy Quarry

Located at: Lot 1, Concession 1, Geographic Township of Mara
Ramara, County of Simcoe

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34.1, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment, Conservation and Parks.

(d) "District Office" means the Barrie District Office.

(e) "Permit" means this Permit to Take Water No. 1603-BKTPQH including its Schedules, if any, issued in accordance with Section 34.1 of the OWRA.

(f) "Permit Holder" means QBJR Aggregates Inc..

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated October 23, 2019 and signed by Jenny Coco, CEO, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act*, R.S.O. 1990, the *Pesticides Act*, R.S.O. 1990, or the *Safe Drinking Water Act,* S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act*, and

the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **January 31, 2025**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Quarry Sump	Pond Connected	Pits and Quarries	Dewatering	4,545	24	6,544,800	250	17 650950 4933500
						Total Taking:	6,544,800		

3.3 There is an additional water taking limitation per year for Source 1 described as Quarry Sump within Table A. The maximum taking per year from the Quarry Sump is 196,500,000 litres.

4. Monitoring

4.1 The Permit Holder shall not lower the water in the quarry below an elevation of 232.0 metres above sea level.

4.2 The Permit Holder shall conduct daily water level monitoring with the use of pressure transducers and data loggers at:

a) The residential well known by the MOE Water Well Record Number 5727662 and identified as well DW3 on Figure 2 in Item 2 of Schedule A of this Permit, if granted permission by the property owner.

b) The monitoring wells named OW4-1, OW4-2, OW5-1, OW6-1, OW6-2, OW8-3, OW9-2, and Bored Well (shown on Figure 2, in Item 2 of Schedule A of this Permit).

c) The City of Kwartha Lakes monitoring well CKL-1, if granted permission by the property owner .

These pressure transducers and data loggers shall be inspected and downloaded at least every 6 months.

4.3 The Permit Holder shall conduct monthly water level monitoring with the use of a manual water level meter at:

a) The residential well known by the MOE Water Well Record Number 5727662 and identified as well DW3 on Figure 2 in Item 2 of Schedule A of this Permit, if granted permission by the property owner.

b) The residential wells named DW1, DW2, and DW4, if granted permission by the property owner (shown on Figure 2, in Item 2 of Schedule A of this Permit).

c) The monitoring wells named AM1b, AMX-R, TW1-1, OW4-1, OW4-2, OW5-1, OW5-2, OW5-3, OW6-1, OW6-2, OW6-3, OW7-1, OW7-2, OW7-3, OW8-1, OW8-2, OW8-3, OW9-1, OW9-2, and Bored Well (shown on Figure 2 in Item 2 of Schedule A of this Permit).

d) The City of Kwartha Lakes monitoring wells CKL-1 and CKL-2, if granted permission by the property owner .

The Permit Holder may suspend monthly water level monitoring under Condition 4.3 for the months of January and/or February if no water is taken from the quarry on those months.

4.4 The Permit Holder shall, if granted permission by the property owner, measure and record static water levels in the residential wells named DW6, DW7, and DW8, as shown on Figure 2 in Item 2 of Schedule A of this Permit, at least once in every two (2) month period during which water is taken from the quarry. The Permit Holder may suspend monthly water level monitoring under Condition 4.4 for the months of January and/or February if no water is taken from the quarry on those months.

4.5 The Permit Holder shall, if granted permission by the property owner, on a semi-annual basis collect raw water samples from the residential wells named DW1, DW2, and the well identified in condition 4.2(a). Each sample shall be tested, at a minimum, for the parameters listed in Table 1 below:

Table 1: Water Quality Parameters for Residential Wells

pH	Sulphate	DOC	Copper
Alkalinity (CaCO3)	Magnesium	Colour	Iron
Bicarbonate	Calcium	Turbidity	Lead
Conductivity	Sodium	Aluminium	Manganese
Fluoride	Potassium	Arsenic	Selenium
Chloride	Ammonia (N)	Barium	Zinc
Nitrate	Phosphate	Boron	Hardness (CaCO3)
Nitrite	Phosphorus	Cadmium	TDS (iron sum calc.)
Chromium	Anion Sum	Ion Ratio	Langelier Index
Tannins	Cation Sum	% Difference	

The Permit Holder shall immediately report to the respective well owner, the Director, and District Office any sampling result that exceeds the Ontario Drinking Water Quality Standards as prescribed by O.Reg. 169/03, as amended.

4.6 The Permit Holder shall on a semi-annual basis conduct the groundwater quality monitoring from the on-site groundwater monitors listed in Table 2. Each sample shall be tested, at a minimum, for the parameters listed in Table 3.

Table 2: On-Site Groundwater Monitors for Water Quality Sampling

AM1b	OW4-I	OW5-III	OW8-I
AMX-R	OW4-II	OW6-II	OW8-II
TW1-1	OW5-I	OW7-I	OW9-I
Bored Well	OW5-II	OW7-II	OW9-II

Table 3: Water Quality Parameters for On-Site Groundwater Monitors

pH	Magnesium	Sulphate	Conductivity
Alkalinity	Calcium	Nitrate	DOC
Bicarbonate	Sodium	Nitrite	Colour
Fluoride	Potassium	Phosphate	TDS
Chloride	Ammonia	Phosphorus	Hardness

4.7 The Permit Holder shall notify the Director, in writing, within 30 days if the groundwater level or groundwater quality monitoring of any well listed under conditions 4.2, 4.3, 4.4, 4.5, and 4.6 is not possible, including being denied access to a private well. In the event of damage or loss of any monitoring well, monitoring devices or related equipment, the Permit Holder shall be allowed 30 calendar days from the date of discovery of the occurrence to repair or replace equipment. If a well is too damaged to be repaired or monitored, or if the well is deemed unsafe to be monitored, then the Director will decide if a replacement well is required and will modify the appropriate monitoring conditions in a written letter to the Permit Holder.

4.8 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings, and the total measured or calculated amounts for water pumped per day for each day that water is taken under the authorization of this Permit.

4.9 The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.10 The Permit Holder shall provide to the Director an annual monitoring report no later than March 1 each year during the life of this Permit. The annual monitoring report shall be prepared by an individual with P.Geo. or equivalent qualifications and shall include, at a minimum:

a) The review and assessment of all monitoring data required by this Permit.
b) An up-date of the quarry operations and predicted quarrying and dewatering for the next twelve (12) months.

c) An assessment of the groundwater trends using the on-site on off-site monitoring data. This analysis should state the actual impact area of quarry dewatering and determine the potential for off-site impacts. If any impacts are predicted then a detailed mitigation plan shall be included within this report.
d) Analysis that includes amount of water pumped, precipitation data, and an estimate of how much groundwater was pumped versus surface water.
e) Figures that include site maps with current quarry depths, groundwater contour maps, impact area of quarry dewatering, groundwater elevation graphs, and geological cross-sections.
f) Any groundwater interference complaints.
g) Description of all communication with the public.
h) Conclusions and recommendations, if any, to improve the monitoring and reporting at the site.

An electronic copy of the data collected must also accompany the report.

4.11 The Permit Holder shall make available on a publicly-accessible site on the internet the water quality and quantity data that it is required to monitor and record under this Permit and O.Reg. 387/04, as amended, and a copy of every report that is required to be prepared under this Permit. For greater clarity, the Permit Holder shall not publish any personal information as defined by the *Freedom of Information and Protection of Privacy Act,* R.S.O. 1990, c. F.31, as amended.

4.12 The Permit Holder shall maintain a Public Liaison Committee ("PLC") comprised of not more than seven (7) members that will meet at least once every four (4) months, unless the majority of the PLC decide that more or less frequent meetings are required. The PLC shall be comprised of: two (2) members appointed by the Permit Holder - one of whom shall act as Chairperson; one (1) member from each of the Township and the County, if they wish to have representatives; and three (3) members appointed by the public, if they wish to have representatives, who must be permanent residents within a 3 kilometre radius of the quarry property. The PLC shall serve in an advisory / community liaison role and shall have no powers to direct the Permit Holder or the Ministry.

4.13 Any request for an amendment or renewal of this Permit must be accompanied by a report prepared by an individual with P.Geo. or equivalent qualifications and shall include, at a minimum:

a) The review and assessment of all monitoring data required by this Permit.
b) An up-date of the quarry operations and predicted quarrying and dewatering for the duration of the requested permit.
c) An assessment of the groundwater trends using the on-site on off-site monitoring data. This analysis should state the actual impact area of quarry dewatering and determine the potential for off-site impacts. If any impacts are predicted then a detailed mitigation plan shall be included within this report.
d) Analysis that includes amount of water pumped, precipitation data, and an estimate of how much groundwater was pumped versus surface water.

e) Figures that include site maps with current quarry depths, groundwater contour maps, impact area of quarry dewatering, groundwater elevation graphs, and geological cross-sections.
f) Any groundwater interference complaints.
g) Description of all communication with the public.
h) Conclusions and recommendations, if any, to improve the monitoring and reporting at the site.

An electronic copy of the data collected must also accompany the report. Any application for renewal of this Permit must be submitted to the Ministry at least ninety (90) days prior to the expiry of this Permit.

4.14 The Permit Holder shall, as directed by the Ministry, participate in a cumulative impact assessment for the Carden Plain Area with other quarry operators who have been issued a permit to take water in this area.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Groundwater Takings

If the taking of water is observed to cause any negative impact to other water supplies obtained from any adequate sources that were in use prior to initial issuance of a Permit for this water taking, the Permit Holder shall take such action necessary to make available to those affected, a supply of water equivalent in quantity and quality to their normal takings, or shall compensate such persons for their reasonable costs of so doing, or shall reduce the rate and amount of taking to prevent or alleviate the observed negative impact. Pending permanent restoration of the affected supplies, the Permit Holder shall provide, to those affected, temporary water supplies adequate to meet their normal requirements, or shall compensate such persons for their reasonable costs of doing so.

If permanent interference is caused by the water taking, the Permit Holder shall restore the water supplies of those permanently affected.

5.2.1 Where the water supply provided by the well known by MOE Water Well Record Number 5727662 is restored in accordance with Condition 5.2, the Permit Holder shall restore the supply in a manner satisfactory to the Director, taking into account the residential needs, requirements and preferences of the persons serviced by the well.

5.3 Upon the receipt of a groundwater interference complaint, the Permit Holder shall:

a) Implement the McCarthy Quarry Complaint Resolution Process as described in Item 3 of Schedule A of this Permit.

b) In addition, appropriate notification and actions must be taken as described in conditions 5.1 and 5.2 of this Permit. The provisions of conditions 5.1 and 5.2 shall take precedence over the provisions of condition 5.3(a) if there is a conflict.

6. Director May Amend Permit

The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written notice served upon me, the Environmental Review Tribunal and the Minister of the Environment, Conservation and Parks, within 15 days after receipt of this Notice, require a hearing by the Tribunal. The Minister of the Environment, Conservation and Parks will place notice of your appeal on the Environmental Registry. Section 101 of the Ontario Water Resources Act, as amended provides that the Notice requiring a hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

a. The name of the appellant;
b. The address of the appellant;
c. The Permit to Take Water number;
d. The date of the Permit to Take Water;
e. The name of the Director;
f. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 326-5370
Email:
ERTTribunalsecretary@ontario.ca

AND

The Minister of the Environment,
Conservation and Parks
777 Bay Street, 5th Floor
Toronto, Ontario
M7J 2J3

AND

The Director, Section 34.1,
Ministry of the Environment,
Conservation and Parks
8th Floor
5775 Yonge St
Toronto ON M2M 4J1
Fax: (416) 325-6347

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by Telephone at	by Fax at	by e-mail at
(416) 212-6349	(416) 326-5370	www.ert.gov.on.ca
Toll Free 1(866) 448-2248	Toll Free 1(844) 213-3474	

This instrument is subject to Section 38 of the ***Environmental Bill of Rights*** *that allows residents of Ontario to seek leave to appeal the decision on this instrument. Residents of Ontario may seek to appeal for 15 days from the date this decision is placed on the Environmental Registry. By accessing the Environmental Registry, you can determine when the leave to appeal period ends.*

This Permit cancels and replaces Permit Number 7818-9QJNL4, issued on 2014/12/30.

Dated at Toronto this 31st day of January, 2020.

Ellen Klupfel
Director, Section 34.1
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule "A" forms part of Permit To Take Water 1603-BKTPQH, dated January 31, 2020.

1. Permit to Take Water Application, dated October 23, 2019 and signed by Jenny Coco.

2. Golder Associates Ltd. (November 1, 2019). Hydrogeological Assessment, Permit to Take Water Renewal, McCarthy Quarry.

Ministry of the Environment, Conservation and Parks
Environmental Assessment and Permissions Division
Brownfields and Permit to Take Water
Permit To Take Water Unit
Floor 1, 135 St Clair Ave W
Toronto, ON
M4V 1P5
Tel: (289) 830-5867

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Division des évaluations et des permissions environnementales
Réaménagement des friches contaminées et réglementation des prélèvements d'eau
Unité de la réglementation des prélèvements d'eau
1er étage, 135 av St. Clair O
Toronto, ON
M4V 1P5
Tél:(289) 830-5867

February 28, 2022

QBJR Aggregates Inc.
949 Wilson Ave
Toronto, Ontario, M3K 1G2
Canada

Attn: Jenny Coco

RE: Amendment to Permit To Take Water No. 1603-BKTPQH
Lot 1 Concession 1 Original Township of Mara
Ramara, County of Simcoe
Reference Number 0707-BHMPF8

In a letter, *Change of Sump Location Identified at the McCarthy Quarry Under Permit No. 1603-BKTPQH*) prepared by Golder Associates Ltd. on behalf of QBJR Aggregates Inc., dated February 23, 2022, it has been requested the the location of water taking identified for **Source 1** in **Table A** (Quarry Sump) of Permit To Take Water ("PTTW") number 1603-BKTPQH be revised to reflect a new proposed water taking location, in the southern portion of the quarry site. In consultation with the Ministry's Central Region Technical Support Section Staff (Mihran Aslanyan, P.Geo., Hydrogeologist) there are no technical concerns identified regarding this request.

I am a Director appointed for the purposes of section 34.1 of the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended ("OWRA"), and pursuant to my authority under subsection 34.1(2) of the OWRA, I am exercising my discretion to amend Permit to Take Water 1603-BKTPQH by amending Condition 3.2, Table A, as follows:

3.2 Amounts of Taking Permitted
The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Quarry Sump	Pond Connected	Pits and Quarries	Dewatering	4,545	24	6,544,800	250	17 **651324** **4933188**
						Total Taking:	6,544,800		

Please note that all other terms and conditions of Permit to Take Water 1603-BKTPQH shall remain in force.

This Notice now forms part of the current permit and must be attached to the original Permit to Take Water, if available. If the original is no longer available, this letter must be kept attached to a certified copy of the Permit to Take Water.

Any change in circumstances related to this permit should be reported promptly to a Director.

In accordance with Section 100 of the *Ontario Water Resources Act, R.S.O. 1990,* you may by written notice served upon me and the Ontario Land Tribunal within 15 days after receipt of this notice, require a hearing by the Tribunal. Section 101 of the *Ontario Water Resources Act, R.S.O. 1990,* as amended, provides that the notice requiring the hearing ("the Notice") shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

a. The name of the appellant;
b. The address of the appellant;
c. The Permit to Take Water number;
d. The date of the Permit to Take Water;
e. The name of the Director;
f. The municipality within which the works are located;

This notice must be served upon:

*Registrar**
Ontario Land Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5
OLT.Registrar@ontario.ca

AND

The Director, Section 34.1,
Ministry of the Environment, Conservation and Parks

*** Further information on the Ontario Land Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: (416) 212-6349 or 1 (866) 448-2248, or www.olt.gov.on.ca.**

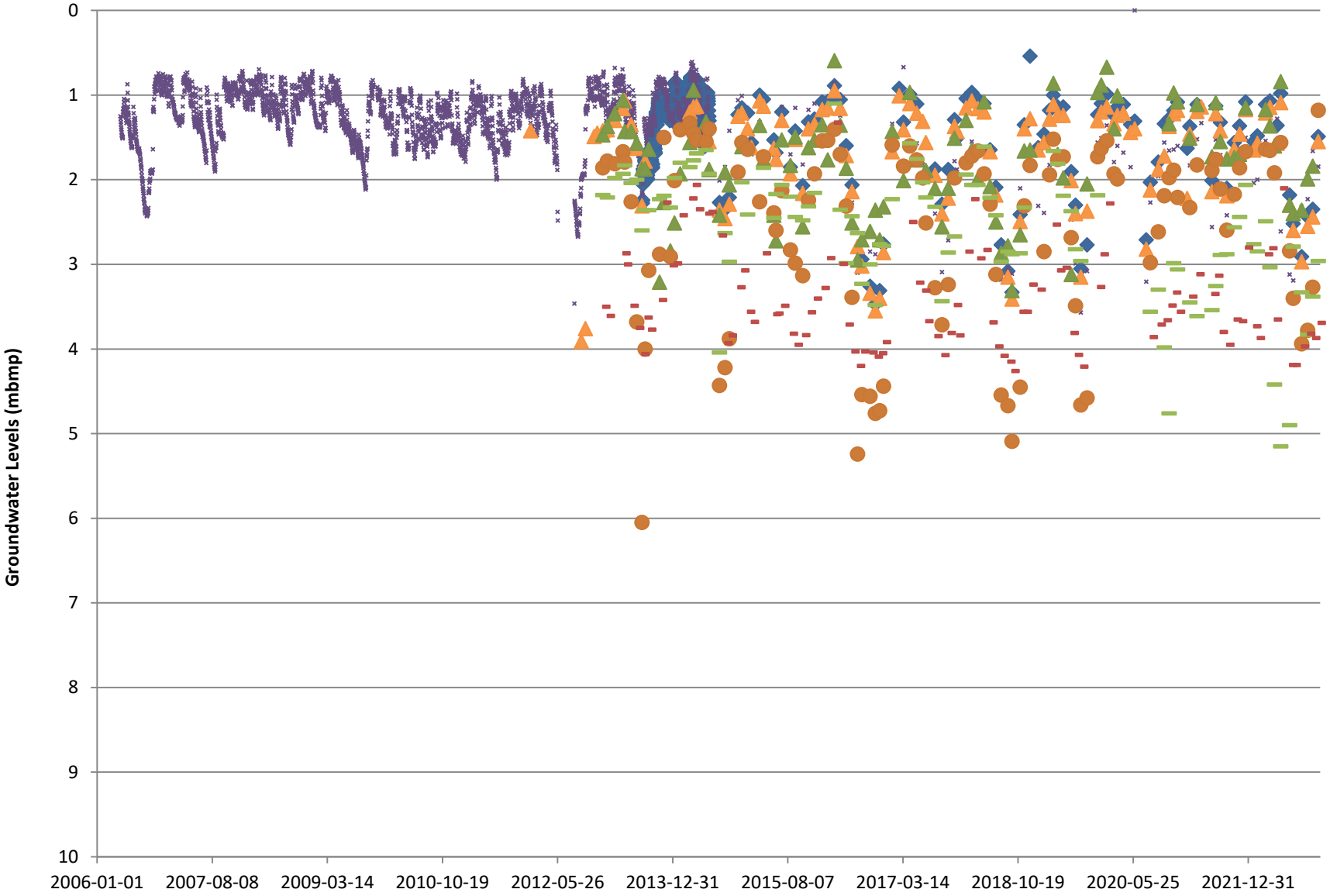
Yours truly,

Gregory Meek
Supervisor (Acting), Permit To Take Water
Director, Section 34.1, Ontario Water Resources Act, R.S.O. 1990
Environmental Permissions Branch

File Storage Number: -

APPENDIX B

Hydrographs



◆ Bored × OW5-1 ▲ AM1b

▲ DW1 ● DW2 — DW6

- DW8

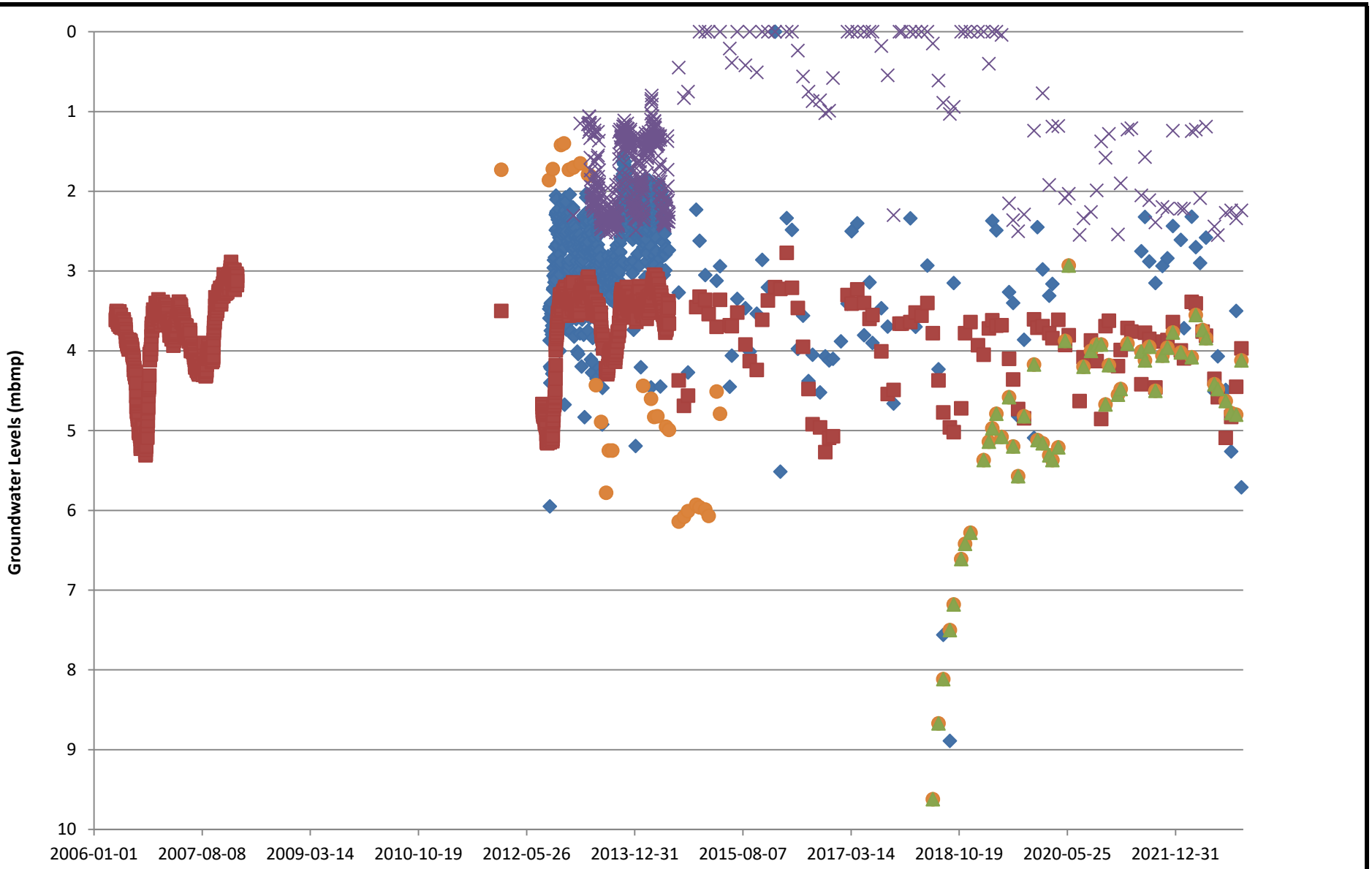
wsp

SCALE:	NTS
DATE:	7-Feb-23
CAD:	CSI
FILE No.	
TEST:	
PROJECT No.	21508089
REVIEW:	SM

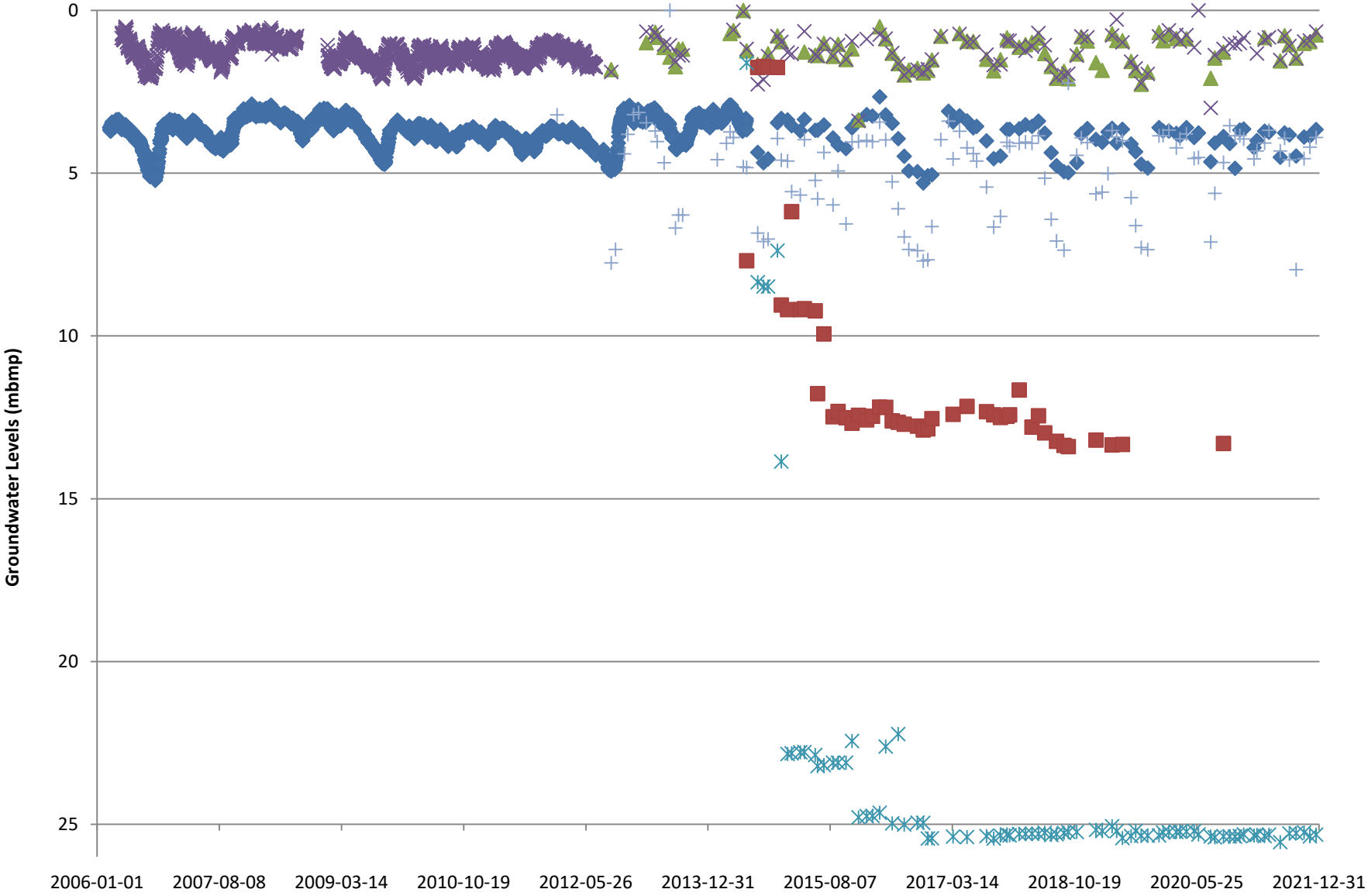
McCarthy Quarry
Overburden Monitoring Wells
GroundwaterLevel

QBJR/Green Infrastructure Partners Inc.
2022 Annual Monitoring Report

FIGURE No
B-1



wsp	SCALE: NTS	McCarthy Quarry Verulam Monitoring Wells Groundwater Level	
	DATE: 7-Feb-23		
	CAD: CSI		
FILE No.	TEST:	QBJR/Green Infrastructure Partners Inc.	FIGURE No
PROJECT No. 21508089	REVIEW: SM	2022 Annual Monitoring Report	B-2



◆ OW4-2 ▲ OW5-2 × OW5-3

+ TW1-1 ■ OW9-I ✳ OW9-II

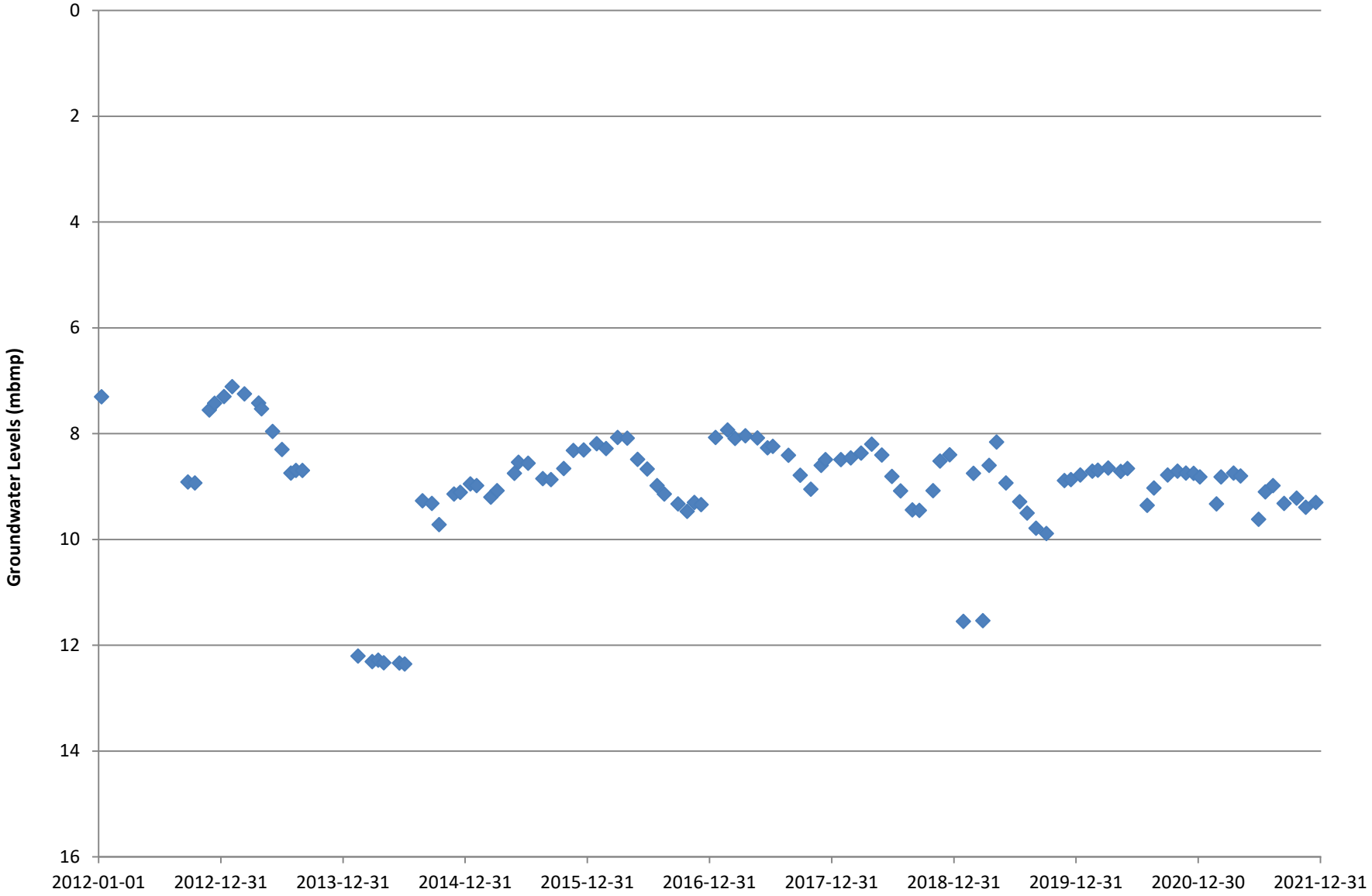
wsp

SCALE:	NTS
DATE:	7-Feb-23
CAD:	CSI
FILE No.	
TEST:	
PROJECT No.	21508089
REVIEW:	SM

McCarthy Quarry
Bobcaygeon Monitoring Wells
Groundwater Level

QBJR/Green Infrastructure Partners Inc.
2022 Annual Monitoring Report

FIGURE No
B-3



TW1-2

	SCALE: NTS	McCarthy Quarry Precambrian Monitoring Wells Groundwater Level	
	DATE: 7-Feb-23		
	CAD: CSI		
FILE No.	TEST:	QBJR/Green Infrastructure Partners Inc.	FIGURE No
PROJECT No. 21508089	REVIEW: SM	2022 Annual Monitoring Report	B-4

APPENDIX C

Certificates of Analysis

Your Project #: 21508089
Site#: McCarthy
Your C.O.C. #: 877884-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/05/20
Report #: R7133473
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2D2929
Received: 2022/05/17, 12:46

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	3	N/A	2022/05/19	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	3	N/A	2022/05/20	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	2	N/A	2022/05/18	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	1	N/A	2022/05/19	CAM SOP-00463	SM 23 4500-Cl E m
Colour	3	N/A	2022/05/19	CAM SOP-00412	SM 23 2120C m
Conductivity	3	N/A	2022/05/19	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2022/05/19	CAM SOP-00446	SM 23 5310 B m
Fluoride	3	2022/05/18	2022/05/19	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	3	N/A	2022/05/19	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	4	N/A	2022/05/19	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	3	N/A	2022/05/20		
Anion and Cation Sum	3	N/A	2022/05/20		
Total Ammonia-N	4	N/A	2022/05/19	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	4	N/A	2022/05/19	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	3	2022/05/18	2022/05/19	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	2	N/A	2022/05/18	CAM SOP-00461	EPA 365.1 m
Orthophosphate	1	N/A	2022/05/19	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	3	N/A	2022/05/20		Auto Calc
Sat. pH and Langelier Index (@ 4C)	3	N/A	2022/05/20		Auto Calc
Sulphate by Automated Colourimetry	2	N/A	2022/05/18	CAM SOP-00464	EPA 375.4 m
Sulphate by Automated Colourimetry	1	N/A	2022/05/19	CAM SOP-00464	EPA 375.4 m
Tannins & Lignins	4	N/A	2022/05/18	CAM SOP-00410	SM 23 5550 B m
Total Dissolved Solids (TDS calc)	3	N/A	2022/05/20		Auto Calc
Turbidity	3	N/A	2022/05/18	CAM SOP-00417	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

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Your Project #: 21508089
Site#: McCarthy
Your C.O.C. #: 877884-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/05/20
Report #: R7133473
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2D2929

Received: 2022/05/17, 12:46

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700
==========
This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID		SQJ211			SQJ211			SQJ212		
Sampling Date		2022/05/13 10:40			2022/05/13 10:40			2022/05/13 10:45		
COC Number		877884-01-01			877884-01-01			877884-01-01		
	UNITS	DW1	RDL	QC Batch	DW1 Lab-Dup	RDL	QC Batch	DW2	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L							8.50	N/A	7999556
Bicarb. Alkalinity (calc. as CaCO3)	mg/L							360	1.0	7999549
Calculated TDS	mg/L							450	1.0	7999560
Carb. Alkalinity (calc. as CaCO3)	mg/L							1.9	1.0	7999549
Cation Sum	me/L							8.73	N/A	7999556
Hardness (CaCO3)	mg/L							390	1.0	7999552
Ion Balance (% Difference)	%							1.36	N/A	7999554
Langelier Index (@ 20C)	N/A							0.969		7999557
Langelier Index (@ 4C)	N/A							0.720		7999558
Saturation pH (@ 20C)	N/A							6.77		7999557
Saturation pH (@ 4C)	N/A							7.02		7999558
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	8003121	<0.050	0.050	8003121	<0.050	0.050	8003121
Conductivity	umho/cm							800	1.0	8003291
Dissolved Organic Carbon	mg/L	1.5	0.40	8002246				3.2	0.40	8002246
Orthophosphate (P)	mg/L							<0.010	0.010	8001857
pH	pH							7.74		8003290
Dissolved Sulphate (SO4)	mg/L							28	1.0	8001855
Alkalinity (Total as CaCO3)	mg/L							360	1.0	8003288
Dissolved Chloride (Cl-)	mg/L							23	1.0	8001851
Nitrite (N)	mg/L	<0.010	0.010	8002174				<0.010	0.010	8002174
Nitrate (N)	mg/L	0.29	0.10	8002174				<0.10	0.10	8002174
Nitrate + Nitrite (N)	mg/L	0.29	0.10	8002174				<0.10	0.10	8002174
Metals										
Dissolved Aluminum (Al)	ug/L	<4.9	4.9	8004184	<4.9	4.9	8004184	<4.9	4.9	8004184
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	8004184	<0.50	0.50	8004184	<0.50	0.50	8004184
Dissolved Arsenic (As)	ug/L	<1.0	1.0	8004184	<1.0	1.0	8004184	<1.0	1.0	8004184
Dissolved Barium (Ba)	ug/L	180	2.0	8004184	180	2.0	8004184	66	2.0	8004184
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	8004184	<0.40	0.40	8004184	<0.40	0.40	8004184
Dissolved Boron (B)	ug/L	22	10	8004184	21	10	8004184	27	10	8004184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID		SQJ211			SQJ211			SQJ212		
Sampling Date		2022/05/13 10:40			2022/05/13 10:40			2022/05/13 10:45		
COC Number		877884-01-01			877884-01-01			877884-01-01		
	UNITS	DW1	RDL	QC Batch	DW1 Lab-Dup	RDL	QC Batch	DW2	RDL	QC Batch
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	8004184	<0.090	0.090	8004184	<0.090	0.090	8004184
Dissolved Calcium (Ca)	ug/L	170000	200	8004184	170000	200	8004184	130000	200	8004184
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	8004184	<5.0	5.0	8004184	<5.0	5.0	8004184
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	8004184	<0.50	0.50	8004184	<0.50	0.50	8004184
Dissolved Copper (Cu)	ug/L	39	0.90	8004184	38	0.90	8004184	1.3	0.90	8004184
Dissolved Iron (Fe)	ug/L	<100	100	8004184	<100	100	8004184	<100	100	8004184
Dissolved Lead (Pb)	ug/L	<0.50	0.50	8004184	<0.50	0.50	8004184	<0.50	0.50	8004184
Dissolved Magnesium (Mg)	ug/L	30000	50	8004184	30000	50	8004184	15000	50	8004184
Dissolved Manganese (Mn)	ug/L	20	2.0	8004184	20	2.0	8004184	19	2.0	8004184
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	8004184	<0.50	0.50	8004184	<0.50	0.50	8004184
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	8004184	<1.0	1.0	8004184	<1.0	1.0	8004184
Dissolved Phosphorus (P)	ug/L	<100	100	8004184	<100	100	8004184	<100	100	8004184
Dissolved Potassium (K)	ug/L	1500	200	8004184	1500	200	8004184	7200	200	8004184
Dissolved Selenium (Se)	ug/L	<2.0	2.0	8004184	<2.0	2.0	8004184	<2.0	2.0	8004184
Dissolved Silicon (Si)	ug/L	6600	50	8004184	6500	50	8004184	4200	50	8004184
Dissolved Silver (Ag)	ug/L	<0.090	0.090	8004184	<0.090	0.090	8004184	<0.090	0.090	8004184
Dissolved Sodium (Na)	ug/L	44000	100	8004184	44000	100	8004184	15000	100	8004184
Dissolved Strontium (Sr)	ug/L	560	1.0	8004184	560	1.0	8004184	340	1.0	8004184
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	8004184	<0.050	0.050	8004184	<0.050	0.050	8004184
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	8004184	<5.0	5.0	8004184	<5.0	5.0	8004184
Dissolved Uranium (U)	ug/L	1.3	0.10	8004184	1.3	0.10	8004184	0.36	0.10	8004184
Dissolved Vanadium (V)	ug/L	<0.50	0.50	8004184	<0.50	0.50	8004184	<0.50	0.50	8004184
Dissolved Zinc (Zn)	ug/L	20	5.0	8004184	22	5.0	8004184	<5.0	5.0	8004184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID		SQJ212			SQJ213			SQJ213		
Sampling Date		2022/05/13 10:45			2022/05/13 08:30			2022/05/13 08:30		
COC Number		877884-01-01			877884-01-01			877884-01-01		
	UNITS	DW2 Lab-Dup	RDL	QC Batch	DW3	RDL	QC Batch	DW3 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L				8.69	N/A	7999556			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L				220	1.0	7999549			
Calculated TDS	mg/L				480	1.0	7999560			
Carb. Alkalinity (calc. as CaCO3)	mg/L				2.2	1.0	7999549			
Cation Sum	me/L				9.20	N/A	7999556			
Hardness (CaCO3)	mg/L				200	1.0	7999552			
Ion Balance (% Difference)	%				2.88	N/A	7999554			
Langelier Index (@ 20C)	N/A				0.426		7999557			
Langelier Index (@ 4C)	N/A				0.178		7999558			
Saturation pH (@ 20C)	N/A				7.59		7999557			
Saturation pH (@ 4C)	N/A				7.83		7999558			
Inorganics										
Total Ammonia-N	mg/L				0.42	0.050	8003121			
Conductivity	umho/cm				930	1.0	8003291	930	1.0	8003291
Dissolved Organic Carbon	mg/L				<0.40	0.40	8002246			
Orthophosphate (P)	mg/L	<0.010	0.010	8001857	<0.010	0.010	8001669			
pH	pH				8.01		8003290	8.06		8003290
Dissolved Sulphate (SO4)	mg/L	29	1.0	8001855	4.7	1.0	8001678			
Alkalinity (Total as CaCO3)	mg/L				220	1.0	8003288	230	1.0	8003288
Dissolved Chloride (Cl-)	mg/L	23	1.0	8001851	140	2.0	8001674			
Nitrite (N)	mg/L	<0.010	0.010	8002174	<0.010	0.010	8001828			
Nitrate (N)	mg/L	<0.10	0.10	8002174	<0.10	0.10	8001828			
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	8002174	<0.10	0.10	8001828			
Metals										
Dissolved Aluminum (Al)	ug/L				<4.9	4.9	8004184			
Dissolved Antimony (Sb)	ug/L				<0.50	0.50	8004184			
Dissolved Arsenic (As)	ug/L				<1.0	1.0	8004184			
Dissolved Barium (Ba)	ug/L				210	2.0	8004184			
Dissolved Beryllium (Be)	ug/L				<0.40	0.40	8004184			
Dissolved Boron (B)	ug/L				750	10	8004184			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID		SQJ212			SQJ213			SQJ213		
Sampling Date		2022/05/13 10:45			2022/05/13 08:30			2022/05/13 08:30		
COC Number		877884-01-01			877884-01-01			877884-01-01		
	UNITS	DW2 Lab-Dup	RDL	QC Batch	DW3	RDL	QC Batch	DW3 Lab-Dup	RDL	QC Batch
Dissolved Cadmium (Cd)	ug/L				<0.090	0.090	8004184			
Dissolved Calcium (Ca)	ug/L				34000	200	8004184			
Dissolved Chromium (Cr)	ug/L				<5.0	5.0	8004184			
Dissolved Cobalt (Co)	ug/L				<0.50	0.50	8004184			
Dissolved Copper (Cu)	ug/L				0.94	0.90	8004184			
Dissolved Iron (Fe)	ug/L				<100	100	8004184			
Dissolved Lead (Pb)	ug/L				<0.50	0.50	8004184			
Dissolved Magnesium (Mg)	ug/L				27000	50	8004184			
Dissolved Manganese (Mn)	ug/L				5.2	2.0	8004184			
Dissolved Molybdenum (Mo)	ug/L				<0.50	0.50	8004184			
Dissolved Nickel (Ni)	ug/L				<1.0	1.0	8004184			
Dissolved Phosphorus (P)	ug/L				<100	100	8004184			
Dissolved Potassium (K)	ug/L				7300	200	8004184			
Dissolved Selenium (Se)	ug/L				<2.0	2.0	8004184			
Dissolved Silicon (Si)	ug/L				5500	50	8004184			
Dissolved Silver (Ag)	ug/L				<0.090	0.090	8004184			
Dissolved Sodium (Na)	ug/L				120000	100	8004184			
Dissolved Strontium (Sr)	ug/L				2400	1.0	8004184			
Dissolved Thallium (Tl)	ug/L				<0.050	0.050	8004184			
Dissolved Titanium (Ti)	ug/L				<5.0	5.0	8004184			
Dissolved Uranium (U)	ug/L				<0.10	0.10	8004184			
Dissolved Vanadium (V)	ug/L				<0.50	0.50	8004184			
Dissolved Zinc (Zn)	ug/L				5.1	5.0	8004184			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C2D2929
Report Date: 2022/05/20

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID		SQJ214		
Sampling Date		2022/05/13 08:30		
COC Number		877884-01-01		
	UNITS	DUP1	RDL	QC Batch
Calculated Parameters				
Anion Sum	me/L	8.76	N/A	7999556
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	230	1.0	7999549
Calculated TDS	mg/L	480	1.0	7999560
Carb. Alkalinity (calc. as CaCO3)	mg/L	2.6	1.0	7999549
Cation Sum	me/L	9.06	N/A	7999556
Hardness (CaCO3)	mg/L	190	1.0	7999552
Ion Balance (% Difference)	%	1.66	N/A	7999554
Langelier Index (@ 20C)	N/A	0.500		7999557
Langelier Index (@ 4C)	N/A	0.252		7999558
Saturation pH (@ 20C)	N/A	7.59		7999557
Saturation pH (@ 4C)	N/A	7.84		7999558
Inorganics				
Total Ammonia-N	mg/L	0.41	0.050	8003121
Conductivity	umho/cm	940	1.0	8003291
Dissolved Organic Carbon	mg/L	<0.40	0.40	8002246
Orthophosphate (P)	mg/L	<0.010	0.010	8001669
pH	pH	8.09		8003290
Dissolved Sulphate (SO4)	mg/L	4.7	1.0	8001678
Alkalinity (Total as CaCO3)	mg/L	230	1.0	8003288
Dissolved Chloride (Cl-)	mg/L	140	2.0	8001674
Nitrite (N)	mg/L	<0.010	0.010	8001828
Nitrate (N)	mg/L	<0.10	0.10	8001828
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	8001828
Metals				
Dissolved Aluminum (Al)	ug/L	<4.9	4.9	8004184
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	8004184
Dissolved Arsenic (As)	ug/L	<1.0	1.0	8004184
Dissolved Barium (Ba)	ug/L	200	2.0	8004184
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	8004184
Dissolved Boron (B)	ug/L	760	10	8004184
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	8004184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID		SQJ214		
Sampling Date		2022/05/13 08:30		
COC Number		877884-01-01		
	UNITS	DUP1	RDL	QC Batch
Dissolved Calcium (Ca)	ug/L	33000	200	8004184
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	8004184
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	8004184
Dissolved Copper (Cu)	ug/L	1.2	0.90	8004184
Dissolved Iron (Fe)	ug/L	<100	100	8004184
Dissolved Lead (Pb)	ug/L	<0.50	0.50	8004184
Dissolved Magnesium (Mg)	ug/L	27000	50	8004184
Dissolved Manganese (Mn)	ug/L	5.2	2.0	8004184
Dissolved Molybdenum (Mo)	ug/L	<0.50	0.50	8004184
Dissolved Nickel (Ni)	ug/L	<1.0	1.0	8004184
Dissolved Phosphorus (P)	ug/L	<100	100	8004184
Dissolved Potassium (K)	ug/L	7200	200	8004184
Dissolved Selenium (Se)	ug/L	<2.0	2.0	8004184
Dissolved Silicon (Si)	ug/L	5500	50	8004184
Dissolved Silver (Ag)	ug/L	<0.090	0.090	8004184
Dissolved Sodium (Na)	ug/L	110000	100	8004184
Dissolved Strontium (Sr)	ug/L	2300	1.0	8004184
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	8004184
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	8004184
Dissolved Uranium (U)	ug/L	<0.10	0.10	8004184
Dissolved Vanadium (V)	ug/L	<0.50	0.50	8004184
Dissolved Zinc (Zn)	ug/L	5.2	5.0	8004184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2D2929
Report Date: 2022/05/20

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		SQJ211			SQJ212	SQJ213			SQJ213		
Sampling Date		2022/05/13 10:40			2022/05/13 10:45	2022/05/13 08:30			2022/05/13 08:30		
COC Number		877884-01-01			877884-01-01	877884-01-01			877884-01-01		
	UNITS	DW1	RDL	QC Batch	DW2	DW3	RDL	QC Batch	DW3 Lab-Dup	RDL	QC Batch
Inorganics											
Colour	TCU				2	<2	2	8002766			
Fluoride (F-)	mg/L				<0.10	0.75	0.10	8003277	0.75	0.10	8003277
Tannins & Lignins	mg/L	<0.2	0.2	8001245	<0.2	<0.2	0.2	8001245			
Turbidity	NTU				0.3	0.4	0.1	8001522			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		SQJ214			SQJ214		
Sampling Date		2022/05/13 08:30			2022/05/13 08:30		
COC Number		877884-01-01			877884-01-01		
	UNITS	DUP1	RDL	QC Batch	DUP1 Lab-Dup	RDL	QC Batch
Inorganics							
Colour	TCU	<2	2	8002766	<2	2	8002766
Fluoride (F-)	mg/L	0.76	0.10	8003277			
Tannins & Lignins	mg/L	<0.2	0.2	8001245			
Turbidity	NTU	0.3	0.1	8001522			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C2D2929
Report Date: 2022/05/20

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SQJ211
Sample ID: DW1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003121	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8002174	N/A	2022/05/19	Samuel Law
Tannins & Lignins	SPEC	8001245	N/A	2022/05/18	Viorica Rotaru

Bureau Veritas ID: SQJ211 Dup
Sample ID: DW1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003121	N/A	2022/05/19	Raiq Kashif

Bureau Veritas ID: SQJ212
Sample ID: DW2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	7999549	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8001851	N/A	2022/05/19	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
Hardness (calculated as CaCO3)		7999552	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Ion Balance (% Difference)	CALC	7999554	N/A	2022/05/20	Automated Statchk
Anion and Cation Sum	CALC	7999556	N/A	2022/05/20	Automated Statchk
Total Ammonia-N	LACH/NH4	8003121	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8002174	N/A	2022/05/19	Samuel Law
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel
Orthophosphate	KONE	8001857	N/A	2022/05/19	Chandra Nandlal
Sat. pH and Langelier Index (@ 20C)	CALC	7999557	N/A	2022/05/20	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7999558	N/A	2022/05/20	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8001855	N/A	2022/05/19	Chandra Nandlal
Tannins & Lignins	SPEC	8001245	N/A	2022/05/18	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	7999560	N/A	2022/05/20	Automated Statchk
Turbidity	AT	8001522	N/A	2022/05/18	Roya Fathitil

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TEST SUMMARY

Bureau Veritas ID: SQJ212 Dup
Sample ID: DW2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8001851	N/A	2022/05/19	Alina Dobreanu
Nitrate & Nitrite as Nitrogen in Water	LACH	8002174	N/A	2022/05/19	Samuel Law
Orthophosphate	KONE	8001857	N/A	2022/05/19	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8001855	N/A	2022/05/19	Chandra Nandlal

Bureau Veritas ID: SQJ213
Sample ID: DW3
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	7999549	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8001674	N/A	2022/05/18	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
Hardness (calculated as CaCO3)		7999552	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Ion Balance (% Difference)	CALC	7999554	N/A	2022/05/20	Automated Statchk
Anion and Cation Sum	CALC	7999556	N/A	2022/05/20	Automated Statchk
Total Ammonia-N	LACH/NH4	8003121	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8001828	N/A	2022/05/19	Samuel Law
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel
Orthophosphate	KONE	8001669	N/A	2022/05/18	Chandra Nandlal
Sat. pH and Langelier Index (@ 20C)	CALC	7999557	N/A	2022/05/20	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7999558	N/A	2022/05/20	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8001678	N/A	2022/05/18	Chandra Nandlal
Tannins & Lignins	SPEC	8001245	N/A	2022/05/18	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	7999560	N/A	2022/05/20	Automated Statchk
Turbidity	AT	8001522	N/A	2022/05/18	Roya Fathitil

Bureau Veritas ID: SQJ213 Dup
Sample ID: DW3
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel

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Bureau Veritas Job #: C2D2929
Report Date: 2022/05/20

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SQJ214
Sample ID: DUP1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	7999549	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8001674	N/A	2022/05/18	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
Hardness (calculated as CaCO3)		7999552	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Ion Balance (% Difference)	CALC	7999554	N/A	2022/05/20	Automated Statchk
Anion and Cation Sum	CALC	7999556	N/A	2022/05/20	Automated Statchk
Total Ammonia-N	LACH/NH4	8003121	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8001828	N/A	2022/05/19	Samuel Law
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel
Orthophosphate	KONE	8001669	N/A	2022/05/18	Chandra Nandlal
Sat. pH and Langelier Index (@ 20C)	CALC	7999557	N/A	2022/05/20	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7999558	N/A	2022/05/20	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8001678	N/A	2022/05/18	Chandra Nandlal
Tannins & Lignins	SPEC	8001245	N/A	2022/05/18	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	7999560	N/A	2022/05/20	Automated Statchk
Turbidity	AT	8001522	N/A	2022/05/18	Roya Fathitil

Bureau Veritas ID: SQJ214 Dup
Sample ID: DUP1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8001245	VRO	Matrix Spike	Tannins & Lignins	2022/05/18		96	%	80 - 120
8001245	VRO	Spiked Blank	Tannins & Lignins	2022/05/18		99	%	80 - 120
8001245	VRO	Method Blank	Tannins & Lignins	2022/05/18	<0.2		mg/L	
8001245	VRO	RPD	Tannins & Lignins	2022/05/18	NC		%	20
8001522	RFT	Spiked Blank	Turbidity	2022/05/18		100	%	85 - 115
8001522	RFT	Method Blank	Turbidity	2022/05/18	<0.1		NTU	
8001522	RFT	RPD	Turbidity	2022/05/18	0.65		%	20
8001669	C_N	Matrix Spike	Orthophosphate (P)	2022/05/18		113	%	75 - 125
8001669	C_N	Spiked Blank	Orthophosphate (P)	2022/05/18		100	%	80 - 120
8001669	C_N	Method Blank	Orthophosphate (P)	2022/05/18	<0.010		mg/L	
8001669	C_N	RPD	Orthophosphate (P)	2022/05/18	NC		%	25
8001674	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/05/18		119	%	80 - 120
8001674	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/05/18		106	%	80 - 120
8001674	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/05/18	<1.0		mg/L	
8001674	ADB	RPD	Dissolved Chloride (Cl-)	2022/05/18	2.5		%	20
8001678	C_N	Matrix Spike	Dissolved Sulphate (SO4)	2022/05/18		NC	%	75 - 125
8001678	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/05/18		102	%	80 - 120
8001678	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/05/18	<1.0		mg/L	
8001678	C_N	RPD	Dissolved Sulphate (SO4)	2022/05/18	1.8		%	20
8001828	S1L	Matrix Spike	Nitrite (N)	2022/05/19		98	%	80 - 120
			Nitrate (N)	2022/05/19		97	%	80 - 120
8001828	S1L	Spiked Blank	Nitrite (N)	2022/05/19		99	%	80 - 120
			Nitrate (N)	2022/05/19		99	%	80 - 120
8001828	S1L	Method Blank	Nitrite (N)	2022/05/19	<0.010		mg/L	
			Nitrate (N)	2022/05/19	<0.10		mg/L	
8001828	S1L	RPD	Nitrite (N)	2022/05/19	NC		%	20
			Nitrate (N)	2022/05/19	NC		%	20
8001851	ADB	Matrix Spike [SQJ212-01]	Dissolved Chloride (Cl-)	2022/05/19		NC	%	80 - 120
8001851	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/05/19		104	%	80 - 120
8001851	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/05/19	<1.0		mg/L	
8001851	ADB	RPD [SQJ212-01]	Dissolved Chloride (Cl-)	2022/05/19	0.65		%	20
8001855	C_N	Matrix Spike [SQJ212-01]	Dissolved Sulphate (SO4)	2022/05/19		NC	%	75 - 125
8001855	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/05/19		107	%	80 - 120
8001855	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/05/19	<1.0		mg/L	
8001855	C_N	RPD [SQJ212-01]	Dissolved Sulphate (SO4)	2022/05/19	1.1		%	20
8001857	C_N	Matrix Spike [SQJ212-01]	Orthophosphate (P)	2022/05/19		107	%	75 - 125
8001857	C_N	Spiked Blank	Orthophosphate (P)	2022/05/19		100	%	80 - 120
8001857	C_N	Method Blank	Orthophosphate (P)	2022/05/19	<0.010		mg/L	
8001857	C_N	RPD [SQJ212-01]	Orthophosphate (P)	2022/05/19	NC		%	25
8002174	S1L	Matrix Spike [SQJ212-01]	Nitrite (N)	2022/05/19		96	%	80 - 120
			Nitrate (N)	2022/05/19		95	%	80 - 120
8002174	S1L	Spiked Blank	Nitrite (N)	2022/05/19		101	%	80 - 120
			Nitrate (N)	2022/05/19		100	%	80 - 120
8002174	S1L	Method Blank	Nitrite (N)	2022/05/19	<0.010		mg/L	
			Nitrate (N)	2022/05/19	<0.10		mg/L	
8002174	S1L	RPD [SQJ212-01]	Nitrite (N)	2022/05/19	NC		%	20
			Nitrate (N)	2022/05/19	NC		%	20
8002246	AGD	Matrix Spike	Dissolved Organic Carbon	2022/05/19		96	%	80 - 120
8002246	AGD	Spiked Blank	Dissolved Organic Carbon	2022/05/19		95	%	80 - 120
8002246	AGD	Method Blank	Dissolved Organic Carbon	2022/05/19	<0.40		mg/L	
8002246	AGD	RPD	Dissolved Organic Carbon	2022/05/19	0.67		%	20
8002766	VRO	Spiked Blank	Colour	2022/05/19		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8002766	VRO	Method Blank	Colour	2022/05/19	<2		TCU	
8002766	VRO	RPD [SQJ214-01]	Colour	2022/05/19	NC		%	25
8003121	RKF	Matrix Spike [SQJ211-05]	Total Ammonia-N	2022/05/19		93	%	75 - 125
8003121	RKF	Spiked Blank	Total Ammonia-N	2022/05/19		95	%	80 - 120
8003121	RKF	Method Blank	Total Ammonia-N	2022/05/19	<0.050		mg/L	
8003121	RKF	RPD [SQJ211-05]	Total Ammonia-N	2022/05/19	NC		%	20
8003277	YPA	Matrix Spike [SQJ213-01]	Fluoride (F-)	2022/05/19		102	%	80 - 120
8003277	YPA	Spiked Blank	Fluoride (F-)	2022/05/19		99	%	80 - 120
8003277	YPA	Method Blank	Fluoride (F-)	2022/05/19	<0.10		mg/L	
8003277	YPA	RPD [SQJ213-01]	Fluoride (F-)	2022/05/19	0.47		%	20
8003288	YPA	Spiked Blank	Alkalinity (Total as CaCO3)	2022/05/19		98	%	85 - 115
8003288	YPA	Method Blank	Alkalinity (Total as CaCO3)	2022/05/19	<1.0		mg/L	
8003288	YPA	RPD [SQJ213-01]	Alkalinity (Total as CaCO3)	2022/05/19	1.1		%	20
8003290	YPA	Spiked Blank	pH	2022/05/19		102	%	98 - 103
8003290	YPA	RPD [SQJ213-01]	pH	2022/05/19	0.59		%	N/A
8003291	YPA	Spiked Blank	Conductivity	2022/05/19		101	%	85 - 115
8003291	YPA	Method Blank	Conductivity	2022/05/19	<1.0		umho/cm	
8003291	YPA	RPD [SQJ213-01]	Conductivity	2022/05/19	0.22		%	25
8004184	DT1	Matrix Spike [SQJ211-04]	Dissolved Aluminum (Al)	2022/05/19		111	%	80 - 120
			Dissolved Antimony (Sb)	2022/05/19		106	%	80 - 120
			Dissolved Arsenic (As)	2022/05/19		102	%	80 - 120
			Dissolved Barium (Ba)	2022/05/19		97	%	80 - 120
			Dissolved Beryllium (Be)	2022/05/19		101	%	80 - 120
			Dissolved Boron (B)	2022/05/19		97	%	80 - 120
			Dissolved Cadmium (Cd)	2022/05/19		102	%	80 - 120
			Dissolved Calcium (Ca)	2022/05/19		NC	%	80 - 120
			Dissolved Chromium (Cr)	2022/05/19		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/05/19		100	%	80 - 120
			Dissolved Copper (Cu)	2022/05/19		101	%	80 - 120
			Dissolved Iron (Fe)	2022/05/19		104	%	80 - 120
			Dissolved Lead (Pb)	2022/05/19		98	%	80 - 120
			Dissolved Magnesium (Mg)	2022/05/19		NC	%	80 - 120
			Dissolved Manganese (Mn)	2022/05/19		101	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/05/19		106	%	80 - 120
			Dissolved Nickel (Ni)	2022/05/19		96	%	80 - 120
			Dissolved Phosphorus (P)	2022/05/19		105	%	80 - 120
			Dissolved Potassium (K)	2022/05/19		107	%	80 - 120
			Dissolved Selenium (Se)	2022/05/19		107	%	80 - 120
			Dissolved Silicon (Si)	2022/05/19		115	%	80 - 120
			Dissolved Silver (Ag)	2022/05/19		105	%	80 - 120
			Dissolved Sodium (Na)	2022/05/19		NC	%	80 - 120
			Dissolved Strontium (Sr)	2022/05/19		NC	%	80 - 120
			Dissolved Thallium (Tl)	2022/05/19		101	%	80 - 120
			Dissolved Titanium (Ti)	2022/05/19		107	%	80 - 120
			Dissolved Uranium (U)	2022/05/19		101	%	80 - 120
			Dissolved Vanadium (V)	2022/05/19		103	%	80 - 120
			Dissolved Zinc (Zn)	2022/05/19		97	%	80 - 120
8004184	DT1	Spiked Blank	Dissolved Aluminum (Al)	2022/05/19		103	%	80 - 120
			Dissolved Antimony (Sb)	2022/05/19		102	%	80 - 120
			Dissolved Arsenic (As)	2022/05/19		99	%	80 - 120
			Dissolved Barium (Ba)	2022/05/19		99	%	80 - 120
			Dissolved Beryllium (Be)	2022/05/19		97	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Boron (B)	2022/05/19		91	%	80 - 120
			Dissolved Cadmium (Cd)	2022/05/19		100	%	80 - 120
			Dissolved Calcium (Ca)	2022/05/19		102	%	80 - 120
			Dissolved Chromium (Cr)	2022/05/19		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/05/19		99	%	80 - 120
			Dissolved Copper (Cu)	2022/05/19		100	%	80 - 120
			Dissolved Iron (Fe)	2022/05/19		102	%	80 - 120
			Dissolved Lead (Pb)	2022/05/19		96	%	80 - 120
			Dissolved Magnesium (Mg)	2022/05/19		103	%	80 - 120
			Dissolved Manganese (Mn)	2022/05/19		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/05/19		102	%	80 - 120
			Dissolved Nickel (Ni)	2022/05/19		96	%	80 - 120
			Dissolved Phosphorus (P)	2022/05/19		111	%	80 - 120
			Dissolved Potassium (K)	2022/05/19		103	%	80 - 120
			Dissolved Selenium (Se)	2022/05/19		98	%	80 - 120
			Dissolved Silicon (Si)	2022/05/19		102	%	80 - 120
			Dissolved Silver (Ag)	2022/05/19		102	%	80 - 120
			Dissolved Sodium (Na)	2022/05/19		102	%	80 - 120
			Dissolved Strontium (Sr)	2022/05/19		96	%	80 - 120
			Dissolved Thallium (Tl)	2022/05/19		98	%	80 - 120
			Dissolved Titanium (Ti)	2022/05/19		98	%	80 - 120
			Dissolved Uranium (U)	2022/05/19		96	%	80 - 120
			Dissolved Vanadium (V)	2022/05/19		98	%	80 - 120
			Dissolved Zinc (Zn)	2022/05/19		96	%	80 - 120
8004184	DT1	Method Blank	Dissolved Aluminum (Al)	2022/05/19	<4.9		ug/L	
			Dissolved Antimony (Sb)	2022/05/19	<0.50		ug/L	
			Dissolved Arsenic (As)	2022/05/19	<1.0		ug/L	
			Dissolved Barium (Ba)	2022/05/19	<2.0		ug/L	
			Dissolved Beryllium (Be)	2022/05/19	<0.40		ug/L	
			Dissolved Boron (B)	2022/05/19	<10		ug/L	
			Dissolved Cadmium (Cd)	2022/05/19	<0.090		ug/L	
			Dissolved Calcium (Ca)	2022/05/19	<200		ug/L	
			Dissolved Chromium (Cr)	2022/05/19	<5.0		ug/L	
			Dissolved Cobalt (Co)	2022/05/19	<0.50		ug/L	
			Dissolved Copper (Cu)	2022/05/19	<0.90		ug/L	
			Dissolved Iron (Fe)	2022/05/19	<100		ug/L	
			Dissolved Lead (Pb)	2022/05/19	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2022/05/19	<50		ug/L	
			Dissolved Manganese (Mn)	2022/05/19	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2022/05/19	<0.50		ug/L	
			Dissolved Nickel (Ni)	2022/05/19	<1.0		ug/L	
			Dissolved Phosphorus (P)	2022/05/19	<100		ug/L	
			Dissolved Potassium (K)	2022/05/19	<200		ug/L	
			Dissolved Selenium (Se)	2022/05/19	<2.0		ug/L	
			Dissolved Silicon (Si)	2022/05/19	<50		ug/L	
			Dissolved Silver (Ag)	2022/05/19	<0.090		ug/L	
			Dissolved Sodium (Na)	2022/05/19	<100		ug/L	
			Dissolved Strontium (Sr)	2022/05/19	<1.0		ug/L	
			Dissolved Thallium (Tl)	2022/05/19	<0.050		ug/L	
			Dissolved Titanium (Ti)	2022/05/19	<5.0		ug/L	
			Dissolved Uranium (U)	2022/05/19	<0.10		ug/L	
			Dissolved Vanadium (V)	2022/05/19	<0.50		ug/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Zinc (Zn)	2022/05/19	<5.0		ug/L	
8004184	DT1	RPD [SQJ211-04]	Dissolved Aluminum (Al)	2022/05/19	NC		%	20
			Dissolved Antimony (Sb)	2022/05/19	NC		%	20
			Dissolved Arsenic (As)	2022/05/19	NC		%	20
			Dissolved Barium (Ba)	2022/05/19	2.0		%	20
			Dissolved Beryllium (Be)	2022/05/19	NC		%	20
			Dissolved Boron (B)	2022/05/19	4.6		%	20
			Dissolved Cadmium (Cd)	2022/05/19	NC		%	20
			Dissolved Calcium (Ca)	2022/05/19	0.59		%	20
			Dissolved Chromium (Cr)	2022/05/19	NC		%	20
			Dissolved Cobalt (Co)	2022/05/19	NC		%	20
			Dissolved Copper (Cu)	2022/05/19	4.1		%	20
			Dissolved Iron (Fe)	2022/05/19	NC		%	20
			Dissolved Lead (Pb)	2022/05/19	NC		%	20
			Dissolved Magnesium (Mg)	2022/05/19	0.29		%	20
			Dissolved Manganese (Mn)	2022/05/19	0.73		%	20
			Dissolved Molybdenum (Mo)	2022/05/19	NC		%	20
			Dissolved Nickel (Ni)	2022/05/19	NC		%	20
			Dissolved Phosphorus (P)	2022/05/19	NC		%	20
			Dissolved Potassium (K)	2022/05/19	0.13		%	20
			Dissolved Selenium (Se)	2022/05/19	NC		%	20
			Dissolved Silicon (Si)	2022/05/19	1.4		%	20
			Dissolved Silver (Ag)	2022/05/19	NC		%	20
			Dissolved Sodium (Na)	2022/05/19	1.7		%	20
			Dissolved Strontium (Sr)	2022/05/19	1.2		%	20
			Dissolved Thallium (Tl)	2022/05/19	NC		%	20
			Dissolved Titanium (Ti)	2022/05/19	NC		%	20
			Dissolved Uranium (U)	2022/05/19	5.6		%	20
			Dissolved Vanadium (V)	2022/05/19	NC		%	20
			Dissolved Zinc (Zn)	2022/05/19	7.5		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

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Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 877895-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/05/24
Report #: R7137282
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2D3220
Received: 2022/05/17, 12:46

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	4	N/A	2022/05/19	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	4	N/A	2022/05/20	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	4	N/A	2022/05/19	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	4	N/A	2022/05/19	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2022/05/19	CAM SOP-00446	SM 23 5310 B m
Fluoride	4	2022/05/18	2022/05/19	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	4	N/A	2022/05/20	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals Analysis by ICP	4	2022/05/18	2022/05/20	CAM SOP-00408	EPA 6010D m
Total Metals Analysis by ICPMS	4	N/A	2022/05/20	CAM SOP-00447	EPA 6020B m
Anion and Cation Sum	4	N/A	2022/05/20		
Total Ammonia-N	4	N/A	2022/05/19	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	4	N/A	2022/05/19	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Animal and Vegetable Oil and Grease	3	N/A	2022/05/21	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	3	2022/05/21	2022/05/21	CAM SOP-00326	EPA1664B m,SM5520B m
pH	4	2022/05/18	2022/05/19	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	4	N/A	2022/05/19	CAM SOP-00444	OMOE E3179 m
Orthophosphate	4	N/A	2022/05/19	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	4	N/A	2022/05/20		Auto Calc
Sat. pH and Langelier Index (@ 4C)	4	N/A	2022/05/20		Auto Calc
Sulphate by Automated Colourimetry	4	N/A	2022/05/19	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	4	2022/05/19	2022/05/20	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	4	2022/05/18	2022/05/19	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2022/05/18	2022/05/19	CAM SOP-00407	SM 23 4500 P B H m
Total Phosphorus (Colourimetric)	1	2022/05/19	2022/05/19	CAM SOP-00407	SM 23 4500 P B H m
Mineral/Synthetic O & G (TPH Heavy Oil) (3)	3	2022/05/21	2022/05/21	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids	4	2022/05/18	2022/05/20	CAM SOP-00428	SM 23 2540D m
Turbidity	4	N/A	2022/05/18	CAM SOP-00417	SM 23 2130 B m

Remarks:

Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 877895-01-01

Attention: Jamie Bonany

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121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/05/24
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2D3220

Received: 2022/05/17, 12:46

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(3) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700

==========

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

OIL & GREASE - A/V/M/T (WATER)

Bureau Veritas ID			SQK728	SQK729	SQK730		
Sampling Date			2022/05/13 04:00	2022/05/13 11:15	2022/05/13		
COC Number			877895-01-01	877895-01-01	877895-01-01		
	UNITS	Criteria	SW1	SW2	DUP3	RDL	QC Batch
Calculated Parameters							
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	<0.50	<0.50	0.50	7999597
Petroleum Hydrocarbons							
Total Oil & Grease	mg/L	-	<0.50	<0.50	<0.50	0.50	8009165
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	<0.50	<0.50	0.50	8009166

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SQK727			SQK727		
Sampling Date			2022/05/13 04:15			2022/05/13 04:15		
COC Number			877895-01-01			877895-01-01		
	UNITS	Criteria	POND	RDL	QC Batch	POND Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	13.0	N/A	7999556			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	58	1.0	7999549			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1.3	1.0	7999549			
Cation Sum	me/L	-	13.6	N/A	7999556			
Hardness (CaCO3)	mg/L	-	360	1.0	7999552			
Langelier Index (@ 20C)	N/A	-	0.520		7999557			
Langelier Index (@ 4C)	N/A	-	0.272		7999558			
Saturation pH (@ 20C)	N/A	-	7.85		7999557			
Saturation pH (@ 4C)	N/A	-	8.10		7999558			
Inorganics								
Total Ammonia-N	mg/L	-	<0.050	0.050	8002264			
Conductivity	umho/cm	-	1400	1.0	8003291			
Total Dissolved Solids	mg/L	-	735	10	8005060			
Fluoride (F-)	mg/L	-	0.55	0.10	8003277			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.42	0.10	8002031			
Dissolved Organic Carbon	mg/L	-	4.8	0.40	8002246			
Orthophosphate (P)	mg/L	-	<0.010	0.010	8001857			
pH	pH	6.5:8.5	8.37		8003290			
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	8002870			
Total Phosphorus	mg/L	0.01	0.008	0.004	8002313			
Total Suspended Solids	mg/L	-	<10	10	8002117			
Dissolved Sulphate (SO4)	mg/L	-	300	1.0	8001855			
Turbidity	NTU	-	2.6	0.1	8001988	2.5	0.1	8001988
Alkalinity (Total as CaCO3)	mg/L	-	59	1.0	8003288			
Dissolved Chloride (Cl-)	mg/L	-	190	2.0	8001851			
Nitrite (N)	mg/L	-	0.063	0.010	8001828			
Nitrate (N)	mg/L	-	0.86	0.10	8001828			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SQK728			SQK729		SQK730		
Sampling Date			2022/05/13 04:00			2022/05/13 11:15		2022/05/13		
COC Number			877895-01-01			877895-01-01		877895-01-01		
	UNITS	Criteria	SW1	RDL	QC Batch	SW2	QC Batch	DUP3	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	-	13.5	N/A	7999556	8.75	7999556	8.68	N/A	7999556
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	140	1.0	7999549	310	7999549	310	1.0	7999549
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1.7	1.0	7999549	2.2	7999549	2.1	1.0	7999549
Cation Sum	me/L	-	14.1	N/A	7999556	9.15	7999556	9.16	N/A	7999556
Hardness (CaCO3)	mg/L	-	410	1.0	7999552	430	7999552	430	1.0	7999552
Langelier Index (@ 20C)	N/A	-	0.759		7999557	1.07	7999557	1.04		7999557
Langelier Index (@ 4C)	N/A	-	0.513		7999558	0.826	7999558	0.794		7999558
Saturation pH (@ 20C)	N/A	-	7.37		7999557	6.81	7999557	6.82		7999557
Saturation pH (@ 4C)	N/A	-	7.61		7999558	7.06	7999558	7.07		7999558
Inorganics										
Total Ammonia-N	mg/L	-	0.10	0.050	8003284	<0.050	8003284	<0.050	0.050	8003284
Conductivity	umho/cm	-	1400	1.0	8003291	800	8003291	790	1.0	8003291
Total Dissolved Solids	mg/L	-	745	10	8005060	405	8005060	420	10	8005060
Fluoride (F-)	mg/L	-	0.53	0.10	8003277	<0.10	8003277	<0.10	0.10	8003277
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.56	0.10	8002031	0.66	8002031	0.67	0.10	8002031
Dissolved Organic Carbon	mg/L	-	5.4	0.40	8002246	8.3	8002246	8.6	0.40	8002246
Orthophosphate (P)	mg/L	-	<0.010	0.010	8002357	<0.010	8001857	<0.010	0.010	8002357
pH	pH	6.5:8.5	8.13		8003290	7.88	8003290	7.86		8003290
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	8002870	<0.0010	8002870	<0.0010	0.0010	8002870
Total Phosphorus	mg/L	0.01	**0.015**	0.004	8004565	**0.017**	8002313	**0.017**	0.004	8002313
Total Suspended Solids	mg/L	-	10	10	8002117	<10	8002117	<10	10	8002117
Dissolved Sulphate (SO4)	mg/L	-	270	1.0	8002354	100	8001855	97	1.0	8002354
Turbidity	NTU	-	4.1	0.1	8001988	2.2	8001988	1.1	0.1	8001988
Alkalinity (Total as CaCO3)	mg/L	-	140	1.0	8003288	310	8003288	310	1.0	8003288
Dissolved Chloride (Cl-)	mg/L	-	180	2.0	8002349	16	8001851	16	1.0	8002349
Nitrite (N)	mg/L	-	0.080	0.010	8001828	<0.010	8001828	<0.010	0.010	8001828
Nitrate (N)	mg/L	-	1.09	0.10	8001828	<0.10	8001828	<0.10	0.10	8001828

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SQK730		
Sampling Date			2022/05/13		
COC Number			877895-01-01		
	UNITS	Criteria	DUP3 Lab-Dup	RDL	QC Batch
Inorganics					
Orthophosphate (P)	mg/L	-	<0.010	0.010	8002357
Dissolved Sulphate (SO4)	mg/L	-	95	1.0	8002354
Dissolved Chloride (Cl-)	mg/L	-	16	1.0	8002349

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			SQK727	SQK728	SQK729	SQK730		
Sampling Date			2022/05/13 04:15	2022/05/13 04:00	2022/05/13 11:15	2022/05/13		
COC Number			877895-01-01	877895-01-01	877895-01-01	877895-01-01		
	UNITS	Criteria	POND	SW1	SW2	DUP3	RDL	QC Batch
Metals								
Dissolved Calcium (Ca)	mg/L	-	76	100	140	140	0.05	8002496
Dissolved Magnesium (Mg)	mg/L	-	42	39	19	20	0.05	8002496
Dissolved Potassium (K)	mg/L	-	13	12	1	1	1	8002496
Dissolved Sodium (Na)	mg/L	-	140	130	13	14	0.5	8002496
Total Arsenic (As)	ug/L	100	<1.0	<1.0	<1.0	<1.0	1.0	8005543
Total Cadmium (Cd)	ug/L	0.2	<0.090	<0.090	<0.090	<0.090	0.090	8005543
Total Calcium (Ca)	ug/L	-	79000	100000	130000	130000	200	8005543
Total Chromium (Cr)	ug/L	-	<5.0	<5.0	<5.0	<5.0	5.0	8005543
Total Copper (Cu)	ug/L	5	<0.90	<0.90	<0.90	<0.90	0.90	8005543
Total Iron (Fe)	ug/L	300	130	230	<100	110	100	8005543
Total Lead (Pb)	ug/L	5	<0.50	<0.50	2.2	<0.50	0.50	8005543
Total Magnesium (Mg)	ug/L	-	44000	42000	21000	22000	50	8005543
Total Manganese (Mn)	ug/L	-	13	37	8.7	9.0	2.0	8005543
Total Nickel (Ni)	ug/L	25	<1.0	1.8	<1.0	<1.0	1.0	8005543
Total Potassium (K)	ug/L	-	12000	11000	880	900	200	8005543
Total Sodium (Na)	ug/L	-	140000	130000	14000	14000	100	8005543
Total Zinc (Zn)	ug/L	30	<5.0	<5.0	<5.0	<5.0	5.0	8005543

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SQK727
Sample ID: POND
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	7999549	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8001851	N/A	2022/05/19	Alina Dobreanu
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
Hardness (calculated as CaCO3)		7999552	N/A	2022/05/20	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	8002496	2022/05/18	2022/05/20	Indira HarryPaul
Total Metals Analysis by ICPMS	ICP/MS	8005543	N/A	2022/05/20	Prempal Bhatti
Anion and Cation Sum	CALC	7999556	N/A	2022/05/20	Automated Statchk
Total Ammonia-N	LACH/NH4	8002264	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8001828	N/A	2022/05/19	Samuel Law
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	8002870	N/A	2022/05/19	Louise Harding
Orthophosphate	KONE	8001857	N/A	2022/05/19	Chandra Nandlal
Sat. pH and Langelier Index (@ 20C)	CALC	7999557	N/A	2022/05/20	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7999558	N/A	2022/05/20	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8001855	N/A	2022/05/19	Chandra Nandlal
Total Dissolved Solids	BAL	8005060	2022/05/19	2022/05/20	Kristen Chan
Total Kjeldahl Nitrogen in Water	SKAL	8002031	2022/05/18	2022/05/19	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	8002313	2022/05/18	2022/05/19	Shivani Shivani
Total Suspended Solids	BAL	8002117	2022/05/18	2022/05/20	Shaneil Hall
Turbidity	AT	8001988	N/A	2022/05/18	Roya Fathitil

Bureau Veritas ID: SQK727 Dup
Sample ID: POND
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Turbidity	AT	8001988	N/A	2022/05/18	Roya Fathitil

Bureau Veritas ID: SQK728
Sample ID: SW1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	7999549	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8002349	N/A	2022/05/19	Alina Dobreanu
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
Hardness (calculated as CaCO3)		7999552	N/A	2022/05/20	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	8002496	2022/05/18	2022/05/20	Indira HarryPaul

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SQK728
Sample ID: SW1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Metals Analysis by ICPMS	ICP/MS	8005543	N/A	2022/05/20	Prempal Bhatti
Anion and Cation Sum	CALC	7999556	N/A	2022/05/20	Automated Statchk
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8001828	N/A	2022/05/19	Samuel Law
Animal and Vegetable Oil and Grease	BAL	7999597	N/A	2022/05/21	Automated Statchk
Total Oil and Grease	BAL	8009165	2022/05/21	2022/05/21	Mitul Patel
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	8002870	N/A	2022/05/19	Louise Harding
Orthophosphate	KONE	8002357	N/A	2022/05/19	Chandra Nandlal
Sat. pH and Langelier Index (@ 20C)	CALC	7999557	N/A	2022/05/20	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7999558	N/A	2022/05/20	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8002354	N/A	2022/05/19	Chandra Nandlal
Total Dissolved Solids	BAL	8005060	2022/05/19	2022/05/20	Kristen Chan
Total Kjeldahl Nitrogen in Water	SKAL	8002031	2022/05/18	2022/05/19	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	8004565	2022/05/19	2022/05/19	Shivani Shivani
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8009166	2022/05/21	2022/05/21	Mitul Patel
Total Suspended Solids	BAL	8002117	2022/05/18	2022/05/20	Shaneil Hall
Turbidity	AT	8001988	N/A	2022/05/18	Roya Fathitil

Bureau Veritas ID: SQK729
Sample ID: SW2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	7999549	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8001851	N/A	2022/05/19	Alina Dobreanu
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
Hardness (calculated as CaCO3)		7999552	N/A	2022/05/20	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	8002496	2022/05/18	2022/05/20	Indira HarryPaul
Total Metals Analysis by ICPMS	ICP/MS	8005543	N/A	2022/05/20	Prempal Bhatti
Anion and Cation Sum	CALC	7999556	N/A	2022/05/20	Automated Statchk
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8001828	N/A	2022/05/19	Samuel Law
Animal and Vegetable Oil and Grease	BAL	7999597	N/A	2022/05/21	Automated Statchk
Total Oil and Grease	BAL	8009165	2022/05/21	2022/05/21	Mitul Patel
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	8002870	N/A	2022/05/19	Louise Harding
Orthophosphate	KONE	8001857	N/A	2022/05/19	Chandra Nandlal
Sat. pH and Langelier Index (@ 20C)	CALC	7999557	N/A	2022/05/20	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7999558	N/A	2022/05/20	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8001855	N/A	2022/05/19	Chandra Nandlal

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SQK729
Sample ID: SW2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	8005060	2022/05/19	2022/05/20	Kristen Chan
Total Kjeldahl Nitrogen in Water	SKAL	8002031	2022/05/18	2022/05/19	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	8002313	2022/05/18	2022/05/19	Shivani Shivani
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8009166	2022/05/21	2022/05/21	Mitul Patel
Total Suspended Solids	BAL	8002117	2022/05/18	2022/05/20	Shaneil Hall
Turbidity	AT	8001988	N/A	2022/05/18	Roya Fathitil

Bureau Veritas ID: SQK730
Sample ID: DUP3
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8003288	N/A	2022/05/19	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	7999549	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8002349	N/A	2022/05/19	Alina Dobreanu
Conductivity	AT	8003291	N/A	2022/05/19	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002246	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8003277	2022/05/18	2022/05/19	Yogesh Patel
Hardness (calculated as CaCO3)		7999552	N/A	2022/05/20	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	8002496	2022/05/18	2022/05/20	Indira HarryPaul
Total Metals Analysis by ICPMS	ICP/MS	8005543	N/A	2022/05/20	Prempal Bhatti
Anion and Cation Sum	CALC	7999556	N/A	2022/05/20	Automated Statchk
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8001828	N/A	2022/05/19	Samuel Law
Animal and Vegetable Oil and Grease	BAL	7999597	N/A	2022/05/21	Automated Statchk
Total Oil and Grease	BAL	8009165	2022/05/21	2022/05/21	Mitul Patel
pH	AT	8003290	2022/05/18	2022/05/19	Yogesh Patel
Phenols (4AAP)	TECH/PHEN	8002870	N/A	2022/05/19	Louise Harding
Orthophosphate	KONE	8002357	N/A	2022/05/19	Chandra Nandlal
Sat. pH and Langelier Index (@ 20C)	CALC	7999557	N/A	2022/05/20	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7999558	N/A	2022/05/20	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8002354	N/A	2022/05/19	Chandra Nandlal
Total Dissolved Solids	BAL	8005060	2022/05/19	2022/05/20	Kristen Chan
Total Kjeldahl Nitrogen in Water	SKAL	8002031	2022/05/18	2022/05/19	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	8002313	2022/05/18	2022/05/19	Shivani Shivani
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8009166	2022/05/21	2022/05/21	Mitul Patel
Total Suspended Solids	BAL	8002117	2022/05/18	2022/05/20	Shaneil Hall
Turbidity	AT	8001988	N/A	2022/05/18	Roya Fathitil

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SQK730 Dup
Sample ID: DUP3
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8002349	N/A	2022/05/19	Alina Dobreanu
Orthophosphate	KONE	8002357	N/A	2022/05/19	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8002354	N/A	2022/05/19	Chandra Nandlal

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8001828	S1L	Matrix Spike	Nitrite (N)	2022/05/19		98	%	80 - 120
			Nitrate (N)	2022/05/19		97	%	80 - 120
8001828	S1L	Spiked Blank	Nitrite (N)	2022/05/19		99	%	80 - 120
			Nitrate (N)	2022/05/19		99	%	80 - 120
8001828	S1L	Method Blank	Nitrite (N)	2022/05/19	<0.010		mg/L	
			Nitrate (N)	2022/05/19	<0.10		mg/L	
8001828	S1L	RPD	Nitrite (N)	2022/05/19	NC		%	20
			Nitrate (N)	2022/05/19	NC		%	20
8001851	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/05/19		NC	%	80 - 120
8001851	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/05/19		104	%	80 - 120
8001851	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/05/19	<1.0		mg/L	
8001851	ADB	RPD	Dissolved Chloride (Cl-)	2022/05/19	0.65		%	20
8001855	C_N	Matrix Spike	Dissolved Sulphate (SO4)	2022/05/19		NC	%	75 - 125
8001855	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/05/19		107	%	80 - 120
8001855	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/05/19	<1.0		mg/L	
8001855	C_N	RPD	Dissolved Sulphate (SO4)	2022/05/19	1.1		%	20
8001857	C_N	Matrix Spike	Orthophosphate (P)	2022/05/19		107	%	75 - 125
8001857	C_N	Spiked Blank	Orthophosphate (P)	2022/05/19		100	%	80 - 120
8001857	C_N	Method Blank	Orthophosphate (P)	2022/05/19	<0.010		mg/L	
8001857	C_N	RPD	Orthophosphate (P)	2022/05/19	NC		%	25
8001988	RFT	Spiked Blank	Turbidity	2022/05/18		98	%	85 - 115
8001988	RFT	Method Blank	Turbidity	2022/05/18	<0.1		NTU	
8001988	RFT	RPD [SQK727-01]	Turbidity	2022/05/18	4.7		%	20
8002031	MJ1	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2022/05/19		107	%	80 - 120
8002031	MJ1	QC Standard	Total Kjeldahl Nitrogen (TKN)	2022/05/19		99	%	80 - 120
8002031	MJ1	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2022/05/19		103	%	80 - 120
8002031	MJ1	Method Blank	Total Kjeldahl Nitrogen (TKN)	2022/05/19	<0.10		mg/L	
8002031	MJ1	RPD	Total Kjeldahl Nitrogen (TKN)	2022/05/19	20		%	20
8002117	SHD	QC Standard	Total Suspended Solids	2022/05/20		95	%	85 - 115
8002117	SHD	Method Blank	Total Suspended Solids	2022/05/20	<10		mg/L	
8002117	SHD	RPD	Total Suspended Solids	2022/05/20	NC		%	25
8002246	AGD	Matrix Spike	Dissolved Organic Carbon	2022/05/19		96	%	80 - 120
8002246	AGD	Spiked Blank	Dissolved Organic Carbon	2022/05/19		95	%	80 - 120
8002246	AGD	Method Blank	Dissolved Organic Carbon	2022/05/19	<0.40		mg/L	
8002246	AGD	RPD	Dissolved Organic Carbon	2022/05/19	0.67		%	20
8002264	RKF	Matrix Spike	Total Ammonia-N	2022/05/19		91	%	75 - 125
8002264	RKF	Spiked Blank	Total Ammonia-N	2022/05/19		97	%	80 - 120
8002264	RKF	Method Blank	Total Ammonia-N	2022/05/19	<0.050		mg/L	
8002264	RKF	RPD	Total Ammonia-N	2022/05/19	NC		%	20
8002313	SSV	Matrix Spike	Total Phosphorus	2022/05/19		NC	%	80 - 120
8002313	SSV	QC Standard	Total Phosphorus	2022/05/19		81	%	80 - 120
8002313	SSV	Spiked Blank	Total Phosphorus	2022/05/19		92	%	80 - 120
8002313	SSV	Method Blank	Total Phosphorus	2022/05/19	<0.004		mg/L	
8002313	SSV	RPD	Total Phosphorus	2022/05/19	1.5		%	20
8002349	ADB	Matrix Spike [SQK730-02]	Dissolved Chloride (Cl-)	2022/05/19		103	%	80 - 120
8002349	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/05/19		104	%	80 - 120
8002349	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/05/19	<1.0		mg/L	
8002349	ADB	RPD [SQK730-02]	Dissolved Chloride (Cl-)	2022/05/19	0.0056		%	20
8002354	C_N	Matrix Spike [SQK730-02]	Dissolved Sulphate (SO4)	2022/05/19		NC	%	75 - 125
8002354	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/05/19		107	%	80 - 120
8002354	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/05/19	<1.0		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8002354	C_N	RPD [SQK730-02]	Dissolved Sulphate (SO4)	2022/05/19	2.9		%	20
8002357	C_N	Matrix Spike [SQK730-02]	Orthophosphate (P)	2022/05/19		113	%	75 - 125
8002357	C_N	Spiked Blank	Orthophosphate (P)	2022/05/19		100	%	80 - 120
8002357	C_N	Method Blank	Orthophosphate (P)	2022/05/19	<0.010		mg/L	
8002357	C_N	RPD [SQK730-02]	Orthophosphate (P)	2022/05/19	NC		%	25
8002496	IHP	Matrix Spike	Dissolved Calcium (Ca)	2022/05/20		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2022/05/20		NC	%	80 - 120
			Dissolved Potassium (K)	2022/05/20		NC	%	80 - 120
			Dissolved Sodium (Na)	2022/05/20		NC	%	80 - 120
8002496	IHP	Spiked Blank	Dissolved Calcium (Ca)	2022/05/20		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/05/20		96	%	80 - 120
			Dissolved Potassium (K)	2022/05/20		99	%	80 - 120
			Dissolved Sodium (Na)	2022/05/20		99	%	80 - 120
8002496	IHP	Method Blank	Dissolved Calcium (Ca)	2022/05/20	<0.05		mg/L	
			Dissolved Magnesium (Mg)	2022/05/20	<0.05		mg/L	
			Dissolved Potassium (K)	2022/05/20	<1		mg/L	
			Dissolved Sodium (Na)	2022/05/20	<0.5		mg/L	
8002496	IHP	RPD	Dissolved Calcium (Ca)	2022/05/20	1.8		%	25
			Dissolved Magnesium (Mg)	2022/05/20	2.1		%	25
			Dissolved Potassium (K)	2022/05/20	0.080		%	25
			Dissolved Sodium (Na)	2022/05/20	0.33		%	25
8002870	LHA	Matrix Spike	Phenols-4AAP	2022/05/19		105	%	80 - 120
8002870	LHA	Spiked Blank	Phenols-4AAP	2022/05/19		102	%	80 - 120
8002870	LHA	Method Blank	Phenols-4AAP	2022/05/19	<0.0010		mg/L	
8002870	LHA	RPD	Phenols-4AAP	2022/05/19	1.8		%	20
8003277	YPA	Matrix Spike	Fluoride (F-)	2022/05/19		102	%	80 - 120
8003277	YPA	Spiked Blank	Fluoride (F-)	2022/05/19		99	%	80 - 120
8003277	YPA	Method Blank	Fluoride (F-)	2022/05/19	<0.10		mg/L	
8003277	YPA	RPD	Fluoride (F-)	2022/05/19	0.47		%	20
8003284	RKF	Matrix Spike	Total Ammonia-N	2022/05/19		90	%	75 - 125
8003284	RKF	Spiked Blank	Total Ammonia-N	2022/05/19		94	%	80 - 120
8003284	RKF	Method Blank	Total Ammonia-N	2022/05/19	<0.050		mg/L	
8003284	RKF	RPD	Total Ammonia-N	2022/05/19	5.5		%	20
8003288	YPA	Spiked Blank	Alkalinity (Total as CaCO3)	2022/05/19		98	%	85 - 115
8003288	YPA	Method Blank	Alkalinity (Total as CaCO3)	2022/05/19	<1.0		mg/L	
8003288	YPA	RPD	Alkalinity (Total as CaCO3)	2022/05/19	1.1		%	20
8003290	YPA	Spiked Blank	pH	2022/05/19		102	%	98 - 103
8003290	YPA	RPD	pH	2022/05/19	0.59		%	N/A
8003291	YPA	Spiked Blank	Conductivity	2022/05/19		101	%	85 - 115
8003291	YPA	Method Blank	Conductivity	2022/05/19	<1.0		umho/cm	
8003291	YPA	RPD	Conductivity	2022/05/19	0.22		%	25
8004565	SSV	Matrix Spike	Total Phosphorus	2022/05/19		NC	%	80 - 120
8004565	SSV	QC Standard	Total Phosphorus	2022/05/19		91	%	80 - 120
8004565	SSV	Spiked Blank	Total Phosphorus	2022/05/19		98	%	80 - 120
8004565	SSV	Method Blank	Total Phosphorus	2022/05/19	<0.004		mg/L	
8004565	SSV	RPD	Total Phosphorus	2022/05/19	9.4		%	20
8005060	KCB	QC Standard	Total Dissolved Solids	2022/05/20		100	%	90 - 110
8005060	KCB	Method Blank	Total Dissolved Solids	2022/05/20	<10		mg/L	
8005543	PBA	Matrix Spike	Total Arsenic (As)	2022/05/20		102	%	80 - 120
			Total Cadmium (Cd)	2022/05/20		102	%	80 - 120
			Total Calcium (Ca)	2022/05/20		NC	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Chromium (Cr)	2022/05/20		97	%	80 - 120
			Total Copper (Cu)	2022/05/20		97	%	80 - 120
			Total Iron (Fe)	2022/05/20		101	%	80 - 120
			Total Lead (Pb)	2022/05/20		101	%	80 - 120
			Total Magnesium (Mg)	2022/05/20		103	%	80 - 120
			Total Manganese (Mn)	2022/05/20		97	%	80 - 120
			Total Nickel (Ni)	2022/05/20		99	%	80 - 120
			Total Potassium (K)	2022/05/20		101	%	80 - 120
			Total Sodium (Na)	2022/05/20		NC	%	80 - 120
			Total Zinc (Zn)	2022/05/20		100	%	80 - 120
8005543	PBA	Spiked Blank	Total Arsenic (As)	2022/05/20		102	%	80 - 120
			Total Cadmium (Cd)	2022/05/20		101	%	80 - 120
			Total Calcium (Ca)	2022/05/20		99	%	80 - 120
			Total Chromium (Cr)	2022/05/20		98	%	80 - 120
			Total Copper (Cu)	2022/05/20		94	%	80 - 120
			Total Iron (Fe)	2022/05/20		102	%	80 - 120
			Total Lead (Pb)	2022/05/20		103	%	80 - 120
			Total Magnesium (Mg)	2022/05/20		104	%	80 - 120
			Total Manganese (Mn)	2022/05/20		98	%	80 - 120
			Total Nickel (Ni)	2022/05/20		99	%	80 - 120
			Total Potassium (K)	2022/05/20		94	%	80 - 120
			Total Sodium (Na)	2022/05/20		103	%	80 - 120
			Total Zinc (Zn)	2022/05/20		103	%	80 - 120
8005543	PBA	Method Blank	Total Arsenic (As)	2022/05/24	<1.0		ug/L	
			Total Cadmium (Cd)	2022/05/24	<0.090		ug/L	
			Total Calcium (Ca)	2022/05/24	<200		ug/L	
			Total Chromium (Cr)	2022/05/24	<5.0		ug/L	
			Total Copper (Cu)	2022/05/24	<0.90		ug/L	
			Total Iron (Fe)	2022/05/24	<100		ug/L	
			Total Lead (Pb)	2022/05/24	<0.50		ug/L	
			Total Magnesium (Mg)	2022/05/24	<50		ug/L	
			Total Manganese (Mn)	2022/05/24	<2.0		ug/L	
			Total Nickel (Ni)	2022/05/24	<1.0		ug/L	
			Total Potassium (K)	2022/05/24	<200		ug/L	
			Total Sodium (Na)	2022/05/24	<100		ug/L	
			Total Zinc (Zn)	2022/05/24	<5.0		ug/L	
8005543	PBA	RPD	Total Arsenic (As)	2022/05/20	5.2		%	20
			Total Cadmium (Cd)	2022/05/20	NC		%	20
			Total Calcium (Ca)	2022/05/20	3.6		%	20
			Total Chromium (Cr)	2022/05/20	NC		%	20
			Total Copper (Cu)	2022/05/20	6.8		%	20
			Total Lead (Pb)	2022/05/20	NC		%	20
			Total Magnesium (Mg)	2022/05/20	1.7		%	20
			Total Manganese (Mn)	2022/05/20	4.1		%	20
			Total Nickel (Ni)	2022/05/20	4.9		%	20
			Total Potassium (K)	2022/05/20	2.6		%	20
			Total Sodium (Na)	2022/05/20	0.40		%	20
			Total Zinc (Zn)	2022/05/20	NC		%	20
8009165	MPZ	Spiked Blank	Total Oil & Grease	2022/05/21		98	%	85 - 115
8009165	MPZ	RPD	Total Oil & Grease	2022/05/21	2.0		%	25
8009165	MPZ	Method Blank	Total Oil & Grease	2022/05/21	<0.50		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8009166	MPZ	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2022/05/21		95	%	85 - 115
8009166	MPZ	RPD	Total Oil & Grease Mineral/Synthetic	2022/05/21	3.6		%	25
8009166	MPZ	Method Blank	Total Oil & Grease Mineral/Synthetic	2022/05/21	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Cristina Carriere

Cristina Carriere, Senior Scientific Specialist

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Bureau Veritas Job #: C2D3220
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
SW1	SQK728-06	Total Phosphorus	0.01	0.015	0.004	mg/L
SW2	SQK729-06	Total Phosphorus	0.01	0.017	0.004	mg/L
DUP3	SQK730-06	Total Phosphorus	0.01	0.017	0.004	mg/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 877890-01-01, 877890-02-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/05/24
Report #: R7137333
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2D3399
Received: 2022/05/17, 12:46

Sample Matrix: Water
Samples Received: 9

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	9	N/A	2022/05/20	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	9	N/A	2022/05/20	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	9	N/A	2022/05/20	CAM SOP-00463	SM 23 4500-Cl E m
Colour	9	N/A	2022/05/19	CAM SOP-00412	SM 23 2120C m
Conductivity	9	N/A	2022/05/20	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	9	N/A	2022/05/19	CAM SOP-00446	SM 23 5310 B m
Fluoride	9	2022/05/19	2022/05/20	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	9	N/A	2022/05/19	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	9	N/A	2022/05/19	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	9	N/A	2022/05/19	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	9	N/A	2022/05/20	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	9	2022/05/19	2022/05/20	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	9	N/A	2022/05/20	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	9	N/A	2022/05/20	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	9	N/A	2022/05/20		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 877890-01-01, 877890-02-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/05/24
Report #: R7137333
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2D3399
Received: 2022/05/17, 12:46

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700
==========
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For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SQL953		SQL955			SQL955		
Sampling Date			2022/05/13 01:15		2022/05/13 10:00			2022/05/13 10:00		
COC Number			877890-01-01		877890-01-01			877890-01-01		
	UNITS	Criteria	TW1-1	RDL	OW5-2	RDL	QC Batch	OW5-2 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	220	1.0	120	1.0	8002837			
Calculated TDS	mg/L	-	1500	1.0	14000	1.0	8002196			
Hardness (CaCO3)	mg/L	-	610	1.0	5900	1.0	8002252			
Inorganics										
Total Ammonia-N	mg/L	-	0.64	0.050	8.8	0.050	8003284			
Colour	TCU	-	<2	2	6	2	8002766			
Conductivity	umho/cm	-	2800	1.0	25000	1.0	8004850			
Fluoride (F-)	mg/L	-	1.1	0.10	0.44	0.10	8004829			
Dissolved Organic Carbon	mg/L	-	1.3	0.40	3.0	0.40	8002836			
Orthophosphate (P)	mg/L	-	0.013	0.010	<0.010	0.010	8004894	<0.010	0.010	8004894
pH	pH	6.5:8.5	7.87		7.35		8004839			
Dissolved Sulphate (SO4)	mg/L	-	80	1.0	<1.0	1.0	8004881	<1.0	1.0	8004881
Alkalinity (Total as CaCO3)	mg/L	-	220	1.0	120	1.0	8004848			
Dissolved Chloride (Cl-)	mg/L	-	700	10	7700	100	8004891	7800	100	8004891
Nitrite (N)	mg/L	-	0.039	0.010	<0.010	0.010	8004648			
Nitrate (N)	mg/L	-	1.31	0.10	<0.10	0.10	8004648			
Nitrate + Nitrite (N)	mg/L	-	1.34	0.10	<0.10	0.10	8004648			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SQL957		SQL958		SQL959		
Sampling Date			2022/05/13 09:20		2022/05/13 12:00		2022/05/13 12:20		
COC Number			877890-01-01		877890-02-01		877890-02-01		
	UNITS	Criteria	TW6-2	RDL	OW7-1	RDL	OW7-2	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	150	1.0	260	1.0	250	1.0	8002837
Calculated TDS	mg/L	-	3800	1.0	4400	1.0	4600	1.0	8002196
Hardness (CaCO3)	mg/L	-	1600	1.0	1300	1.0	1400	1.0	8002252
Inorganics									
Total Ammonia-N	mg/L	-	1.2	0.050	2.8	0.050	2.6	0.050	8003284
Colour	TCU	-	<2	2	150	4	5	2	8002766
Conductivity	umho/cm	-	6300	1.0	8300	1.0	8500	1.0	8004850
Fluoride (F-)	mg/L	-	0.89	0.10	1.7	0.10	1.7	0.10	8004829
Dissolved Organic Carbon	mg/L	-	0.63	0.40	0.57	0.40	0.75	0.40	8002836
Orthophosphate (P)	mg/L	-	<0.010	0.010	<0.010	0.010	<0.010	0.010	8004894
pH	pH	6.5:8.5	7.65		7.71		7.62		8004839
Dissolved Sulphate (SO4)	mg/L	-	890	10	24	1.0	33	1.0	8004881
Alkalinity (Total as CaCO3)	mg/L	-	150	1.0	260	1.0	250	1.0	8004848
Dissolved Chloride (Cl-)	mg/L	-	1500	20	2400	40	2600	40	8004891
Nitrite (N)	mg/L	-	0.041	0.010	<0.010	0.010	<0.010	0.010	8004648
Nitrate (N)	mg/L	-	<0.10	0.10	<0.10	0.10	<0.10	0.10	8004648
Nitrate + Nitrite (N)	mg/L	-	0.12	0.10	<0.10	0.10	<0.10	0.10	8004648

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SQL960	SQL961	SQL962			SQL962		
Sampling Date			2022/05/13 03:15	2022/05/13 03:20	2022/05/13			2022/05/13		
COC Number			877890-02-01	877890-02-01	877890-02-01			877890-02-01		
	UNITS	Criteria	OW8-1	OW8-2	DUP 4	RDL	QC Batch	DUP 4 Lab-Dup	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	280	270	270	1.0	8002837			
Calculated TDS	mg/L	-	510	420	420	1.0	8002196			
Hardness (CaCO3)	mg/L	-	350	330	330	1.0	8002252			
Inorganics										
Total Ammonia-N	mg/L	-	0.38	<0.050	<0.050	0.050	8003284			
Colour	TCU	-	<2	2	<2	2	8002766			
Conductivity	umho/cm	-	890	700	700	1.0	8004850	700	1.0	8004850
Fluoride (F-)	mg/L	-	0.65	0.51	0.49	0.10	8004829	0.49	0.10	8004829
Dissolved Organic Carbon	mg/L	-	1.3	2.6	2.7	0.40	8002836			
Orthophosphate (P)	mg/L	-	<0.010	<0.010	<0.010	0.010	8004894			
pH	pH	6.5:8.5	7.79	8.01	8.00		8004839	8.02		8004839
Dissolved Sulphate (SO4)	mg/L	-	57	57	58	1.0	8004881			
Alkalinity (Total as CaCO3)	mg/L	-	280	280	270	1.0	8004848	270	1.0	8004848
Dissolved Chloride (Cl-)	mg/L	-	85	29	29	1.0	8004891			
Nitrite (N)	mg/L	-	<0.010	<0.010	<0.010	0.010	8004648			
Nitrate (N)	mg/L	-	<0.10	0.30	0.29	0.10	8004648			
Nitrate + Nitrite (N)	mg/L	-	<0.10	0.30	0.29	0.10	8004648			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SQL963		
Sampling Date			2022/05/13		
COC Number			877890-02-01		
	UNITS	Criteria	DUP 2	RDL	QC Batch
Calculated Parameters					
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	150	1.0	8002837
Calculated TDS	mg/L	-	3700	1.0	8002196
Hardness (CaCO3)	mg/L	-	1600	1.0	8002252
Inorganics					
Total Ammonia-N	mg/L	-	1.3	0.050	8003284
Colour	TCU	-	<2	2	8002766
Conductivity	umho/cm	-	6300	1.0	8004850
Fluoride (F-)	mg/L	-	0.88	0.10	8004829
Dissolved Organic Carbon	mg/L	-	0.69	0.40	8002836
Orthophosphate (P)	mg/L	-	<0.010	0.010	8004894
pH	pH	6.5:8.5	7.66		8004839
Dissolved Sulphate (SO4)	mg/L	-	880	10	8004881
Alkalinity (Total as CaCO3)	mg/L	-	150	1.0	8004848
Dissolved Chloride (Cl-)	mg/L	-	1400	20	8004891
Nitrite (N)	mg/L	-	0.059	0.010	8004648
Nitrate (N)	mg/L	-	<0.10	0.10	8004648
Nitrate + Nitrite (N)	mg/L	-	0.12	0.10	8004648

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		SQL953		SQL955		SQL957	SQL958	SQL959		
Sampling Date		2022/05/13 01:15		2022/05/13 10:00		2022/05/13 09:20	2022/05/13 12:00	2022/05/13 12:20		
COC Number		877890-01-01		877890-01-01		877890-01-01	877890-02-01	877890-02-01		
	UNITS	TW1-1	RDL	OW5-2	RDL	TW6-2	OW7-1	OW7-2	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	130000	1000	1200000	4000	320000	260000	270000	1000	8004184
Dissolved Magnesium (Mg)	ug/L	70000	50	730000	500	190000	160000	170000	50	8004184
Dissolved Phosphorus (P)	ug/L	140	100	100	100	<100	<100	<100	100	8004184
Dissolved Potassium (K)	ug/L	11000	200	78000	200	19000	22000	22000	200	8004184
Dissolved Sodium (Na)	ug/L	340000	100	3800000	1000	790000	1300000	1400000	500	8004184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		SQL960	SQL961	SQL962		SQL963		
Sampling Date		2022/05/13 03:15	2022/05/13 03:20	2022/05/13		2022/05/13		
COC Number		877890-02-01	877890-02-01	877890-02-01		877890-02-01		
	UNITS	OW8-1	OW8-2	DUP 4	RDL	DUP 2	RDL	QC Batch
Metals								
Dissolved Calcium (Ca)	ug/L	110000	100000	100000	200	310000	1000	8004184
Dissolved Magnesium (Mg)	ug/L	21000	18000	18000	50	200000	50	8004184
Dissolved Phosphorus (P)	ug/L	<100	<100	<100	100	<100	100	8004184
Dissolved Potassium (K)	ug/L	3800	3700	3700	200	19000	200	8004184
Dissolved Sodium (Na)	ug/L	53000	34000	34000	100	780000	500	8004184

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

TEST SUMMARY

Bureau Veritas ID: SQL953
Sample ID: TW1-1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

Bureau Veritas ID: SQL955
Sample ID: OW5-2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

Bureau Veritas ID: SQL955 Dup
Sample ID: OW5-2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal

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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

TEST SUMMARY

Bureau Veritas ID: SQL955 Dup
Sample ID: OW5-2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal

Bureau Veritas ID: SQL957
Sample ID: TW6-2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

Bureau Veritas ID: SQL958
Sample ID: OW7-1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

TEST SUMMARY

Bureau Veritas ID: SQL959
Sample ID: OW7-2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

Bureau Veritas ID: SQL960
Sample ID: OW8-1
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

Bureau Veritas ID: SQL961
Sample ID: OW8-2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk

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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

TEST SUMMARY

Bureau Veritas ID: SQL961
Sample ID: OW8-2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

Bureau Veritas ID: SQL962
Sample ID: DUP 4
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

Bureau Veritas ID: SQL962 Dup
Sample ID: DUP 4
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel

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Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

TEST SUMMARY

Bureau Veritas ID: SQL963
Sample ID: DUP 2
Matrix: Water

Collected: 2022/05/13
Shipped:
Received: 2022/05/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8004848	N/A	2022/05/20	Yogesh Patel
Carbonate, Bicarbonate and Hydroxide	CALC	8002837	N/A	2022/05/20	Automated Statchk
Chloride by Automated Colourimetry	KONE	8004891	N/A	2022/05/20	Alina Dobreanu
Colour	SPEC	8002766	N/A	2022/05/19	Viorica Rotaru
Conductivity	AT	8004850	N/A	2022/05/20	Yogesh Patel
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8002836	N/A	2022/05/19	Anna-Kay Gooden
Fluoride	ISE	8004829	2022/05/19	2022/05/20	Yogesh Patel
Hardness (calculated as CaCO3)		8002252	N/A	2022/05/19	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8004184	N/A	2022/05/19	Daniel Teclu
Total Ammonia-N	LACH/NH4	8003284	N/A	2022/05/19	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8004648	N/A	2022/05/20	Samuel Law
pH	AT	8004839	2022/05/19	2022/05/20	Yogesh Patel
Orthophosphate	KONE	8004894	N/A	2022/05/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8004881	N/A	2022/05/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8002196	N/A	2022/05/20	Automated Statchk

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	0.0°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8002766	VRO	Spiked Blank	Colour	2022/05/19		96	%	80 - 120
8002766	VRO	Method Blank	Colour	2022/05/19	<2		TCU	
8002766	VRO	RPD	Colour	2022/05/19	NC		%	25
8002836	AGD	Matrix Spike	Dissolved Organic Carbon	2022/05/19		97	%	80 - 120
8002836	AGD	Spiked Blank	Dissolved Organic Carbon	2022/05/19		97	%	80 - 120
8002836	AGD	Method Blank	Dissolved Organic Carbon	2022/05/19	<0.40		mg/L	
8002836	AGD	RPD	Dissolved Organic Carbon	2022/05/19	0.45		%	20
8003284	RKF	Matrix Spike	Total Ammonia-N	2022/05/19		90	%	75 - 125
8003284	RKF	Spiked Blank	Total Ammonia-N	2022/05/19		94	%	80 - 120
8003284	RKF	Method Blank	Total Ammonia-N	2022/05/19	<0.050		mg/L	
8003284	RKF	RPD	Total Ammonia-N	2022/05/19	5.5		%	20
8004184	DT1	Matrix Spike	Dissolved Calcium (Ca)	2022/05/19		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2022/05/19		NC	%	80 - 120
			Dissolved Phosphorus (P)	2022/05/19		105	%	80 - 120
			Dissolved Potassium (K)	2022/05/19		107	%	80 - 120
			Dissolved Sodium (Na)	2022/05/19		NC	%	80 - 120
8004184	DT1	Spiked Blank	Dissolved Calcium (Ca)	2022/05/19		102	%	80 - 120
			Dissolved Magnesium (Mg)	2022/05/19		103	%	80 - 120
			Dissolved Phosphorus (P)	2022/05/19		111	%	80 - 120
			Dissolved Potassium (K)	2022/05/19		103	%	80 - 120
			Dissolved Sodium (Na)	2022/05/19		102	%	80 - 120
8004184	DT1	Method Blank	Dissolved Calcium (Ca)	2022/05/19	<200		ug/L	
			Dissolved Magnesium (Mg)	2022/05/19	<50		ug/L	
			Dissolved Phosphorus (P)	2022/05/19	<100		ug/L	
			Dissolved Potassium (K)	2022/05/19	<200		ug/L	
			Dissolved Sodium (Na)	2022/05/19	<100		ug/L	
8004184	DT1	RPD	Dissolved Calcium (Ca)	2022/05/19	0.59		%	20
			Dissolved Magnesium (Mg)	2022/05/19	0.29		%	20
			Dissolved Phosphorus (P)	2022/05/19	NC		%	20
			Dissolved Potassium (K)	2022/05/19	0.13		%	20
			Dissolved Sodium (Na)	2022/05/19	1.7		%	20
8004648	S1L	Matrix Spike	Nitrite (N)	2022/05/20		110	%	80 - 120
			Nitrate (N)	2022/05/20		93	%	80 - 120
8004648	S1L	Spiked Blank	Nitrite (N)	2022/05/20		112	%	80 - 120
			Nitrate (N)	2022/05/20		96	%	80 - 120
8004648	S1L	Method Blank	Nitrite (N)	2022/05/20	<0.010		mg/L	
			Nitrate (N)	2022/05/20	<0.10		mg/L	
8004648	S1L	RPD	Nitrite (N)	2022/05/20	3.4		%	20
			Nitrate (N)	2022/05/20	1.7		%	20
8004829	YPA	Matrix Spike [SQL962-01]	Fluoride (F-)	2022/05/20		104	%	80 - 120
8004829	YPA	Spiked Blank	Fluoride (F-)	2022/05/20		97	%	80 - 120
8004829	YPA	Method Blank	Fluoride (F-)	2022/05/20	<0.10		mg/L	
8004829	YPA	RPD [SQL962-01]	Fluoride (F-)	2022/05/20	0.94		%	20
8004839	YPA	Spiked Blank	pH	2022/05/20		102	%	98 - 103
8004839	YPA	RPD [SQL962-01]	pH	2022/05/20	0.16		%	N/A
8004848	YPA	Spiked Blank	Alkalinity (Total as CaCO3)	2022/05/20		95	%	85 - 115
8004848	YPA	Method Blank	Alkalinity (Total as CaCO3)	2022/05/20	<1.0		mg/L	
8004848	YPA	RPD [SQL962-01]	Alkalinity (Total as CaCO3)	2022/05/20	0.10		%	20
8004850	YPA	Spiked Blank	Conductivity	2022/05/20		100	%	85 - 115
8004850	YPA	Method Blank	Conductivity	2022/05/20	<1.0		umho/cm	
8004850	YPA	RPD [SQL962-01]	Conductivity	2022/05/20	0.29		%	25

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8004881	C_N	Matrix Spike [SQL955-01]	Dissolved Sulphate (SO4)	2022/05/20		121	%	75 - 125
8004881	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/05/20		104	%	80 - 120
8004881	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/05/20	<1.0		mg/L	
8004881	C_N	RPD [SQL955-01]	Dissolved Sulphate (SO4)	2022/05/20	NC		%	20
8004891	ADB	Matrix Spike [SQL955-01]	Dissolved Chloride (Cl-)	2022/05/20		NC	%	80 - 120
8004891	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/05/20		102	%	80 - 120
8004891	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/05/20	<1.0		mg/L	
8004891	ADB	RPD [SQL955-01]	Dissolved Chloride (Cl-)	2022/05/20	0.82		%	20
8004894	C_N	Matrix Spike [SQL955-01]	Orthophosphate (P)	2022/05/20		108	%	75 - 125
8004894	C_N	Spiked Blank	Orthophosphate (P)	2022/05/20		99	%	80 - 120
8004894	C_N	Method Blank	Orthophosphate (P)	2022/05/20	<0.010		mg/L	
8004894	C_N	RPD [SQL955-01]	Orthophosphate (P)	2022/05/20	NC		%	25

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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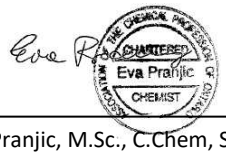
Bureau Veritas Job #: C2D3399
Report Date: 2022/05/24

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

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Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 21508089
Site#: MCCARTHY
Your C.O.C. #: 864954-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/06/21
Report #: R7180067
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2G4607
Received: 2022/06/15, 11:51

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2022/06/20	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	1	N/A	2022/06/21	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	1	N/A	2022/06/21	CAM SOP-00463	SM 23 4500-Cl E m
Colour	1	N/A	2022/06/20	CAM SOP-00412	SM 23 2120C m
Conductivity	1	N/A	2022/06/20	CAM SOP-00414	SM 23 2510 m
Fluoride	1	2022/06/17	2022/06/20	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	1	N/A	2022/06/20	CAM SOP 00102/00408/00447	SM 2340 B
pH	1	2022/06/17	2022/06/20	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	1	N/A	2022/06/20	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	1	N/A	2022/06/20	CAM SOP-00464	EPA 375.4 m
Turbidity	1	N/A	2022/06/17	CAM SOP-00417	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Your Project #: 21508089
Site#: MCCARTHY
Your C.O.C. #: 864954-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/06/21
Report #: R7180067
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2G4607

Received: 2022/06/15, 11:51

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700

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For Service Group specific validation please refer to the Validation Signature Page.

RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID				SXE826			SXE826		
Sampling Date				2022/06/13 02:00			2022/06/13 02:00		
COC Number				864954-01-01			864954-01-01		
	UNITS	Criteria	A/O	DW 1	RDL	QC Batch	DW 1 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	-	330	1.0	8054145			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	-	1.1	1.0	8054145			
Hardness (CaCO3)	mg/L	-	80:100	**580**	1.0	8053580			
Inorganics									
Conductivity	umho/cm	-	-	1500	1.0	8060618	1500	1.0	8060618
Orthophosphate (P)	mg/L	-	-	<0.010	0.010	8060631			
pH	pH	6.5:8.5	6.5:8.5	7.55		8060620	7.57		8060620
Dissolved Sulphate (SO4)	mg/L	-	500	28	1.0	8060625			
Alkalinity (Total as CaCO3)	mg/L	-	30:500	330	1.0	8060614	340	1.0	8060614
Dissolved Chloride (Cl-)	mg/L	-	250	250	3.0	8060613			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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Bureau Veritas Job #: C2G4607
Report Date: 2022/06/21

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CT

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID				SXE826			SXE826		
Sampling Date				2022/06/13 02:00			2022/06/13 02:00		
COC Number				864954-01-01			864954-01-01		
	UNITS	MAC	A/O	DW 1	RDL	QC Batch	DW 1 Lab-Dup	RDL	QC Batch
Inorganics									
Colour	TCU	-	5	<2	2	8061396	<2	2	8061396
Fluoride (F-)	mg/L	1.5	-	<0.10	0.10	8060603	<0.10	0.10	8060603
Turbidity	NTU	-	5	0.1	0.1	8055257			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
MAC,A/O: Ontario Drinking Water Standards - Maximum Acceptable Concentration [MAC] & Table 4-Chemical/Physical Objectives [A/O] - Not Health Related, respectively
(Made under the Ontario Safe Drinking Water Act, 2002)

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Bureau Veritas Job #: C2G4607
Report Date: 2022/06/21

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CT

TEST SUMMARY

Bureau Veritas ID: SXE826
Sample ID: DW 1
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/20	Automated Statchk
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Turbidity	AT	8055257	N/A	2022/06/17	Roya Fathitil

Bureau Veritas ID: SXE826 Dup
Sample ID: DW 1
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	11.7°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8055257	RFT	Spiked Blank	Turbidity	2022/06/17		93	%	85 - 115
8055257	RFT	Method Blank	Turbidity	2022/06/17	<0.1		NTU	
8055257	RFT	RPD	Turbidity	2022/06/17	9.7		%	20
8060603	SAU	Matrix Spike [SXE826-01]	Fluoride (F-)	2022/06/20		107	%	80 - 120
8060603	SAU	Spiked Blank	Fluoride (F-)	2022/06/20		99	%	80 - 120
8060603	SAU	Method Blank	Fluoride (F-)	2022/06/20	<0.10		mg/L	
8060603	SAU	RPD [SXE826-01]	Fluoride (F-)	2022/06/20	NC		%	20
8060613	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/06/21		112	%	80 - 120
8060613	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/06/21		105	%	80 - 120
8060613	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/06/21	<1.0		mg/L	
8060613	ADB	RPD	Dissolved Chloride (Cl-)	2022/06/21	1.2		%	20
8060614	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2022/06/20		94	%	85 - 115
8060614	SAU	Method Blank	Alkalinity (Total as CaCO3)	2022/06/20	<1.0		mg/L	
8060614	SAU	RPD [SXE826-01]	Alkalinity (Total as CaCO3)	2022/06/20	0.72		%	20
8060618	SAU	Spiked Blank	Conductivity	2022/06/20		99	%	85 - 115
8060618	SAU	Method Blank	Conductivity	2022/06/20	<1.0		umho/cm	
8060618	SAU	RPD [SXE826-01]	Conductivity	2022/06/20	0.069		%	25
8060620	SAU	Spiked Blank	pH	2022/06/20		102	%	98 - 103
8060620	SAU	RPD [SXE826-01]	pH	2022/06/20	0.22		%	N/A
8060625	C_N	Matrix Spike	Dissolved Sulphate (SO4)	2022/06/20		NC	%	75 - 125
8060625	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/06/20		103	%	80 - 120
8060625	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/06/20	<1.0		mg/L	
8060625	C_N	RPD	Dissolved Sulphate (SO4)	2022/06/20	2.5		%	20
8060631	C_N	Matrix Spike	Orthophosphate (P)	2022/06/20		103	%	75 - 125
8060631	C_N	Spiked Blank	Orthophosphate (P)	2022/06/20		100	%	80 - 120
8060631	C_N	Method Blank	Orthophosphate (P)	2022/06/20	<0.010		mg/L	
8060631	C_N	RPD	Orthophosphate (P)	2022/06/20	NC		%	25
8061396	VRO	Spiked Blank	Colour	2022/06/20		100	%	80 - 120
8061396	VRO	Method Blank	Colour	2022/06/20	<2		TCU	
8061396	VRO	RPD [SXE826-01]	Colour	2022/06/20	NC		%	25

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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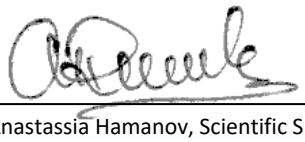
Bureau Veritas Job #: C2G4607
Report Date: 2022/06/21

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CT

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

Exceedance Summary Table – ODWS (2002)

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 864954-02-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/06/22
Report #: R7181768
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2G4633
Received: 2022/06/15, 11:51

Sample Matrix: Water
Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	8	N/A	2022/06/20	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	8	N/A	2022/06/21	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	1	N/A	2022/06/20	CAM SOP-00463	SM 23 4500-Cl E m
Chloride by Automated Colourimetry	7	N/A	2022/06/21	CAM SOP-00463	SM 23 4500-Cl E m
Colour	8	N/A	2022/06/20	CAM SOP-00412	SM 23 2120C m
Conductivity	8	N/A	2022/06/20	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2022/06/17	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2022/06/20	CAM SOP-00446	SM 23 5310 B m
Fluoride	8	2022/06/17	2022/06/20	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	8	N/A	2022/06/22	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	8	N/A	2022/06/22	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	8	N/A	2022/06/20	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	8	N/A	2022/06/20	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	8	2022/06/17	2022/06/20	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	8	N/A	2022/06/20	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	8	N/A	2022/06/20	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	8	N/A	2022/06/22		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.

Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 864954-02-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/06/22
Report #: R7181768
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2G4633

Received: 2022/06/15, 11:51

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700

==========

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For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SXE904			SXE904		
Sampling Date			2022/06/13 11:55			2022/06/13 11:55		
COC Number			864954-02-01			864954-02-01		
	UNITS	Criteria	AM 1-B	RDL	QC Batch	AM 1-B Lab-Dup	RDL	QC Batch
Calculated Parameters								
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	240	1.0	8054145			
Calculated TDS	mg/L	-	310	1.0	8053584			
Hardness (CaCO3)	mg/L	-	270	1.0	8053580			
Inorganics								
Total Ammonia-N	mg/L	-	0.096	0.050	8063093	0.086	0.050	8063093
Colour	TCU	-	<2	2	8061396			
Conductivity	umho/cm	-	520	1.0	8060618			
Fluoride (F-)	mg/L	-	0.23	0.10	8060603			
Dissolved Organic Carbon	mg/L	-	0.75	0.40	8061376			
Orthophosphate (P)	mg/L	-	<0.010	0.010	8060631			
pH	pH	6.5:8.5	7.91		8060620			
Dissolved Sulphate (SO4)	mg/L	-	39	1.0	8060625			
Alkalinity (Total as CaCO3)	mg/L	-	240	1.0	8060614			
Dissolved Chloride (Cl-)	mg/L	-	1.7	1.0	8060613			
Nitrite (N)	mg/L	-	<0.010	0.010	8060526			
Nitrate (N)	mg/L	-	<0.10	0.10	8060526			
Nitrate + Nitrite (N)	mg/L	-	<0.10	0.10	8060526			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SXE905			SXE906		
Sampling Date			2022/06/13 12:15			2022/06/13 10:15		
COC Number			864954-02-01			864954-02-01		
	UNITS	Criteria	AM X-R	RDL	QC Batch	BORED	RDL	QC Batch
Calculated Parameters								
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	4.0	1.0	8054145	250	1.0	8054145
Calculated TDS	mg/L	-	9300	1.0	8053584	310	1.0	8053584
Hardness (CaCO3)	mg/L	-	3400	1.0	8053580	260	1.0	8053580
Inorganics								
Total Ammonia-N	mg/L	-	5.6	0.050	8063093	<0.050	0.050	8063093
Colour	TCU	-	22	2	8061396	<2	2	8061396
Conductivity	umho/cm	-	17000	1.0	8060618	530	1.0	8060618
Fluoride (F-)	mg/L	-	0.69	0.10	8060603	0.12	0.10	8060603
Dissolved Organic Carbon	mg/L	-	1.9	0.40	8059321	1.0	0.40	8059321
Orthophosphate (P)	mg/L	-	<0.010	0.010	8060631	<0.010	0.010	8061821
pH	pH	6.5:8.5	**5.77**		8060620	8.02		8060620
Dissolved Sulphate (SO4)	mg/L	-	<1.0	1.0	8060625	32	1.0	8061824
Alkalinity (Total as CaCO3)	mg/L	-	4.0	1.0	8060614	260	1.0	8060614
Dissolved Chloride (Cl-)	mg/L	-	5900	60	8060613	1.6	1.0	8061828
Nitrite (N)	mg/L	-	0.031	0.010	8060526	<0.010	0.010	8060526
Nitrate (N)	mg/L	-	0.10	0.10	8060526	0.24	0.10	8060526
Nitrate + Nitrite (N)	mg/L	-	0.13	0.10	8060526	0.24	0.10	8060526

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SXE906			SXE907	SXE908		
Sampling Date			2022/06/13 10:15			2022/06/13 11:25	2022/06/13 11:00		
COC Number			864954-02-01			864954-02-01	864954-02-01		
	UNITS	Criteria	BORED Lab-Dup	RDL	QC Batch	OW 4-1	OW 4-2	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-				240	250	1.0	8054145
Calculated TDS	mg/L	-				640	710	1.0	8053584
Hardness (CaCO3)	mg/L	-				140	170	1.0	8053580
Inorganics									
Total Ammonia-N	mg/L	-				1.0	0.95	0.050	8063093
Colour	TCU	-				<2	<2	2	8061396
Conductivity	umho/cm	-				1200	1400	1.0	8060618
Fluoride (F-)	mg/L	-				1.2	1.2	0.10	8060603
Dissolved Organic Carbon	mg/L	-				1.5	1.3	0.40	8061376
Orthophosphate (P)	mg/L	-	<0.010	0.010	8061821	<0.010	<0.010	0.010	8060631
pH	pH	6.5:8.5				8.23	8.00		8060620
Dissolved Sulphate (SO4)	mg/L	-	32	1.0	8061824	1.3	<1.0	1.0	8060625
Alkalinity (Total as CaCO3)	mg/L	-				240	250	1.0	8060614
Dissolved Chloride (Cl-)	mg/L	-	1.6	1.0	8061828	240	270	3.0	8060613
Nitrite (N)	mg/L	-				<0.010	<0.010	0.010	8060526
Nitrate (N)	mg/L	-				<0.10	<0.10	0.10	8060526
Nitrate + Nitrite (N)	mg/L	-				<0.10	<0.10	0.10	8060526

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			SXE909			SXE910		SXE911		
Sampling Date			2022/06/13 01:20			2022/06/13 01:50		2022/06/13		
COC Number			864954-02-01			864954-02-01		864954-02-01		
	UNITS	Criteria	OW 5-1	RDL	QC Batch	OW 5-3	RDL	DUP 1	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	310	1.0	8054145	110	1.0	270	1.0	8054145
Calculated TDS	mg/L	-	420	1.0	8053584	16000	1.0	330	1.0	8053584
Hardness (CaCO3)	mg/L	-	260	1.0	8053580	6300	1.0	270	1.0	8053580
Inorganics										
Total Ammonia-N	mg/L	-	0.62	0.050	8063093	9.5	0.050	<0.050	0.050	8063093
Colour	TCU	-	<2	2	8061396	<2	2	<2	2	8061396
Conductivity	umho/cm	-	730	1.0	8060618	28000	1.0	560	1.0	8060618
Fluoride (F-)	mg/L	-	0.59	0.10	8060603	0.47	0.10	0.14	0.10	8060603
Dissolved Organic Carbon	mg/L	-	1.4	0.40	8061376	0.61	0.40	0.98	0.40	8059321
Orthophosphate (P)	mg/L	-	<0.010	0.010	8060631	<0.010	0.010	<0.010	0.010	8060631
pH	pH	6.5:8.5	8.14		8060620	7.32		8.00		8060620
Dissolved Sulphate (SO4)	mg/L	-	45	1.0	8060625	1.3	1.0	33	1.0	8060625
Alkalinity (Total as CaCO3)	mg/L	-	310	1.0	8060614	110	1.0	270	1.0	8060614
Dissolved Chloride (Cl-)	mg/L	-	23	1.0	8060613	9500	80	1.6	1.0	8060613
Nitrite (N)	mg/L	-	0.128	0.010	8060526	<0.010	0.010	<0.010	0.010	8060526
Nitrate (N)	mg/L	-	0.22	0.10	8060526	<0.10	0.10	0.21	0.10	8060526
Nitrate + Nitrite (N)	mg/L	-	0.35	0.10	8060526	<0.10	0.10	0.21	0.10	8060526

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		SXE904		SXE905		SXE906	SXE906	SXE907		
Sampling Date		2022/06/13 11:55		2022/06/13 12:15		2022/06/13 10:15	2022/06/13 10:15	2022/06/13 11:25		
COC Number		864954-02-01		864954-02-01		864954-02-01	864954-02-01	864954-02-01		
	UNITS	AM 1-B	RDL	AM X-R	RDL	BORED	BORED Lab-Dup	OW 4-1	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	53000	200	660000	2000	58000	61000	26000	200	8059072
Dissolved Magnesium (Mg)	ug/L	33000	50	440000	250	27000	28000	17000	50	8059072
Dissolved Phosphorus (P)	ug/L	<100	100	590	500	<100	<100	<100	100	8059072
Dissolved Potassium (K)	ug/L	2300	200	43000	1000	4700	4700	7200	200	8059072
Dissolved Sodium (Na)	ug/L	6200	100	2200000	500	14000	14000	190000	100	8059072

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		SXE908	SXE909		SXE910		SXE911		
Sampling Date		2022/06/13 11:00	2022/06/13 01:20		2022/06/13 01:50		2022/06/13		
COC Number		864954-02-01	864954-02-01		864954-02-01		864954-02-01		
	UNITS	OW 4-2	OW 5-1	RDL	OW 5-3	RDL	DUP 1	RDL	QC Batch
Metals									
Dissolved Calcium (Ca)	ug/L	32000	49000	200	1300000	4000	61000	200	8059072
Dissolved Magnesium (Mg)	ug/L	23000	34000	50	770000	250	29000	50	8059072
Dissolved Phosphorus (P)	ug/L	<100	<100	100	<500	500	<100	100	8059072
Dissolved Potassium (K)	ug/L	8400	7000	200	72000	1000	5000	200	8059072
Dissolved Sodium (Na)	ug/L	210000	58000	100	3900000	1000	15000	100	8059072

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SXE904
Sample ID: AM 1-B
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8061376	N/A	2022/06/20	Anna-Kay Gooden
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

Bureau Veritas ID: SXE904 Dup
Sample ID: AM 1-B
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif

Bureau Veritas ID: SXE905
Sample ID: AM X-R
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8059321	N/A	2022/06/17	Nimarta Singh
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SXE906
Sample ID: BORED
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8061828	N/A	2022/06/20	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8059321	N/A	2022/06/17	Nimarta Singh
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8061821	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8061824	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

Bureau Veritas ID: SXE906 Dup
Sample ID: BORED
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8061828	N/A	2022/06/20	Alina Dobreanu
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Orthophosphate	KONE	8061821	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8061824	N/A	2022/06/20	Chandra Nandlal

Bureau Veritas ID: SXE907
Sample ID: OW 4-1
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8061376	N/A	2022/06/20	Anna-Kay Gooden
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal

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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SXE907
Sample ID: OW 4-1
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

Bureau Veritas ID: SXE908
Sample ID: OW 4-2
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8061376	N/A	2022/06/20	Anna-Kay Gooden
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

Bureau Veritas ID: SXE909
Sample ID: OW 5-1
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8061376	N/A	2022/06/20	Anna-Kay Gooden
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

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Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: SXE910
Sample ID: OW 5-3
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8059321	N/A	2022/06/17	Nimarta Singh
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

Bureau Veritas ID: SXE911
Sample ID: DUP 1
Matrix: Water

Collected: 2022/06/13
Shipped:
Received: 2022/06/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8060614	N/A	2022/06/20	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	8054145	N/A	2022/06/21	Automated Statchk
Chloride by Automated Colourimetry	KONE	8060613	N/A	2022/06/21	Alina Dobreanu
Colour	SPEC	8061396	N/A	2022/06/20	Viorica Rotaru
Conductivity	AT	8060618	N/A	2022/06/20	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8059321	N/A	2022/06/17	Nimarta Singh
Fluoride	ISE	8060603	2022/06/17	2022/06/20	Surinder Rai
Hardness (calculated as CaCO3)		8053580	N/A	2022/06/22	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8059072	N/A	2022/06/22	Nan Raykha
Total Ammonia-N	LACH/NH4	8063093	N/A	2022/06/20	Raiq Kashif
Nitrate & Nitrite as Nitrogen in Water	LACH	8060526	N/A	2022/06/20	Samuel Law
pH	AT	8060620	2022/06/17	2022/06/20	Surinder Rai
Orthophosphate	KONE	8060631	N/A	2022/06/20	Chandra Nandlal
Sulphate by Automated Colourimetry	KONE	8060625	N/A	2022/06/20	Chandra Nandlal
Total Dissolved Solids (TDS calc)	CALC	8053584	N/A	2022/06/22	Automated Statchk

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	11.7°C

Sample SXE905 [AM X-R] : Metals Analysis:Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample SXE910 [OW 5-3] : Metals Analysis:Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8059072	N_R	Matrix Spike [SXE906-03]	Dissolved Calcium (Ca)	2022/06/22		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/22		NC	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/22		109	%	80 - 120
			Dissolved Potassium (K)	2022/06/22		114	%	80 - 120
			Dissolved Sodium (Na)	2022/06/22		110	%	80 - 120
8059072	N_R	Spiked Blank	Dissolved Calcium (Ca)	2022/06/22		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/22		101	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/22		117	%	80 - 120
			Dissolved Potassium (K)	2022/06/22		104	%	80 - 120
			Dissolved Sodium (Na)	2022/06/22		100	%	80 - 120
8059072	N_R	Method Blank	Dissolved Calcium (Ca)	2022/06/22	<200		ug/L	
			Dissolved Magnesium (Mg)	2022/06/22	<50		ug/L	
			Dissolved Phosphorus (P)	2022/06/22	<100		ug/L	
			Dissolved Potassium (K)	2022/06/22	<200		ug/L	
			Dissolved Sodium (Na)	2022/06/22	<100		ug/L	
8059072	N_R	RPD [SXE906-03]	Dissolved Calcium (Ca)	2022/06/22	3.9		%	20
			Dissolved Magnesium (Mg)	2022/06/22	2.2		%	20
			Dissolved Phosphorus (P)	2022/06/22	NC		%	20
			Dissolved Potassium (K)	2022/06/22	0.98		%	20
			Dissolved Sodium (Na)	2022/06/22	0.56		%	20
8059321	NS3	Matrix Spike	Dissolved Organic Carbon	2022/06/17		94	%	80 - 120
8059321	NS3	Spiked Blank	Dissolved Organic Carbon	2022/06/17		96	%	80 - 120
8059321	NS3	Method Blank	Dissolved Organic Carbon	2022/06/17	<0.40		mg/L	
8059321	NS3	RPD	Dissolved Organic Carbon	2022/06/17	1.7		%	20
8060526	S1L	Matrix Spike	Nitrite (N)	2022/06/20		102	%	80 - 120
			Nitrate (N)	2022/06/20		NC	%	80 - 120
8060526	S1L	Spiked Blank	Nitrite (N)	2022/06/20		104	%	80 - 120
			Nitrate (N)	2022/06/20		96	%	80 - 120
8060526	S1L	Method Blank	Nitrite (N)	2022/06/20	<0.010		mg/L	
			Nitrate (N)	2022/06/20	<0.10		mg/L	
8060526	S1L	RPD	Nitrite (N)	2022/06/20	3.0		%	20
			Nitrate (N)	2022/06/20	0.67		%	20
8060603	SAU	Matrix Spike	Fluoride (F-)	2022/06/20		107	%	80 - 120
8060603	SAU	Spiked Blank	Fluoride (F-)	2022/06/20		99	%	80 - 120
8060603	SAU	Method Blank	Fluoride (F-)	2022/06/20	<0.10		mg/L	
8060603	SAU	RPD	Fluoride (F-)	2022/06/20	NC		%	20
8060613	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/06/21		112	%	80 - 120
8060613	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/06/21		105	%	80 - 120
8060613	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/06/21	<1.0		mg/L	
8060613	ADB	RPD	Dissolved Chloride (Cl-)	2022/06/21	1.2		%	20
8060614	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2022/06/20		94	%	85 - 115
8060614	SAU	Method Blank	Alkalinity (Total as CaCO3)	2022/06/20	<1.0		mg/L	
8060614	SAU	RPD	Alkalinity (Total as CaCO3)	2022/06/20	0.72		%	20
8060618	SAU	Spiked Blank	Conductivity	2022/06/20		99	%	85 - 115
8060618	SAU	Method Blank	Conductivity	2022/06/20	<1.0		umho/cm	
8060618	SAU	RPD	Conductivity	2022/06/20	0.069		%	25
8060620	SAU	Spiked Blank	pH	2022/06/20		102	%	98 - 103
8060620	SAU	RPD	pH	2022/06/20	0.22		%	N/A
8060625	C_N	Matrix Spike	Dissolved Sulphate (SO4)	2022/06/20		NC	%	75 - 125
8060625	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/06/20		103	%	80 - 120
8060625	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/06/20	<1.0		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8060625	C_N	RPD	Dissolved Sulphate (SO4)	2022/06/20	2.5		%	20
8060631	C_N	Matrix Spike	Orthophosphate (P)	2022/06/20		103	%	75 - 125
8060631	C_N	Spiked Blank	Orthophosphate (P)	2022/06/20		100	%	80 - 120
8060631	C_N	Method Blank	Orthophosphate (P)	2022/06/20	<0.010		mg/L	
8060631	C_N	RPD	Orthophosphate (P)	2022/06/20	NC		%	25
8061376	AGD	Matrix Spike	Dissolved Organic Carbon	2022/06/20		95	%	80 - 120
8061376	AGD	Spiked Blank	Dissolved Organic Carbon	2022/06/20		97	%	80 - 120
8061376	AGD	Method Blank	Dissolved Organic Carbon	2022/06/20	<0.40		mg/L	
8061376	AGD	RPD	Dissolved Organic Carbon	2022/06/20	0.14		%	20
8061396	VRO	Spiked Blank	Colour	2022/06/20		100	%	80 - 120
8061396	VRO	Method Blank	Colour	2022/06/20	<2		TCU	
8061396	VRO	RPD	Colour	2022/06/20	NC		%	25
8061821	C_N	Matrix Spike [SXE906-01]	Orthophosphate (P)	2022/06/20		103	%	75 - 125
8061821	C_N	Spiked Blank	Orthophosphate (P)	2022/06/20		99	%	80 - 120
8061821	C_N	Method Blank	Orthophosphate (P)	2022/06/20	<0.010		mg/L	
8061821	C_N	RPD [SXE906-01]	Orthophosphate (P)	2022/06/20	NC		%	25
8061824	C_N	Matrix Spike [SXE906-01]	Dissolved Sulphate (SO4)	2022/06/20		NC	%	75 - 125
8061824	C_N	Spiked Blank	Dissolved Sulphate (SO4)	2022/06/20		108	%	80 - 120
8061824	C_N	Method Blank	Dissolved Sulphate (SO4)	2022/06/20	<1.0		mg/L	
8061824	C_N	RPD [SXE906-01]	Dissolved Sulphate (SO4)	2022/06/20	1.1		%	20
8061828	ADB	Matrix Spike [SXE906-01]	Dissolved Chloride (Cl-)	2022/06/20		119	%	80 - 120
8061828	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/06/20		107	%	80 - 120
8061828	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/06/20	<1.0		mg/L	
8061828	ADB	RPD [SXE906-01]	Dissolved Chloride (Cl-)	2022/06/20	1.0		%	20
8063093	RKF	Matrix Spike [SXE904-04]	Total Ammonia-N	2022/06/20		99	%	75 - 125
8063093	RKF	Spiked Blank	Total Ammonia-N	2022/06/20		96	%	80 - 120
8063093	RKF	Method Blank	Total Ammonia-N	2022/06/20	<0.050		mg/L	
8063093	RKF	RPD [SXE904-04]	Total Ammonia-N	2022/06/20	11		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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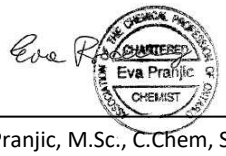
Bureau Veritas Job #: C2G4633
Report Date: 2022/06/22

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 21508089
Site#: MCCARTHY
Your C.O.C. #: 901520-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/11/07
Report #: R7378004
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2V7959
Received: 2022/10/31, 15:40

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	4	N/A	2022/11/02	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	4	N/A	2022/11/03	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	4	N/A	2022/11/04	CAM SOP-00463	SM 23 4500-Cl E m
Colour	3	N/A	2022/11/02	CAM SOP-00412	SM 23 2120C m
Colour	1	N/A	2022/11/03	CAM SOP-00412	SM 23 2120C m
Conductivity	4	N/A	2022/11/02	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	4	N/A	2022/11/02	CAM SOP-00446	SM 23 5310 B m
Fluoride	4	2022/11/01	2022/11/02	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	4	N/A	2022/11/03	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	4	N/A	2022/11/03	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	4	N/A	2022/11/07		
Anion and Cation Sum	4	N/A	2022/11/03		
Total Ammonia-N	4	N/A	2022/11/05	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	4	N/A	2022/11/04	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	4	2022/11/01	2022/11/02	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	4	N/A	2022/11/03	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	4	N/A	2022/11/07		Auto Calc
Sat. pH and Langelier Index (@ 4C)	4	N/A	2022/11/07		Auto Calc
Sulphate by Automated Colourimetry	4	N/A	2022/11/07	CAM SOP-00464	EPA 375.4 m
Tannins & Lignins	4	N/A	2022/11/03	CAM SOP-00410	SM 23 5550 B m
Total Dissolved Solids (TDS calc)	4	N/A	2022/11/07		Auto Calc
Turbidity	4	N/A	2022/11/02	CAM SOP-00417	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are

Your Project #: 21508089
Site#: MCCARTHY
Your C.O.C. #: 901520-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/11/07
Report #: R7378004
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2V7959

Received: 2022/10/31, 15:40

reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700

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This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C2V7959
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID			UDX634			UDX634			UDX635		
Sampling Date			2022/10/28 12:45			2022/10/28 12:45			2022/10/28 13:00		
COC Number			901520-01-01			901520-01-01			901520-01-01		
	UNITS	Criteria	DW1	RDL	QC Batch	DW1 Lab-Dup	RDL	QC Batch	DW2	RDL	QC Batch
Calculated Parameters											
Anion Sum	me/L	-	15.3	N/A	8317577				9.04	N/A	8317576
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	340	1.0	8316069				330	1.0	8316069
Calculated TDS	mg/L	-	850	1.0	8317585				500	1.0	8317585
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1.1	1.0	8316069				2.0	1.0	8316069
Cation Sum	me/L	-	16.8	N/A	8317577				9.93	N/A	8317576
Hardness (CaCO3)	mg/L	-	690	1.0	8316897				450	1.0	8316897
Ion Balance (% Difference)	%	-	4.68	N/A	8316922				4.68	N/A	8316922
Langelier Index (@ 20C)	N/A	-	0.862		8317580				0.987		8317580
Langelier Index (@ 4C)	N/A	-	0.616		8317584				0.740		8317584
Saturation pH (@ 20C)	N/A	-	6.68		8317580				6.83		8317580
Saturation pH (@ 4C)	N/A	-	6.92		8317584				7.08		8317584
Inorganics											
Total Ammonia-N	mg/L	-	<0.050	0.050	8324511				<0.050	0.050	8324511
Conductivity	umho/cm	-	1500	1.0	8318841				780	1.0	8318841
Dissolved Organic Carbon	mg/L	-	1.4	0.40	8321392	1.4	0.40	8321392	1.8	0.40	8321392
Orthophosphate (P)	mg/L	-	<0.010	0.010	8320273				<0.010	0.010	8320273
pH	pH	6.5:8.5	7.54		8318865				7.82		8318865
Dissolved Sulphate (SO4)	mg/L	-	32	1.0	8320279				68	1.0	8320279
Alkalinity (Total as CaCO3)	mg/L	-	340	1.0	8318859				330	1.0	8318859
Dissolved Chloride (Cl-)	mg/L	-	270	3.0	8320281				35	1.0	8320281
Nitrite (N)	mg/L	-	<0.010	0.010	8319325				<0.010	0.010	8319346
Nitrate (N)	mg/L	-	0.23	0.10	8319325				0.19	0.10	8319346
Nitrate + Nitrite (N)	mg/L	-	0.23	0.10	8319325				0.19	0.10	8319346
Metals											
Dissolved Aluminum (Al)	ug/L	-	5.8	4.9	8323545				7.0	4.9	8323545
Dissolved Antimony (Sb)	ug/L	20	<0.50	0.50	8323545				<0.50	0.50	8323545
Dissolved Arsenic (As)	ug/L	100	<1.0	1.0	8323545				<1.0	1.0	8323545
Dissolved Barium (Ba)	ug/L	-	210	2.0	8323545				86	2.0	8323545

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Bureau Veritas Job #: C2V7959
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID			UDX634			UDX634			UDX635		
Sampling Date			2022/10/28 12:45			2022/10/28 12:45			2022/10/28 13:00		
COC Number			901520-01-01			901520-01-01			901520-01-01		
	UNITS	Criteria	DW1	RDL	QC Batch	DW1 Lab-Dup	RDL	QC Batch	DW2	RDL	QC Batch
Dissolved Beryllium (Be)	ug/L	11	<0.40	0.40	8323545				<0.40	0.40	8323545
Dissolved Boron (B)	ug/L	200	48	10	8323545				19	10	8323545
Dissolved Cadmium (Cd)	ug/L	0.2	<0.090	0.090	8323545				<0.090	0.090	8323545
Dissolved Calcium (Ca)	ug/L	-	210000	200	8323545				130000	200	8323545
Dissolved Chromium (Cr)	ug/L	-	<5.0	5.0	8323545				<5.0	5.0	8323545
Dissolved Cobalt (Co)	ug/L	0.9	<0.50	0.50	8323545				<0.50	0.50	8323545
Dissolved Copper (Cu)	ug/L	5	**25**	0.90	8323545				2.4	0.90	8323545
Dissolved Iron (Fe)	ug/L	300	<100	100	8323545				<100	100	8323545
Dissolved Lead (Pb)	ug/L	5	<0.50	0.50	8323545				<0.50	0.50	8323545
Dissolved Magnesium (Mg)	ug/L	-	42000	50	8323545				29000	50	8323545
Dissolved Manganese (Mn)	ug/L	-	35	2.0	8323545				50	2.0	8323545
Dissolved Molybdenum (Mo)	ug/L	40	<0.50	0.50	8323545				0.56	0.50	8323545
Dissolved Nickel (Ni)	ug/L	25	<1.0	1.0	8323545				1.9	1.0	8323545
Dissolved Phosphorus (P)	ug/L	-	100	100	8323545				110	100	8323545
Dissolved Potassium (K)	ug/L	-	2200	200	8323545				5900	200	8323545
Dissolved Selenium (Se)	ug/L	100	<2.0	2.0	8323545				<2.0	2.0	8323545
Dissolved Silicon (Si)	ug/L	-	9800	50	8323545				7700	50	8323545
Dissolved Silver (Ag)	ug/L	0.1	<0.090	0.090	8323545				<0.090	0.090	8323545
Dissolved Sodium (Na)	ug/L	-	66000	100	8323545				19000	100	8323545
Dissolved Strontium (Sr)	ug/L	-	670	1.0	8323545				440	1.0	8323545
Dissolved Thallium (Tl)	ug/L	0.3	<0.050	0.050	8323545				<0.050	0.050	8323545
Dissolved Titanium (Ti)	ug/L	-	<5.0	5.0	8323545				<5.0	5.0	8323545
Dissolved Uranium (U)	ug/L	5	1.5	0.10	8323545				0.72	0.10	8323545
Dissolved Vanadium (V)	ug/L	6	<0.50	0.50	8323545				<0.50	0.50	8323545
Dissolved Zinc (Zn)	ug/L	30	10	5.0	8323545				11	5.0	8323545

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID			UDX636		UDX637		
Sampling Date			2022/10/28 09:30		2022/10/28		
COC Number			901520-01-01		901520-01-01		
	UNITS	Criteria	DW3	QC Batch	DUP 1	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	-	8.81	8317577	8.70	N/A	8317576
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	240	8316069	240	1.0	8316069
Calculated TDS	mg/L	-	490	8317585	490	1.0	8317585
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	3.1	8316069	2.9	1.0	8316069
Cation Sum	me/L	-	9.58	8317577	9.46	N/A	8317576
Hardness (CaCO3)	mg/L	-	190	8316897	180	1.0	8316897
Ion Balance (% Difference)	%	-	4.19	8316922	4.18	N/A	8316922
Langelier Index (@ 20C)	N/A	-	0.574	8317580	0.541		8317579
Langelier Index (@ 4C)	N/A	-	0.326	8317584	0.293		8317582
Saturation pH (@ 20C)	N/A	-	7.56	8317580	7.57		8317579
Saturation pH (@ 4C)	N/A	-	7.81	8317584	7.82		8317582
Inorganics							
Total Ammonia-N	mg/L	-	0.31	8324511	0.32	0.050	8324511
Conductivity	umho/cm	-	890	8318841	880	1.0	8318841
Dissolved Organic Carbon	mg/L	-	0.51	8321392	0.56	0.40	8321392
Orthophosphate (P)	mg/L	-	<0.010	8320273	<0.010	0.010	8320273
pH	pH	6.5:8.5	8.14	8318865	8.11		8318865
Dissolved Sulphate (SO4)	mg/L	-	2.5	8320279	2.3	1.0	8320279
Alkalinity (Total as CaCO3)	mg/L	-	240	8318859	240	1.0	8318859
Dissolved Chloride (Cl-)	mg/L	-	140	8320281	140	2.0	8320281
Nitrite (N)	mg/L	-	<0.010	8319346	<0.010	0.010	8319346
Nitrate (N)	mg/L	-	<0.10	8319346	<0.10	0.10	8319346
Nitrate + Nitrite (N)	mg/L	-	<0.10	8319346	<0.10	0.10	8319346
Metals							
Dissolved Aluminum (Al)	ug/L	-	<4.9	8323545	<4.9	4.9	8323545
Dissolved Antimony (Sb)	ug/L	20	<0.50	8323545	<0.50	0.50	8323545
Dissolved Arsenic (As)	ug/L	100	<1.0	8323545	<1.0	1.0	8323545
Dissolved Barium (Ba)	ug/L	-	220	8323545	230	2.0	8323545
Dissolved Beryllium (Be)	ug/L	11	<0.40	8323545	<0.40	0.40	8323545

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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RCAP - COMPREHENSIVE (WATER)

Bureau Veritas ID			UDX636		UDX637		
Sampling Date			2022/10/28 09:30		2022/10/28		
COC Number			901520-01-01		901520-01-01		
	UNITS	Criteria	DW3	QC Batch	DUP 1	RDL	QC Batch
Dissolved Boron (B)	ug/L	200	**870**	8323545	**870**	10	8323545
Dissolved Cadmium (Cd)	ug/L	0.2	<0.090	8323545	<0.090	0.090	8323545
Dissolved Calcium (Ca)	ug/L	-	33000	8323545	33000	200	8323545
Dissolved Chromium (Cr)	ug/L	-	<5.0	8323545	<5.0	5.0	8323545
Dissolved Cobalt (Co)	ug/L	0.9	<0.50	8323545	<0.50	0.50	8323545
Dissolved Copper (Cu)	ug/L	5	1.8	8323545	2.0	0.90	8323545
Dissolved Iron (Fe)	ug/L	300	<100	8323545	<100	100	8323545
Dissolved Lead (Pb)	ug/L	5	<0.50	8323545	<0.50	0.50	8323545
Dissolved Magnesium (Mg)	ug/L	-	25000	8323545	25000	50	8323545
Dissolved Manganese (Mn)	ug/L	-	3.6	8323545	3.5	2.0	8323545
Dissolved Molybdenum (Mo)	ug/L	40	<0.50	8323545	<0.50	0.50	8323545
Dissolved Nickel (Ni)	ug/L	25	<1.0	8323545	<1.0	1.0	8323545
Dissolved Phosphorus (P)	ug/L	-	<100	8323545	<100	100	8323545
Dissolved Potassium (K)	ug/L	-	7600	8323545	7600	200	8323545
Dissolved Selenium (Se)	ug/L	100	<2.0	8323545	<2.0	2.0	8323545
Dissolved Silicon (Si)	ug/L	-	5800	8323545	5500	50	8323545
Dissolved Silver (Ag)	ug/L	0.1	<0.090	8323545	<0.090	0.090	8323545
Dissolved Sodium (Na)	ug/L	-	130000	8323545	130000	100	8323545
Dissolved Strontium (Sr)	ug/L	-	2500	8323545	2500	1.0	8323545
Dissolved Thallium (Tl)	ug/L	0.3	<0.050	8323545	<0.050	0.050	8323545
Dissolved Titanium (Ti)	ug/L	-	<5.0	8323545	<5.0	5.0	8323545
Dissolved Uranium (U)	ug/L	5	<0.10	8323545	<0.10	0.10	8323545
Dissolved Vanadium (V)	ug/L	6	<0.50	8323545	<0.50	0.50	8323545
Dissolved Zinc (Zn)	ug/L	30	**41**	8323545	**42**	5.0	8323545

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V7959
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		UDX634			UDX634			UDX635	UDX636		
Sampling Date		2022/10/28 12:45			2022/10/28 12:45			2022/10/28 13:00	2022/10/28 09:30		
COC Number		901520-01-01			901520-01-01			901520-01-01	901520-01-01		
	UNITS	DW1	RDL	QC Batch	DW1 Lab-Dup	RDL	QC Batch	DW2	DW3	RDL	QC Batch
Inorganics											
Colour	TCU	<2	2	8321978	<2	2	8321978	<2	<2	2	8320300
Fluoride (F-)	mg/L	<0.10	0.10	8318852				<0.10	0.80	0.10	8318852
Tannins & Lignins	mg/L	<0.2	0.2	8320949				<0.2	<0.2	0.2	8320949
Turbidity	NTU	0.2	0.1	8319286				0.8	0.3	0.1	8319286

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		UDX637			UDX637		
Sampling Date		2022/10/28			2022/10/28		
COC Number		901520-01-01			901520-01-01		
	UNITS	DUP 1	RDL	QC Batch	DUP 1 Lab-Dup	RDL	QC Batch
Inorganics							
Colour	TCU	<2	2	8320300	<2	2	8320300
Fluoride (F-)	mg/L	0.80	0.10	8318852			
Tannins & Lignins	mg/L	<0.2	0.2	8320949			
Turbidity	NTU	0.2	0.1	8319286			

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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TEST SUMMARY

Bureau Veritas ID: UDX634 **Collected:** 2022/10/28
Sample ID: DW1 **Shipped:**
Matrix: Water **Received:** 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8318859	N/A	2022/11/02	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8316069	N/A	2022/11/03	Automated Statchk
Chloride by Automated Colourimetry	KONE	8320281	N/A	2022/11/04	Alina Dobreanu
Colour	SPEC	8321978	N/A	2022/11/03	Viorica Rotaru
Conductivity	AT	8318841	N/A	2022/11/02	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz
Fluoride	ISE	8318852	2022/11/01	2022/11/02	Kien Tran
Hardness (calculated as CaCO3)		8316897	N/A	2022/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8323545	N/A	2022/11/03	Prempal Bhatti
Ion Balance (% Difference)	CALC	8316922	N/A	2022/11/07	Automated Statchk
Anion and Cation Sum	CALC	8317577	N/A	2022/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	8324511	N/A	2022/11/05	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8319325	N/A	2022/11/04	Chandra Nandlal
pH	AT	8318865	2022/11/01	2022/11/02	Kien Tran
Orthophosphate	KONE	8320273	N/A	2022/11/03	Samuel Law
Sat. pH and Langelier Index (@ 20C)	CALC	8317580	N/A	2022/11/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	8317584	N/A	2022/11/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8320279	N/A	2022/11/07	Samuel Law
Tannins & Lignins	SPEC	8320949	N/A	2022/11/03	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	8317585	N/A	2022/11/07	Automated Statchk
Turbidity	AT	8319286	N/A	2022/11/02	Surinder Rai

Bureau Veritas ID: UDX634 Dup **Collected:** 2022/10/28
Sample ID: DW1 **Shipped:**
Matrix: Water **Received:** 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	8321978	N/A	2022/11/03	Viorica Rotaru
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz

Bureau Veritas ID: UDX635 **Collected:** 2022/10/28
Sample ID: DW2 **Shipped:**
Matrix: Water **Received:** 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8318859	N/A	2022/11/02	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8316069	N/A	2022/11/03	Automated Statchk
Chloride by Automated Colourimetry	KONE	8320281	N/A	2022/11/04	Alina Dobreanu
Colour	SPEC	8320300	N/A	2022/11/02	Viorica Rotaru
Conductivity	AT	8318841	N/A	2022/11/02	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz
Fluoride	ISE	8318852	2022/11/01	2022/11/02	Kien Tran
Hardness (calculated as CaCO3)		8316897	N/A	2022/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8323545	N/A	2022/11/03	Prempal Bhatti
Ion Balance (% Difference)	CALC	8316922	N/A	2022/11/07	Automated Statchk

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TEST SUMMARY

Bureau Veritas ID: UDX635 **Collected:** 2022/10/28
Sample ID: DW2 **Shipped:**
Matrix: Water **Received:** 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Anion and Cation Sum	CALC	8317576	N/A	2022/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	8324511	N/A	2022/11/05	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8319346	N/A	2022/11/04	Chandra Nandlal
pH	AT	8318865	2022/11/01	2022/11/02	Kien Tran
Orthophosphate	KONE	8320273	N/A	2022/11/03	Samuel Law
Sat. pH and Langelier Index (@ 20C)	CALC	8317580	N/A	2022/11/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	8317584	N/A	2022/11/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8320279	N/A	2022/11/07	Samuel Law
Tannins & Lignins	SPEC	8320949	N/A	2022/11/03	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	8317585	N/A	2022/11/07	Automated Statchk
Turbidity	AT	8319286	N/A	2022/11/02	Surinder Rai

Bureau Veritas ID: UDX636 **Collected:** 2022/10/28
Sample ID: DW3 **Shipped:**
Matrix: Water **Received:** 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8318859	N/A	2022/11/02	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8316069	N/A	2022/11/03	Automated Statchk
Chloride by Automated Colourimetry	KONE	8320281	N/A	2022/11/04	Alina Dobreanu
Colour	SPEC	8320300	N/A	2022/11/02	Viorica Rotaru
Conductivity	AT	8318841	N/A	2022/11/02	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz
Fluoride	ISE	8318852	2022/11/01	2022/11/02	Kien Tran
Hardness (calculated as CaCO3)		8316897	N/A	2022/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8323545	N/A	2022/11/03	Prempal Bhatti
Ion Balance (% Difference)	CALC	8316922	N/A	2022/11/07	Automated Statchk
Anion and Cation Sum	CALC	8317577	N/A	2022/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	8324511	N/A	2022/11/05	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8319346	N/A	2022/11/04	Chandra Nandlal
pH	AT	8318865	2022/11/01	2022/11/02	Kien Tran
Orthophosphate	KONE	8320273	N/A	2022/11/03	Samuel Law
Sat. pH and Langelier Index (@ 20C)	CALC	8317580	N/A	2022/11/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	8317584	N/A	2022/11/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8320279	N/A	2022/11/07	Samuel Law
Tannins & Lignins	SPEC	8320949	N/A	2022/11/03	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	8317585	N/A	2022/11/07	Automated Statchk
Turbidity	AT	8319286	N/A	2022/11/02	Surinder Rai

Bureau Veritas ID: UDX637 **Collected:** 2022/10/28
Sample ID: DUP 1 **Shipped:**
Matrix: Water **Received:** 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8318859	N/A	2022/11/02	Kien Tran

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Bureau Veritas Job #: C2V7959
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: UDX637
Sample ID: DUP 1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbonate, Bicarbonate and Hydroxide	CALC	8316069	N/A	2022/11/03	Automated Statchk
Chloride by Automated Colourimetry	KONE	8320281	N/A	2022/11/04	Alina Dobreanu
Colour	SPEC	8320300	N/A	2022/11/02	Viorica Rotaru
Conductivity	AT	8318841	N/A	2022/11/02	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz
Fluoride	ISE	8318852	2022/11/01	2022/11/02	Kien Tran
Hardness (calculated as CaCO3)		8316897	N/A	2022/11/03	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8323545	N/A	2022/11/03	Prempal Bhatti
Ion Balance (% Difference)	CALC	8316922	N/A	2022/11/07	Automated Statchk
Anion and Cation Sum	CALC	8317576	N/A	2022/11/03	Automated Statchk
Total Ammonia-N	LACH/NH4	8324511	N/A	2022/11/05	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8319346	N/A	2022/11/04	Chandra Nandlal
pH	AT	8318865	2022/11/01	2022/11/02	Kien Tran
Orthophosphate	KONE	8320273	N/A	2022/11/03	Samuel Law
Sat. pH and Langelier Index (@ 20C)	CALC	8317579	N/A	2022/11/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	8317582	N/A	2022/11/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8320279	N/A	2022/11/07	Samuel Law
Tannins & Lignins	SPEC	8320949	N/A	2022/11/03	Viorica Rotaru
Total Dissolved Solids (TDS calc)	CALC	8317585	N/A	2022/11/07	Automated Statchk
Turbidity	AT	8319286	N/A	2022/11/02	Surinder Rai

Bureau Veritas ID: UDX637 Dup
Sample ID: DUP 1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	8320300	N/A	2022/11/02	Viorica Rotaru

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8318841	KIT	Spiked Blank	Conductivity	2022/11/02		103	%	85 - 115
8318841	KIT	Method Blank	Conductivity	2022/11/02	<1.0		umho/cm	
8318841	KIT	RPD	Conductivity	2022/11/02	2.2		%	25
8318852	KIT	Matrix Spike	Fluoride (F-)	2022/11/02		100	%	80 - 120
8318852	KIT	Spiked Blank	Fluoride (F-)	2022/11/02		101	%	80 - 120
8318852	KIT	Method Blank	Fluoride (F-)	2022/11/02	<0.10		mg/L	
8318852	KIT	RPD	Fluoride (F-)	2022/11/02	1.9		%	20
8318859	KIT	Spiked Blank	Alkalinity (Total as CaCO3)	2022/11/02		97	%	85 - 115
8318859	KIT	Method Blank	Alkalinity (Total as CaCO3)	2022/11/02	<1.0		mg/L	
8318859	KIT	RPD	Alkalinity (Total as CaCO3)	2022/11/02	0.34		%	20
8318865	KIT	Spiked Blank	pH	2022/11/02		102	%	98 - 103
8318865	KIT	RPD	pH	2022/11/02	0.39		%	N/A
8319286	SAU	Spiked Blank	Turbidity	2022/11/02		114	%	85 - 115
8319286	SAU	Method Blank	Turbidity	2022/11/02	0.4, RDL=0.1		NTU	
8319286	SAU	RPD	Turbidity	2022/11/02	1.5		%	20
8319325	C_N	Matrix Spike	Nitrite (N)	2022/11/04		102	%	80 - 120
			Nitrate (N)	2022/11/04		95	%	80 - 120
8319325	C_N	Spiked Blank	Nitrite (N)	2022/11/04		106	%	80 - 120
			Nitrate (N)	2022/11/04		97	%	80 - 120
8319325	C_N	Method Blank	Nitrite (N)	2022/11/04	<0.010		mg/L	
			Nitrate (N)	2022/11/04	<0.10		mg/L	
8319325	C_N	RPD	Nitrate (N)	2022/11/04	NC		%	20
8319346	C_N	Matrix Spike	Nitrite (N)	2022/11/04		103	%	80 - 120
			Nitrate (N)	2022/11/04		97	%	80 - 120
8319346	C_N	Spiked Blank	Nitrite (N)	2022/11/04		106	%	80 - 120
			Nitrate (N)	2022/11/04		99	%	80 - 120
8319346	C_N	Method Blank	Nitrite (N)	2022/11/04	<0.010		mg/L	
			Nitrate (N)	2022/11/04	<0.10		mg/L	
8319346	C_N	RPD	Nitrite (N)	2022/11/04	16		%	20
			Nitrate (N)	2022/11/04	0.078		%	20
8320273	S1L	Matrix Spike	Orthophosphate (P)	2022/11/03		105	%	75 - 125
8320273	S1L	Spiked Blank	Orthophosphate (P)	2022/11/03		102	%	80 - 120
8320273	S1L	Method Blank	Orthophosphate (P)	2022/11/03	<0.010		mg/L	
8320273	S1L	RPD	Orthophosphate (P)	2022/11/03	NC		%	25
8320279	S1L	Matrix Spike	Dissolved Sulphate (SO4)	2022/11/07		NC	%	75 - 125
8320279	S1L	Spiked Blank	Dissolved Sulphate (SO4)	2022/11/07		108	%	80 - 120
8320279	S1L	Method Blank	Dissolved Sulphate (SO4)	2022/11/07	<1.0		mg/L	
8320279	S1L	RPD	Dissolved Sulphate (SO4)	2022/11/07	NC		%	20
8320281	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/11/04		119	%	80 - 120
8320281	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/11/04		103	%	80 - 120
8320281	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/11/04	<1.0		mg/L	
8320281	ADB	RPD	Dissolved Chloride (Cl-)	2022/11/04	0.14		%	20
8320300	VRO	Spiked Blank	Colour	2022/11/02		98	%	80 - 120
8320300	VRO	Method Blank	Colour	2022/11/02	<2		TCU	
8320300	VRO	RPD [UDX637-01]	Colour	2022/11/02	NC		%	25
8320949	VRO	Matrix Spike	Tannins & Lignins	2022/11/03		101	%	80 - 120
8320949	VRO	Spiked Blank	Tannins & Lignins	2022/11/03		99	%	80 - 120
8320949	VRO	Method Blank	Tannins & Lignins	2022/11/03	<0.2		mg/L	
8320949	VRO	RPD	Tannins & Lignins	2022/11/03	NC		%	20
8321392	GID	Matrix Spike [UDX634-02]	Dissolved Organic Carbon	2022/11/02		97	%	80 - 120
8321392	GID	Spiked Blank	Dissolved Organic Carbon	2022/11/02		98	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8321392	GID	Method Blank	Dissolved Organic Carbon	2022/11/02	<0.40		mg/L	
8321392	GID	RPD [UDX634-02]	Dissolved Organic Carbon	2022/11/02	2.0		%	20
8321978	VRO	Spiked Blank	Colour	2022/11/03		103	%	80 - 120
8321978	VRO	Method Blank	Colour	2022/11/03	<2		TCU	
8321978	VRO	RPD [UDX634-01]	Colour	2022/11/03	NC		%	25
8323545	PBA	Matrix Spike	Dissolved Aluminum (Al)	2022/11/03		103	%	80 - 120
			Dissolved Antimony (Sb)	2022/11/03		112	%	80 - 120
			Dissolved Arsenic (As)	2022/11/03		105	%	80 - 120
			Dissolved Barium (Ba)	2022/11/03		105	%	80 - 120
			Dissolved Beryllium (Be)	2022/11/03		104	%	80 - 120
			Dissolved Boron (B)	2022/11/03		101	%	80 - 120
			Dissolved Cadmium (Cd)	2022/11/03		107	%	80 - 120
			Dissolved Calcium (Ca)	2022/11/03		NC	%	80 - 120
			Dissolved Chromium (Cr)	2022/11/03		104	%	80 - 120
			Dissolved Cobalt (Co)	2022/11/03		104	%	80 - 120
			Dissolved Copper (Cu)	2022/11/03		103	%	80 - 120
			Dissolved Iron (Fe)	2022/11/03		107	%	80 - 120
			Dissolved Lead (Pb)	2022/11/03		102	%	80 - 120
			Dissolved Magnesium (Mg)	2022/11/03		NC	%	80 - 120
			Dissolved Manganese (Mn)	2022/11/03		103	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/11/03		114	%	80 - 120
			Dissolved Nickel (Ni)	2022/11/03		101	%	80 - 120
			Dissolved Phosphorus (P)	2022/11/03		101	%	80 - 120
			Dissolved Potassium (K)	2022/11/03		107	%	80 - 120
			Dissolved Selenium (Se)	2022/11/03		106	%	80 - 120
			Dissolved Silicon (Si)	2022/11/03		106	%	80 - 120
			Dissolved Silver (Ag)	2022/11/03		75 (1)	%	80 - 120
			Dissolved Sodium (Na)	2022/11/03		NC	%	80 - 120
			Dissolved Strontium (Sr)	2022/11/03		NC	%	80 - 120
			Dissolved Thallium (Tl)	2022/11/03		106	%	80 - 120
			Dissolved Titanium (Ti)	2022/11/03		107	%	80 - 120
			Dissolved Uranium (U)	2022/11/03		108	%	80 - 120
			Dissolved Vanadium (V)	2022/11/03		107	%	80 - 120
			Dissolved Zinc (Zn)	2022/11/03		101	%	80 - 120
8323545	PBA	Spiked Blank	Dissolved Aluminum (Al)	2022/11/03		102	%	80 - 120
			Dissolved Antimony (Sb)	2022/11/03		109	%	80 - 120
			Dissolved Arsenic (As)	2022/11/03		102	%	80 - 120
			Dissolved Barium (Ba)	2022/11/03		104	%	80 - 120
			Dissolved Beryllium (Be)	2022/11/03		103	%	80 - 120
			Dissolved Boron (B)	2022/11/03		100	%	80 - 120
			Dissolved Cadmium (Cd)	2022/11/03		106	%	80 - 120
			Dissolved Calcium (Ca)	2022/11/03		104	%	80 - 120
			Dissolved Chromium (Cr)	2022/11/03		102	%	80 - 120
			Dissolved Cobalt (Co)	2022/11/03		104	%	80 - 120
			Dissolved Copper (Cu)	2022/11/03		102	%	80 - 120
			Dissolved Iron (Fe)	2022/11/03		106	%	80 - 120
			Dissolved Lead (Pb)	2022/11/03		103	%	80 - 120
			Dissolved Magnesium (Mg)	2022/11/03		104	%	80 - 120
			Dissolved Manganese (Mn)	2022/11/03		103	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/11/03		109	%	80 - 120
			Dissolved Nickel (Ni)	2022/11/03		103	%	80 - 120
			Dissolved Phosphorus (P)	2022/11/03		118	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Potassium (K)	2022/11/03		105	%	80 - 120
			Dissolved Selenium (Se)	2022/11/03		103	%	80 - 120
			Dissolved Silicon (Si)	2022/11/03		105	%	80 - 120
			Dissolved Silver (Ag)	2022/11/03		104	%	80 - 120
			Dissolved Sodium (Na)	2022/11/03		104	%	80 - 120
			Dissolved Strontium (Sr)	2022/11/03		106	%	80 - 120
			Dissolved Thallium (Tl)	2022/11/03		105	%	80 - 120
			Dissolved Titanium (Ti)	2022/11/03		104	%	80 - 120
			Dissolved Uranium (U)	2022/11/03		105	%	80 - 120
			Dissolved Vanadium (V)	2022/11/03		104	%	80 - 120
			Dissolved Zinc (Zn)	2022/11/03		103	%	80 - 120
8323545	PBA	Method Blank	Dissolved Aluminum (Al)	2022/11/03	<4.9		ug/L	
			Dissolved Antimony (Sb)	2022/11/03	<0.50		ug/L	
			Dissolved Arsenic (As)	2022/11/03	<1.0		ug/L	
			Dissolved Barium (Ba)	2022/11/03	<2.0		ug/L	
			Dissolved Beryllium (Be)	2022/11/03	<0.40		ug/L	
			Dissolved Boron (B)	2022/11/03	<10		ug/L	
			Dissolved Cadmium (Cd)	2022/11/03	<0.090		ug/L	
			Dissolved Calcium (Ca)	2022/11/03	<200		ug/L	
			Dissolved Chromium (Cr)	2022/11/03	<5.0		ug/L	
			Dissolved Cobalt (Co)	2022/11/03	<0.50		ug/L	
			Dissolved Copper (Cu)	2022/11/03	<0.90		ug/L	
			Dissolved Iron (Fe)	2022/11/03	<100		ug/L	
			Dissolved Lead (Pb)	2022/11/03	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2022/11/03	<50		ug/L	
			Dissolved Manganese (Mn)	2022/11/03	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2022/11/03	<0.50		ug/L	
			Dissolved Nickel (Ni)	2022/11/03	<1.0		ug/L	
			Dissolved Phosphorus (P)	2022/11/03	<100		ug/L	
			Dissolved Potassium (K)	2022/11/03	<200		ug/L	
			Dissolved Selenium (Se)	2022/11/03	<2.0		ug/L	
			Dissolved Silicon (Si)	2022/11/03	<50		ug/L	
			Dissolved Silver (Ag)	2022/11/03	<0.090		ug/L	
			Dissolved Sodium (Na)	2022/11/03	<100		ug/L	
			Dissolved Strontium (Sr)	2022/11/03	<1.0		ug/L	
			Dissolved Thallium (Tl)	2022/11/03	<0.050		ug/L	
			Dissolved Titanium (Ti)	2022/11/03	<5.0		ug/L	
			Dissolved Uranium (U)	2022/11/03	<0.10		ug/L	
			Dissolved Vanadium (V)	2022/11/03	<0.50		ug/L	
			Dissolved Zinc (Zn)	2022/11/03	<5.0		ug/L	
8323545	PBA	RPD	Dissolved Antimony (Sb)	2022/11/03	NC		%	20
			Dissolved Arsenic (As)	2022/11/03	NC		%	20
			Dissolved Barium (Ba)	2022/11/03	0.69		%	20
			Dissolved Beryllium (Be)	2022/11/03	NC		%	20
			Dissolved Boron (B)	2022/11/03	1.6		%	20
			Dissolved Cadmium (Cd)	2022/11/03	9.5		%	20
			Dissolved Chromium (Cr)	2022/11/03	NC		%	20
			Dissolved Cobalt (Co)	2022/11/03	1.8		%	20
			Dissolved Copper (Cu)	2022/11/03	NC		%	20
			Dissolved Lead (Pb)	2022/11/03	NC		%	20
			Dissolved Molybdenum (Mo)	2022/11/03	7.1		%	20
			Dissolved Nickel (Ni)	2022/11/03	8.0		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Selenium (Se)	2022/11/03	NC		%	20
			Dissolved Silver (Ag)	2022/11/03	NC		%	20
			Dissolved Sodium (Na)	2022/11/03	0.42		%	20
			Dissolved Thallium (Tl)	2022/11/03	NC		%	20
			Dissolved Uranium (U)	2022/11/03	2.3		%	20
			Dissolved Vanadium (V)	2022/11/03	NC		%	20
			Dissolved Zinc (Zn)	2022/11/03	11		%	20
8324511	ASP	Matrix Spike	Total Ammonia-N	2022/11/05		99	%	75 - 125
8324511	ASP	Spiked Blank	Total Ammonia-N	2022/11/05		101	%	80 - 120
8324511	ASP	Method Blank	Total Ammonia-N	2022/11/05	<0.050		mg/L	
8324511	ASP	RPD	Total Ammonia-N	2022/11/05	NC		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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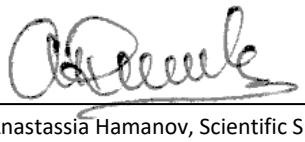
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

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Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
DW1	UDX634-04	Dissolved Copper (Cu)	5	25	0.90	ug/L
DW3	UDX636-04	Dissolved Boron (B)	200	870	10	ug/L
DW3	UDX636-04	Dissolved Zinc (Zn)	30	41	5.0	ug/L
DUP 1	UDX637-04	Dissolved Boron (B)	200	870	10	ug/L
DUP 1	UDX637-04	Dissolved Zinc (Zn)	30	42	5.0	ug/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 901522-01-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/11/07
Report #: R7378001
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2V7988
Received: 2022/10/31, 15:40

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	3	N/A	2022/11/02	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	3	N/A	2022/11/03	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	3	N/A	2022/11/04	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	3	N/A	2022/11/02	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2022/11/02	CAM SOP-00446	SM 23 5310 B m
Fluoride	3	2022/11/01	2022/11/02	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	3	N/A	2022/11/04	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals Analysis by ICP	3	2022/11/02	2022/11/04	CAM SOP-00408	EPA 6010D m
Total Metals Analysis by ICPMS	3	N/A	2022/11/03	CAM SOP-00447	EPA 6020B m
Anion and Cation Sum	3	N/A	2022/11/04		
Total Ammonia-N	3	N/A	2022/11/05	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	3	N/A	2022/11/04	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Animal and Vegetable Oil and Grease	3	N/A	2022/11/06	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	3	2022/11/06	2022/11/06	CAM SOP-00326	EPA1664B m,SM5520B m
pH	3	2022/11/01	2022/11/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	3	N/A	2022/11/04	CAM SOP-00444	OMOE E3179 m
Orthophosphate	3	N/A	2022/11/03	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	3	N/A	2022/11/04		Auto Calc
Sat. pH and Langelier Index (@ 4C)	3	N/A	2022/11/04		Auto Calc
Sulphate by Automated Colourimetry	3	N/A	2022/11/07	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	3	2022/11/02	2022/11/03	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	3	2022/11/02	2022/11/02	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	3	2022/11/02	2022/11/02	CAM SOP-00407	SM 23 4500-P I
Mineral/Synthetic O & G (TPH Heavy Oil) (3)	3	2022/11/06	2022/11/06	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids	3	2022/11/02	2022/11/03	CAM SOP-00428	SM 23 2540D m
Turbidity	3	N/A	2022/11/02	CAM SOP-00417	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau

Your Project #: 21508089
Site Location: MCCARTHY
Your C.O.C. #: 901522-01-01

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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2V7988
Received: 2022/10/31, 15:40

Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.
(3) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

OIL & GREASE - A/V/M/T (WATER)

Bureau Veritas ID			UDX806	UDX807	UDX808		
Sampling Date			2022/10/28 11:30	2022/10/28 11:30	2022/10/28		
COC Number			901522-01-01	901522-01-01	901522-01-01		
	UNITS	Criteria	POND	SW1	DUP 3	RDL	QC Batch
Calculated Parameters							
Total Animal/Vegetable Oil and Grease	mg/L	-	0.60	1.3	0.80	0.50	8316617
Petroleum Hydrocarbons							
Total Oil & Grease	mg/L	-	0.60	1.3	1.3	0.50	8329463
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	<0.50	0.50	0.50	8329467

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDX806			UDX806		
Sampling Date			2022/10/28 11:30			2022/10/28 11:30		
COC Number			901522-01-01			901522-01-01		
	UNITS	Criteria	POND	RDL	QC Batch	POND Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	16.5	N/A	8317577			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	110	1.0	8316069			
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1.0	1.0	8316069			
Cation Sum	me/L	-	17.2	N/A	8317577			
Hardness (CaCO3)	mg/L	-	470	1.0	8316897			
Langelier Index (@ 20C)	N/A	-	0.485		8317580			
Langelier Index (@ 4C)	N/A	-	0.239		8317584			
Saturation pH (@ 20C)	N/A	-	7.53		8317580			
Saturation pH (@ 4C)	N/A	-	7.77		8317584			
Inorganics								
Total Ammonia-N	mg/L	-	0.17	0.050	8324582			
Conductivity	umho/cm	-	1600	1.0	8318841			
Total Dissolved Solids	mg/L	-	1080	10	8321805	1090	10	8321805
Fluoride (F-)	mg/L	-	0.59	0.10	8318852			
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.65	0.10	8321959			
Dissolved Organic Carbon	mg/L	-	7.4	0.40	8321392			
Orthophosphate (P)	mg/L	-	<0.010	0.010	8320273			
pH	pH	6.5:8.5	8.01		8318865			
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	8326458			
Total Phosphorus	mg/L	0.01	**0.019**	0.004	8319206			
Total Suspended Solids	mg/L	-	<10	10	8321801			
Dissolved Sulphate (SO4)	mg/L	-	330	1.0	8320279			
Turbidity	NTU	-	3.5	0.1	8319286			
Alkalinity (Total as CaCO3)	mg/L	-	110	1.0	8318859			
Dissolved Chloride (Cl-)	mg/L	-	270	3.0	8320281			
Nitrite (N)	mg/L	-	<0.010	0.010	8319325			
Nitrate (N)	mg/L	-	<0.10	0.10	8319325			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDX807		UDX808		
Sampling Date			2022/10/28 11:30		2022/10/28		
COC Number			901522-01-01		901522-01-01		
	UNITS	Criteria	SW1	QC Batch	DUP 3	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	-	18.8	8317577	18.5	N/A	8317577
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	150	8316069	150	1.0	8316069
Carb. Alkalinity (calc. as CaCO3)	mg/L	-	1.1	8316069	1.2	1.0	8316069
Cation Sum	me/L	-	20.0	8317577	19.5	N/A	8317577
Hardness (CaCO3)	mg/L	-	600	8316897	590	1.0	8316897
Langelier Index (@ 20C)	N/A	-	0.713	8317580	0.719		8317580
Langelier Index (@ 4C)	N/A	-	0.468	8317584	0.474		8317584
Saturation pH (@ 20C)	N/A	-	7.20	8317580	7.21		8317580
Saturation pH (@ 4C)	N/A	-	7.44	8317584	7.46		8317584
Inorganics							
Total Ammonia-N	mg/L	-	0.15	8324582	0.13	0.050	8324582
Conductivity	umho/cm	-	1800	8318841	1800	1.0	8318841
Total Dissolved Solids	mg/L	-	1060	8321805	1070	10	8321805
Fluoride (F-)	mg/L	-	0.50	8318852	0.50	0.10	8318852
Total Kjeldahl Nitrogen (TKN)	mg/L	-	0.56	8321959	0.55	0.10	8321959
Dissolved Organic Carbon	mg/L	-	6.2	8321392	6.3	0.40	8321392
Orthophosphate (P)	mg/L	-	<0.010	8320273	<0.010	0.010	8320273
pH	pH	6.5:8.5	7.91	8318865	7.93		8318865
Phenols-4AAP	mg/L	0.001	<0.0010	8326458	<0.0010	0.0010	8326699
Total Phosphorus	mg/L	0.01	**0.021**	8319206	**0.020**	0.004	8319206
Total Suspended Solids	mg/L	-	12	8321416	<10	10	8321416
Dissolved Sulphate (SO4)	mg/L	-	370	8320279	370	1.0	8320279
Turbidity	NTU	-	3.2	8319286	3.6	0.1	8319286
Alkalinity (Total as CaCO3)	mg/L	-	150	8318859	150	1.0	8318859
Dissolved Chloride (Cl-)	mg/L	-	290	8320281	280	3.0	8320281
Nitrite (N)	mg/L	-	0.020	8319346	0.016	0.010	8319325
Nitrate (N)	mg/L	-	0.52	8319346	0.51	0.10	8319325

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999
N/A = Not Applicable

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			UDX806		UDX807			UDX807		
Sampling Date			2022/10/28 11:30		2022/10/28 11:30			2022/10/28 11:30		
COC Number			901522-01-01		901522-01-01			901522-01-01		
	UNITS	Criteria	POND	QC Batch	SW1	RDL	QC Batch	SW1 Lab-Dup	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	mg/L	-	99	8321931	150	0.05	8321931	150	0.05	8321931
Dissolved Magnesium (Mg)	mg/L	-	54	8321931	53	0.05	8321931	51	0.05	8321931
Dissolved Potassium (K)	mg/L	-	20	8321931	17	1	8321931	17	1	8321931
Dissolved Sodium (Na)	mg/L	-	170	8321931	170	0.5	8321931	170	0.5	8321931
Total Arsenic (As)	ug/L	100	<1.0	8323476	<1.0	1.0	8324011			
Total Cadmium (Cd)	ug/L	0.2	<0.090	8323476	<0.090	0.090	8324011			
Total Calcium (Ca)	ug/L	-	100000	8323476	160000	200	8324011			
Total Chromium (Cr)	ug/L	-	<5.0	8323476	<5.0	5.0	8324011			
Total Copper (Cu)	ug/L	5	<0.90	8323476	1.3	0.90	8324011			
Total Iron (Fe)	ug/L	300	**320**	8323476	300	100	8324011			
Total Lead (Pb)	ug/L	5	<0.50	8323476	<0.50	0.50	8324011			
Total Magnesium (Mg)	ug/L	-	54000	8323476	52000	50	8324011			
Total Manganese (Mn)	ug/L	-	130	8323476	65	2.0	8324011			
Total Nickel (Ni)	ug/L	25	1.7	8323476	1.6	1.0	8324011			
Total Potassium (K)	ug/L	-	19000	8323476	17000	200	8324011			
Total Sodium (Na)	ug/L	-	170000	8323476	170000	100	8324011			
Total Zinc (Zn)	ug/L	30	<5.0	8323476	5.2	5.0	8324011			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			UDX808		
Sampling Date			2022/10/28		
COC Number			901522-01-01		
	UNITS	Criteria	DUP 3	RDL	QC Batch
Metals					
Dissolved Calcium (Ca)	mg/L	-	150	0.05	8321931
Dissolved Magnesium (Mg)	mg/L	-	52	0.05	8321931
Dissolved Potassium (K)	mg/L	-	17	1	8321931
Dissolved Sodium (Na)	mg/L	-	170	0.5	8321931
Total Arsenic (As)	ug/L	100	<1.0	1.0	8324011
Total Cadmium (Cd)	ug/L	0.2	<0.090	0.090	8324011
Total Calcium (Ca)	ug/L	-	150000	200	8324011
Total Chromium (Cr)	ug/L	-	<5.0	5.0	8324011
Total Copper (Cu)	ug/L	5	1.0	0.90	8324011
Total Iron (Fe)	ug/L	300	290	100	8324011
Total Lead (Pb)	ug/L	5	<0.50	0.50	8324011
Total Magnesium (Mg)	ug/L	-	50000	50	8324011
Total Manganese (Mn)	ug/L	-	63	2.0	8324011
Total Nickel (Ni)	ug/L	25	1.4	1.0	8324011
Total Potassium (K)	ug/L	-	16000	200	8324011
Total Sodium (Na)	ug/L	-	170000	100	8324011
Total Zinc (Zn)	ug/L	30	<5.0	5.0	8324011

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: UDX806
Sample ID: POND
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8318859	N/A	2022/11/02	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8316069	N/A	2022/11/03	Automated Statchk
Chloride by Automated Colourimetry	KONE	8320281	N/A	2022/11/04	Alina Dobreanu
Conductivity	AT	8318841	N/A	2022/11/02	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz
Fluoride	ISE	8318852	2022/11/01	2022/11/02	Kien Tran
Hardness (calculated as CaCO3)		8316897	N/A	2022/11/04	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	8321931	2022/11/02	2022/11/04	Indira HarryPaul
Total Metals Analysis by ICPMS	ICP/MS	8323476	N/A	2022/11/03	Arefa Dabhad
Anion and Cation Sum	CALC	8317577	N/A	2022/11/04	Automated Statchk
Total Ammonia-N	LACH/NH4	8324582	N/A	2022/11/05	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8319325	N/A	2022/11/04	Chandra Nandlal
Animal and Vegetable Oil and Grease	BAL	8316617	N/A	2022/11/06	Automated Statchk
Total Oil and Grease	BAL	8329463	2022/11/06	2022/11/06	Navneet Singh
pH	AT	8318865	2022/11/01	2022/11/02	Kien Tran
Phenols (4AAP)	TECH/PHEN	8326458	N/A	2022/11/04	Mandeep Kaur
Orthophosphate	KONE	8320273	N/A	2022/11/03	Samuel Law
Sat. pH and Langelier Index (@ 20C)	CALC	8317580	N/A	2022/11/04	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	8317584	N/A	2022/11/04	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8320279	N/A	2022/11/07	Samuel Law
Total Dissolved Solids	BAL	8321805	2022/11/02	2022/11/03	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	8321959	2022/11/02	2022/11/02	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8319206	2022/11/02	2022/11/02	Sachi Patel
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8329467	2022/11/06	2022/11/06	Navneet Singh
Total Suspended Solids	BAL	8321801	2022/11/02	2022/11/03	Shaneil Hall
Turbidity	AT	8319286	N/A	2022/11/02	Surinder Rai

Bureau Veritas ID: UDX806 Dup
Sample ID: POND
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids	BAL	8321805	2022/11/02	2022/11/03	Shaneil Hall

Bureau Veritas ID: UDX807
Sample ID: SW1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8318859	N/A	2022/11/02	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8316069	N/A	2022/11/03	Automated Statchk
Chloride by Automated Colourimetry	KONE	8320281	N/A	2022/11/04	Alina Dobreanu
Conductivity	AT	8318841	N/A	2022/11/02	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: UDX807
Sample ID: SW1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE	8318852	2022/11/01	2022/11/02	Kien Tran
Hardness (calculated as CaCO3)		8316897	N/A	2022/11/04	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	8321931	2022/11/02	2022/11/04	Indira HarryPaul
Total Metals Analysis by ICPMS	ICP/MS	8324011	N/A	2022/11/03	Arefa Dabhad
Anion and Cation Sum	CALC	8317577	N/A	2022/11/04	Automated Statchk
Total Ammonia-N	LACH/NH4	8324582	N/A	2022/11/05	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8319346	N/A	2022/11/04	Chandra Nandlal
Animal and Vegetable Oil and Grease	BAL	8316617	N/A	2022/11/06	Automated Statchk
Total Oil and Grease	BAL	8329463	2022/11/06	2022/11/06	Navneet Singh
pH	AT	8318865	2022/11/01	2022/11/02	Kien Tran
Phenols (4AAP)	TECH/PHEN	8326458	N/A	2022/11/04	Mandeep Kaur
Orthophosphate	KONE	8320273	N/A	2022/11/03	Samuel Law
Sat. pH and Langelier Index (@ 20C)	CALC	8317580	N/A	2022/11/04	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	8317584	N/A	2022/11/04	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8320279	N/A	2022/11/07	Samuel Law
Total Dissolved Solids	BAL	8321805	2022/11/02	2022/11/03	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	8321959	2022/11/02	2022/11/02	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8319206	2022/11/02	2022/11/02	Sachi Patel
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8329467	2022/11/06	2022/11/06	Navneet Singh
Total Suspended Solids	BAL	8321416	2022/11/02	2022/11/03	Shaneil Hall
Turbidity	AT	8319286	N/A	2022/11/02	Surinder Rai

Bureau Veritas ID: UDX807 Dup
Sample ID: SW1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals Analysis by ICP	ICP	8321931	2022/11/02	2022/11/04	Indira HarryPaul

Bureau Veritas ID: UDX808
Sample ID: DUP 3
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8318859	N/A	2022/11/02	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8316069	N/A	2022/11/03	Automated Statchk
Chloride by Automated Colourimetry	KONE	8320281	N/A	2022/11/04	Alina Dobreanu
Conductivity	AT	8318841	N/A	2022/11/02	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8321392	N/A	2022/11/02	Gyulshen Idriz
Fluoride	ISE	8318852	2022/11/01	2022/11/02	Kien Tran
Hardness (calculated as CaCO3)		8316897	N/A	2022/11/04	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	8321931	2022/11/02	2022/11/04	Indira HarryPaul
Total Metals Analysis by ICPMS	ICP/MS	8324011	N/A	2022/11/03	Arefa Dabhad
Anion and Cation Sum	CALC	8317577	N/A	2022/11/04	Automated Statchk

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: UDX808
Sample ID: DUP 3
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	8324582	N/A	2022/11/05	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8319325	N/A	2022/11/04	Chandra Nandlal
Animal and Vegetable Oil and Grease	BAL	8316617	N/A	2022/11/06	Automated Statchk
Total Oil and Grease	BAL	8329463	2022/11/06	2022/11/06	Navneet Singh
pH	AT	8318865	2022/11/01	2022/11/02	Kien Tran
Phenols (4AAP)	TECH/PHEN	8326699	N/A	2022/11/04	Mandeep Kaur
Orthophosphate	KONE	8320273	N/A	2022/11/03	Samuel Law
Sat. pH and Langelier Index (@ 20C)	CALC	8317580	N/A	2022/11/04	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	8317584	N/A	2022/11/04	Automated Statchk
Sulphate by Automated Colourimetry	KONE	8320279	N/A	2022/11/07	Samuel Law
Total Dissolved Solids	BAL	8321805	2022/11/02	2022/11/03	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	8321959	2022/11/02	2022/11/02	Jency Sara Johnson
Total Phosphorus (Colourimetric)	SKAL/P	8319206	2022/11/02	2022/11/02	Sachi Patel
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	8329467	2022/11/06	2022/11/06	Navneet Singh
Total Suspended Solids	BAL	8321416	2022/11/02	2022/11/03	Shaneil Hall
Turbidity	AT	8319286	N/A	2022/11/02	Surinder Rai

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Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8318841	KIT	Spiked Blank	Conductivity	2022/11/02		103	%	85 - 115
8318841	KIT	Method Blank	Conductivity	2022/11/02	<1.0		umho/cm	
8318841	KIT	RPD	Conductivity	2022/11/02	2.2		%	25
8318852	KIT	Matrix Spike	Fluoride (F-)	2022/11/02		100	%	80 - 120
8318852	KIT	Spiked Blank	Fluoride (F-)	2022/11/02		101	%	80 - 120
8318852	KIT	Method Blank	Fluoride (F-)	2022/11/02	<0.10		mg/L	
8318852	KIT	RPD	Fluoride (F-)	2022/11/02	1.9		%	20
8318859	KIT	Spiked Blank	Alkalinity (Total as CaCO3)	2022/11/02		97	%	85 - 115
8318859	KIT	Method Blank	Alkalinity (Total as CaCO3)	2022/11/02	<1.0		mg/L	
8318859	KIT	RPD	Alkalinity (Total as CaCO3)	2022/11/02	0.34		%	20
8318865	KIT	Spiked Blank	pH	2022/11/02		102	%	98 - 103
8318865	KIT	RPD	pH	2022/11/02	0.39		%	N/A
8319206	SPC	Matrix Spike	Total Phosphorus	2022/11/02		113	%	80 - 120
8319206	SPC	QC Standard	Total Phosphorus	2022/11/02		106	%	80 - 120
8319206	SPC	Spiked Blank	Total Phosphorus	2022/11/02		98	%	80 - 120
8319206	SPC	Method Blank	Total Phosphorus	2022/11/02	<0.004		mg/L	
8319206	SPC	RPD	Total Phosphorus	2022/11/02	2.2		%	20
8319286	SAU	Spiked Blank	Turbidity	2022/11/02		114	%	85 - 115
8319286	SAU	Method Blank	Turbidity	2022/11/02	0.4, RDL=0.1		NTU	
8319286	SAU	RPD	Turbidity	2022/11/02	1.5		%	20
8319325	C_N	Matrix Spike	Nitrite (N)	2022/11/04		102	%	80 - 120
			Nitrate (N)	2022/11/04		95	%	80 - 120
8319325	C_N	Spiked Blank	Nitrite (N)	2022/11/04		106	%	80 - 120
			Nitrate (N)	2022/11/04		97	%	80 - 120
8319325	C_N	Method Blank	Nitrite (N)	2022/11/04	<0.010		mg/L	
			Nitrate (N)	2022/11/04	<0.10		mg/L	
8319325	C_N	RPD	Nitrate (N)	2022/11/04	NC		%	20
8319346	C_N	Matrix Spike	Nitrite (N)	2022/11/04		103	%	80 - 120
			Nitrate (N)	2022/11/04		97	%	80 - 120
8319346	C_N	Spiked Blank	Nitrite (N)	2022/11/04		106	%	80 - 120
			Nitrate (N)	2022/11/04		99	%	80 - 120
8319346	C_N	Method Blank	Nitrite (N)	2022/11/04	<0.010		mg/L	
			Nitrate (N)	2022/11/04	<0.10		mg/L	
8319346	C_N	RPD	Nitrite (N)	2022/11/04	16		%	20
			Nitrate (N)	2022/11/04	0.078		%	20
8320273	S1L	Matrix Spike	Orthophosphate (P)	2022/11/03		105	%	75 - 125
8320273	S1L	Spiked Blank	Orthophosphate (P)	2022/11/03		102	%	80 - 120
8320273	S1L	Method Blank	Orthophosphate (P)	2022/11/03	<0.010		mg/L	
8320273	S1L	RPD	Orthophosphate (P)	2022/11/03	NC		%	25
8320279	S1L	Matrix Spike	Dissolved Sulphate (SO4)	2022/11/07		NC	%	75 - 125
8320279	S1L	Spiked Blank	Dissolved Sulphate (SO4)	2022/11/07		108	%	80 - 120
8320279	S1L	Method Blank	Dissolved Sulphate (SO4)	2022/11/07	<1.0		mg/L	
8320279	S1L	RPD	Dissolved Sulphate (SO4)	2022/11/07	NC		%	20
8320281	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2022/11/04		119	%	80 - 120
8320281	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2022/11/04		103	%	80 - 120
8320281	ADB	Method Blank	Dissolved Chloride (Cl-)	2022/11/04	<1.0		mg/L	
8320281	ADB	RPD	Dissolved Chloride (Cl-)	2022/11/04	0.14		%	20
8321392	GID	Matrix Spike	Dissolved Organic Carbon	2022/11/02		97	%	80 - 120
8321392	GID	Spiked Blank	Dissolved Organic Carbon	2022/11/02		98	%	80 - 120
8321392	GID	Method Blank	Dissolved Organic Carbon	2022/11/02	<0.40		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8321392	GID	RPD	Dissolved Organic Carbon	2022/11/02	2.0		%	20
8321416	SHD	QC Standard	Total Suspended Solids	2022/11/03		95	%	85 - 115
8321416	SHD	Method Blank	Total Suspended Solids	2022/11/03	<10		mg/L	
8321416	SHD	RPD	Total Suspended Solids	2022/11/03	NC		%	25
8321801	SHD	QC Standard	Total Suspended Solids	2022/11/03		95	%	85 - 115
8321801	SHD	Method Blank	Total Suspended Solids	2022/11/03	<10		mg/L	
8321801	SHD	RPD	Total Suspended Solids	2022/11/03	0.16		%	25
8321805	SHD	QC Standard	Total Dissolved Solids	2022/11/03		100	%	90 - 110
8321805	SHD	Method Blank	Total Dissolved Solids	2022/11/03	<10		mg/L	
8321805	SHD	RPD [UDX806-03]	Total Dissolved Solids	2022/11/03	0.46		%	25
8321931	IHP	Matrix Spike [UDX807-01]	Dissolved Calcium (Ca)	2022/11/04		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2022/11/04		NC	%	80 - 120
			Dissolved Potassium (K)	2022/11/04		NC	%	80 - 120
			Dissolved Sodium (Na)	2022/11/04		NC	%	80 - 120
8321931	IHP	Spiked Blank	Dissolved Calcium (Ca)	2022/11/04		100	%	80 - 120
			Dissolved Magnesium (Mg)	2022/11/04		107	%	80 - 120
			Dissolved Potassium (K)	2022/11/04		106	%	80 - 120
			Dissolved Sodium (Na)	2022/11/04		101	%	80 - 120
8321931	IHP	Method Blank	Dissolved Calcium (Ca)	2022/11/04	<0.05		mg/L	
			Dissolved Magnesium (Mg)	2022/11/04	<0.05		mg/L	
			Dissolved Potassium (K)	2022/11/04	<1		mg/L	
			Dissolved Sodium (Na)	2022/11/04	<0.5		mg/L	
8321931	IHP	RPD [UDX807-01]	Dissolved Calcium (Ca)	2022/11/04	3.6		%	25
			Dissolved Magnesium (Mg)	2022/11/04	2.8		%	25
			Dissolved Potassium (K)	2022/11/04	3.9		%	25
			Dissolved Sodium (Na)	2022/11/04	3.1		%	25
8321959	JJH	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2022/11/03		96	%	80 - 120
8321959	JJH	QC Standard	Total Kjeldahl Nitrogen (TKN)	2022/11/02		103	%	80 - 120
8321959	JJH	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2022/11/02		104	%	80 - 120
8321959	JJH	Method Blank	Total Kjeldahl Nitrogen (TKN)	2022/11/02	<0.10		mg/L	
8321959	JJH	RPD	Total Kjeldahl Nitrogen (TKN)	2022/11/03	10		%	20
8323476	ADA	Matrix Spike	Total Arsenic (As)	2022/11/03		102	%	80 - 120
			Total Cadmium (Cd)	2022/11/03		102	%	80 - 120
			Total Calcium (Ca)	2022/11/03		NC	%	80 - 120
			Total Chromium (Cr)	2022/11/03		96	%	80 - 120
			Total Copper (Cu)	2022/11/03		107	%	80 - 120
			Total Iron (Fe)	2022/11/03		100	%	80 - 120
			Total Lead (Pb)	2022/11/03		101	%	80 - 120
			Total Magnesium (Mg)	2022/11/03		98	%	80 - 120
			Total Manganese (Mn)	2022/11/03		98	%	80 - 120
			Total Nickel (Ni)	2022/11/03		99	%	80 - 120
			Total Potassium (K)	2022/11/03		99	%	80 - 120
			Total Sodium (Na)	2022/11/03		NC	%	80 - 120
			Total Zinc (Zn)	2022/11/03		100	%	80 - 120
8323476	ADA	Spiked Blank	Total Arsenic (As)	2022/11/03		101	%	80 - 120
			Total Cadmium (Cd)	2022/11/03		101	%	80 - 120
			Total Calcium (Ca)	2022/11/03		101	%	80 - 120
			Total Chromium (Cr)	2022/11/03		96	%	80 - 120
			Total Copper (Cu)	2022/11/03		105	%	80 - 120
			Total Iron (Fe)	2022/11/03		101	%	80 - 120
			Total Lead (Pb)	2022/11/03		98	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Magnesium (Mg)	2022/11/03		101	%	80 - 120
			Total Manganese (Mn)	2022/11/03		98	%	80 - 120
			Total Nickel (Ni)	2022/11/03		99	%	80 - 120
			Total Potassium (K)	2022/11/03		100	%	80 - 120
			Total Sodium (Na)	2022/11/03		102	%	80 - 120
			Total Zinc (Zn)	2022/11/03		101	%	80 - 120
8323476	ADA	Method Blank	Total Arsenic (As)	2022/11/03	<1.0		ug/L	
			Total Cadmium (Cd)	2022/11/03	<0.090		ug/L	
			Total Calcium (Ca)	2022/11/03	<200		ug/L	
			Total Chromium (Cr)	2022/11/03	<5.0		ug/L	
			Total Copper (Cu)	2022/11/03	<0.90		ug/L	
			Total Iron (Fe)	2022/11/03	<100		ug/L	
			Total Lead (Pb)	2022/11/03	<0.50		ug/L	
			Total Magnesium (Mg)	2022/11/03	<50		ug/L	
			Total Manganese (Mn)	2022/11/03	<2.0		ug/L	
			Total Nickel (Ni)	2022/11/03	<1.0		ug/L	
			Total Potassium (K)	2022/11/03	<200		ug/L	
			Total Sodium (Na)	2022/11/03	<100		ug/L	
			Total Zinc (Zn)	2022/11/03	<5.0		ug/L	
8323476	ADA	RPD	Total Cadmium (Cd)	2022/11/03	8.4		%	20
			Total Chromium (Cr)	2022/11/03	NC		%	20
			Total Copper (Cu)	2022/11/03	0.43		%	20
			Total Iron (Fe)	2022/11/03	3.4		%	20
			Total Lead (Pb)	2022/11/03	2.4		%	20
			Total Nickel (Ni)	2022/11/03	2.6		%	20
			Total Zinc (Zn)	2022/11/03	1.4		%	20
8324011	ADA	Matrix Spike	Total Arsenic (As)	2022/11/03		102	%	80 - 120
			Total Cadmium (Cd)	2022/11/03		101	%	80 - 120
			Total Calcium (Ca)	2022/11/03		103	%	80 - 120
			Total Chromium (Cr)	2022/11/03		98	%	80 - 120
			Total Copper (Cu)	2022/11/03		104	%	80 - 120
			Total Iron (Fe)	2022/11/03		103	%	80 - 120
			Total Lead (Pb)	2022/11/03		102	%	80 - 120
			Total Magnesium (Mg)	2022/11/03		NC	%	80 - 120
			Total Manganese (Mn)	2022/11/03		100	%	80 - 120
			Total Nickel (Ni)	2022/11/03		100	%	80 - 120
			Total Potassium (K)	2022/11/03		103	%	80 - 120
			Total Sodium (Na)	2022/11/03		103	%	80 - 120
			Total Zinc (Zn)	2022/11/03		101	%	80 - 120
8324011	ADA	Spiked Blank	Total Arsenic (As)	2022/11/03		103	%	80 - 120
			Total Cadmium (Cd)	2022/11/03		101	%	80 - 120
			Total Calcium (Ca)	2022/11/03		104	%	80 - 120
			Total Chromium (Cr)	2022/11/03		98	%	80 - 120
			Total Copper (Cu)	2022/11/03		103	%	80 - 120
			Total Iron (Fe)	2022/11/03		103	%	80 - 120
			Total Lead (Pb)	2022/11/03		100	%	80 - 120
			Total Magnesium (Mg)	2022/11/03		102	%	80 - 120
			Total Manganese (Mn)	2022/11/03		99	%	80 - 120
			Total Nickel (Ni)	2022/11/03		101	%	80 - 120
			Total Potassium (K)	2022/11/03		102	%	80 - 120
			Total Sodium (Na)	2022/11/03		102	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Zinc (Zn)	2022/11/03		102	%	80 - 120
8324011	ADA	Method Blank	Total Arsenic (As)	2022/11/03	<1.0		ug/L	
			Total Cadmium (Cd)	2022/11/03	<0.090		ug/L	
			Total Calcium (Ca)	2022/11/03	<200		ug/L	
			Total Chromium (Cr)	2022/11/03	<5.0		ug/L	
			Total Copper (Cu)	2022/11/03	<0.90		ug/L	
			Total Iron (Fe)	2022/11/03	<100		ug/L	
			Total Lead (Pb)	2022/11/03	<0.50		ug/L	
			Total Magnesium (Mg)	2022/11/03	<50		ug/L	
			Total Manganese (Mn)	2022/11/03	<2.0		ug/L	
			Total Nickel (Ni)	2022/11/03	<1.0		ug/L	
			Total Potassium (K)	2022/11/03	<200		ug/L	
			Total Sodium (Na)	2022/11/03	<100		ug/L	
			Total Zinc (Zn)	2022/11/03	<5.0		ug/L	
8324011	ADA	RPD	Total Arsenic (As)	2022/11/03	NC		%	20
			Total Cadmium (Cd)	2022/11/03	NC		%	20
			Total Calcium (Ca)	2022/11/03	4.0		%	20
			Total Chromium (Cr)	2022/11/03	3.9		%	20
			Total Copper (Cu)	2022/11/03	NC		%	20
			Total Iron (Fe)	2022/11/03	NC		%	20
			Total Lead (Pb)	2022/11/03	NC		%	20
			Total Magnesium (Mg)	2022/11/03	5.2		%	20
			Total Manganese (Mn)	2022/11/03	7.3		%	20
			Total Nickel (Ni)	2022/11/03	4.3		%	20
			Total Potassium (K)	2022/11/03	NC		%	20
			Total Sodium (Na)	2022/11/03	4.0		%	20
			Total Zinc (Zn)	2022/11/03	12		%	20
8324582	ASP	Matrix Spike	Total Ammonia-N	2022/11/05		100	%	75 - 125
8324582	ASP	Spiked Blank	Total Ammonia-N	2022/11/05		103	%	80 - 120
8324582	ASP	Method Blank	Total Ammonia-N	2022/11/05	<0.050		mg/L	
8324582	ASP	RPD	Total Ammonia-N	2022/11/05	NC		%	20
8326458	MKX	Matrix Spike	Phenols-4AAP	2022/11/04		104	%	80 - 120
8326458	MKX	Spiked Blank	Phenols-4AAP	2022/11/04		102	%	80 - 120
8326458	MKX	Method Blank	Phenols-4AAP	2022/11/04	<0.0010		mg/L	
8326458	MKX	RPD	Phenols-4AAP	2022/11/04	NC		%	20
8326699	MKX	Matrix Spike	Phenols-4AAP	2022/11/04		102	%	80 - 120
8326699	MKX	Spiked Blank	Phenols-4AAP	2022/11/04		100	%	80 - 120
8326699	MKX	Method Blank	Phenols-4AAP	2022/11/04	<0.0010		mg/L	
8326699	MKX	RPD	Phenols-4AAP	2022/11/04	11		%	20
8329463	NSG	Spiked Blank	Total Oil & Grease	2022/11/06		99	%	85 - 115
8329463	NSG	RPD	Total Oil & Grease	2022/11/06	0.25		%	25
8329463	NSG	Method Blank	Total Oil & Grease	2022/11/06	<0.50		mg/L	
8329467	NSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2022/11/06		97	%	85 - 115
8329467	NSG	RPD	Total Oil & Grease Mineral/Synthetic	2022/11/06	0.52		%	25

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8329467	NSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2022/11/06	<0.50		mg/L	

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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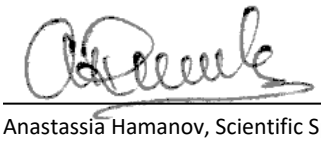
Bureau Veritas Job #: C2V7988
Report Date: 2022/11/07

Golder Associates Ltd
Client Project #: 21508089
Site Location: MCCARTHY
Sampler Initials: CI

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

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Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
POND	UDX806-06	Total Iron (Fe)	300	320	100	ug/L
POND	UDX806-05	Total Phosphorus	0.01	0.019	0.004	mg/L
SW1	UDX807-05	Total Phosphorus	0.01	0.021	0.004	mg/L
DUP 3	UDX808-05	Total Phosphorus	0.01	0.020	0.004	mg/L

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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Your Project #: 21508089
Site#: McCarthy
Your C.O.C. #: 901521-01-01, 901521-02-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/11/08
Report #: R7378517
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2V8178
Received: 2022/10/31, 15:40

Sample Matrix: Water
Samples Received: 16

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	16	N/A	2022/11/03	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	16	N/A	2022/11/04	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	16	N/A	2022/11/04	CAM SOP-00463	SM 23 4500-Cl E m
Colour	16	N/A	2022/11/04	CAM SOP-00412	SM 23 2120C m
Conductivity	16	N/A	2022/11/03	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	16	N/A	2022/11/03	CAM SOP-00446	SM 23 5310 B m
Fluoride	16	2022/11/03	2022/11/03	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	16	N/A	2022/11/04	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	16	N/A	2022/11/04	CAM SOP-00447	EPA 6020B m
Total Ammonia-N	15	N/A	2022/11/06	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	13	N/A	2022/11/05	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Nitrate & Nitrite as Nitrogen in Water (2)	3	N/A	2022/11/07	CAM SOP-00440	SM 23 4500-NO3I/NO2B
pH	16	2022/11/03	2022/11/03	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	16	N/A	2022/11/03	CAM SOP-00461	EPA 365.1 m
Sulphate by Automated Colourimetry	16	N/A	2022/11/07	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	16	N/A	2022/11/07		Auto Calc

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the

Your Project #: 21508089
Site#: McCarthy
Your C.O.C. #: 901521-01-01, 901521-02-01

Attention: Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
Unit L
Barrie, ON
CANADA L4N 8X1

Report Date: 2022/11/08
Report #: R7378517
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2V8178
Received: 2022/10/31, 15:40
customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:
Ankita Bhalla, Project Manager
Email: Ankita.Bhalla@bureauveritas.com
Phone# (905) 817-5700
==========
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Bureau Veritas Job #: C2V8178
Report Date: 2022/11/08

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDY814		UDY815			UDY815		
Sampling Date			2022/10/28 10:30		2022/10/28 10:40			2022/10/28 10:40		
COC Number			901521-01-01		901521-01-01			901521-01-01		
	UNITS	Criteria	AM1b	RDL	AMx-R	RDL	QC Batch	AMx-R Lab-Dup	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	280	1.0	3.6	1.0	8321280			
Calculated TDS	mg/L	-	350	1.0	9300	1.0	8321279			
Hardness (CaCO3)	mg/L	-	320	1.0	3700	1.0	8321281			
Inorganics										
Total Ammonia-N	mg/L	-	0.094	0.050	6.0	0.050	8326279			
Colour	TCU	-	<2	2	4	2	8324469			
Conductivity	umho/cm	-	550	1.0	15000	1.0	8324108			
Fluoride (F-)	mg/L	-	0.20	0.10	0.65	0.10	8324096			
Dissolved Organic Carbon	mg/L	-	0.81	0.40	1.7	0.40	8324654			
Orthophosphate (P)	mg/L	-	<0.010	0.010	<0.010	0.010	8322087	<0.010	0.010	8322087
pH	pH	6.5:8.5	7.96		**5.70**		8324112			
Dissolved Sulphate (SO4)	mg/L	-	33	1.0	<1.0	1.0	8322086	<1.0	1.0	8322086
Alkalinity (Total as CaCO3)	mg/L	-	280	1.0	3.6	1.0	8324109			
Dissolved Chloride (Cl-)	mg/L	-	1.8	1.0	5600	50	8322082	5500	50	8322082
Nitrite (N)	mg/L	-	<0.010	0.010	0.032	0.010	8322267			
Nitrate (N)	mg/L	-	<0.10	0.10	<0.10	0.10	8322267			
Nitrate + Nitrite (N)	mg/L	-	<0.10	0.10	<0.10	0.10	8322267			

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V8178
Report Date: 2022/11/08

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDY816			UDY816			UDY817		
Sampling Date			2022/10/28 14:20			2022/10/28 14:20			2022/10/28 10:10		
COC Number			901521-01-01			901521-01-01			901521-01-01		
	UNITS	Criteria	TW1-1	RDL	QC Batch	TW1-1 Lab-Dup	RDL	QC Batch	Bored	RDL	QC Batch
Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	200	1.0	8321280				270	1.0	8321280
Calculated TDS	mg/L	-	1900	1.0	8321279				350	1.0	8321279
Hardness (CaCO3)	mg/L	-	720	1.0	8321281				300	1.0	8321281
Inorganics											
Total Ammonia-N	mg/L	-	1.4	0.050	8326279				<0.050	0.050	8326279
Colour	TCU	-	<2	2	8324469				<2	2	8324469
Conductivity	umho/cm	-	3400	1.0	8324108				550	1.0	8324108
Fluoride (F-)	mg/L	-	1.9	0.10	8324096				0.14	0.10	8324096
Dissolved Organic Carbon	mg/L	-	0.78	0.40	8324654	0.75	0.40	8324654	0.98	0.40	8324654
Orthophosphate (P)	mg/L	-	<0.010	0.010	8322087				<0.010	0.010	8322087
pH	pH	6.5:8.5	7.83		8324112				8.12		8324112
Dissolved Sulphate (SO4)	mg/L	-	160	1.0	8322086				32	1.0	8322086
Alkalinity (Total as CaCO3)	mg/L	-	200	1.0	8324109				280	1.0	8324109
Dissolved Chloride (Cl-)	mg/L	-	910	10	8322082				1.7	1.0	8322082
Nitrite (N)	mg/L	-	0.021	0.010	8322267				<0.010	0.010	8322267
Nitrate (N)	mg/L	-	<0.10	0.10	8322267				0.18	0.10	8322267
Nitrate + Nitrite (N)	mg/L	-	<0.10	0.10	8322267				0.18	0.10	8322267

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V8178
Report Date: 2022/11/08

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDY817			UDY818			UDY819		
Sampling Date			2022/10/28 10:10			2022/10/28 10:45			2022/10/28 10:55		
COC Number			901521-01-01			901521-01-01			901521-01-01		
	UNITS	Criteria	Bored Lab-Dup	RDL	QC Batch	OW4-1	RDL	QC Batch	OW4-2	RDL	QC Batch
Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-				220	1.0	8321280	240	1.0	8321280
Calculated TDS	mg/L	-				630	1.0	8321279	960	1.0	8321279
Hardness (CaCO3)	mg/L	-				130	1.0	8321281	280	1.0	8321281
Inorganics											
Total Ammonia-N	mg/L	-							1.3	0.050	8326279
Colour	TCU	-	<2	2	8324469	<2	2	8324469	<2	2	8324469
Conductivity	umho/cm	-				1200	1.0	8324108	1700	1.0	8324108
Fluoride (F-)	mg/L	-				1.1	0.10	8324096	0.95	0.10	8324096
Dissolved Organic Carbon	mg/L	-				1.3	0.40	8324654	1.1	0.40	8324654
Orthophosphate (P)	mg/L	-				<0.010	0.010	8322087	<0.010	0.010	8322087
pH	pH	6.5:8.5				8.24		8324112	8.05		8324112
Dissolved Sulphate (SO4)	mg/L	-				13	1.0	8322086	<1.0	1.0	8322086
Alkalinity (Total as CaCO3)	mg/L	-				220	1.0	8324109	240	1.0	8324109
Dissolved Chloride (Cl-)	mg/L	-				230	3.0	8322082	410	5.0	8322082
Nitrite (N)	mg/L	-				0.016	0.010	8322267	0.052	0.010	8324064
Nitrate (N)	mg/L	-				0.14	0.10	8322267	<0.10	0.10	8324064
Nitrate + Nitrite (N)	mg/L	-				0.15	0.10	8322267	<0.10	0.10	8324064

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V8178
Report Date: 2022/11/08

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDY820		UDY821			UDY822		
Sampling Date			2022/10/28 12:10		2022/10/28 12:30			2022/10/28 12:15		
COC Number			901521-01-01		901521-01-01			901521-01-01		
	UNITS	Criteria	OW5-1	RDL	OW5-2	RDL	QC Batch	OW5-3	RDL	QC Batch
Calculated Parameters										
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	330	1.0	120	1.0	8321280	110	1.0	8321280
Calculated TDS	mg/L	-	450	1.0	16000	1.0	8321279	16000	1.0	8321279
Hardness (CaCO3)	mg/L	-	270	1.0	6500	1.0	8321281	7000	1.0	8321281
Inorganics										
Total Ammonia-N	mg/L	-	0.65	0.050	10	0.050	8326279	9.9	0.050	8326279
Colour	TCU	-	<2	2	<2	2	8324469	<2	2	8324469
Conductivity	umho/cm	-	710	1.0	24000	1.0	8324108	26000	1.0	8324108
Fluoride (F-)	mg/L	-	0.61	0.10	0.45	0.10	8324096	0.43	0.10	8324096
Dissolved Organic Carbon	mg/L	-	1.5	0.40	0.66	0.40	8324654	0.58	0.40	8324654
Orthophosphate (P)	mg/L	-	<0.010	0.010	<0.010	0.010	8322087	<0.010	0.010	8322087
pH	pH	6.5:8.5	7.89		7.46		8324112	7.46		8324112
Dissolved Sulphate (SO4)	mg/L	-	52	1.0	<1.0	1.0	8322086	1.5	1.0	8322086
Alkalinity (Total as CaCO3)	mg/L	-	330	1.0	120	1.0	8324109	110	1.0	8324109
Dissolved Chloride (Cl-)	mg/L	-	20	1.0	9700	90	8322082	9400	70	8322082
Nitrite (N)	mg/L	-	0.024	0.010	<0.010	0.010	8322267	0.012	0.010	8324064
Nitrate (N)	mg/L	-	0.26	0.10	<0.10	0.10	8322267	<0.10	0.10	8324064
Nitrate + Nitrite (N)	mg/L	-	0.29	0.10	<0.10	0.10	8322267	<0.10	0.10	8324064

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V8178
Report Date: 2022/11/08

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDY822			UDY823			UDY832		
Sampling Date			2022/10/28 12:15			2022/10/28 10:15			2022/10/28 13:35		
COC Number			901521-01-01			901521-01-01			901521-02-01		
	UNITS	Criteria	OW5-3 Lab-Dup	RDL	QC Batch	OW6-2	RDL	QC Batch	OW7-1	RDL	QC Batch
Calculated Parameters											
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-				170	1.0	8321280	200	1.0	8321280
Calculated TDS	mg/L	-				4100	1.0	8321279	1700	1.0	8321279
Hardness (CaCO3)	mg/L	-				1800	1.0	8321281	920	1.0	8321281
Inorganics											
Total Ammonia-N	mg/L	-				2.0	0.050	8326279	3.0	0.050	8326279
Colour	TCU	-				4	2	8324469	240	10	8324469
Conductivity	umho/cm	-	26000	1.0	8324108	6000	1.0	8324108	2800	1.0	8324108
Fluoride (F-)	mg/L	-	0.43	0.10	8324096	0.94	0.10	8324096	0.54	0.10	8324096
Dissolved Organic Carbon	mg/L	-				0.45	0.40	8324654	2.1	0.40	8324654
Orthophosphate (P)	mg/L	-				<0.010	0.010	8322087	<0.010	0.010	8322087
pH	pH	6.5:8.5	7.42		8324112	7.84		8324112	7.44		8324112
Dissolved Sulphate (SO4)	mg/L	-				980	5.0	8322086	290	1.0	8322086
Alkalinity (Total as CaCO3)	mg/L	-	120	1.0	8324109	170	1.0	8324109	200	1.0	8324109
Dissolved Chloride (Cl-)	mg/L	-				1600	15	8322082	680	7.0	8322082
Nitrite (N)	mg/L	-				0.050	0.010	8322267	<0.010	0.010	8324064
Nitrate (N)	mg/L	-				<0.10	0.10	8322267	<0.10	0.10	8324064
Nitrate + Nitrite (N)	mg/L	-				<0.10	0.10	8322267	<0.10	0.10	8324064

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate
Criteria: Ontario Provincial Water Quality Objectives
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Bureau Veritas Job #: C2V8178
Report Date: 2022/11/08

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDY833		UDY834		UDY835		
Sampling Date			2022/10/28 13:35		2022/10/28 16:15		2022/10/28 15:15		
COC Number			901521-02-01		901521-02-01		901521-02-01		
	UNITS	Criteria	OW7-2	RDL	OW8-1	RDL	OW9-2	RDL	QC Batch
Calculated Parameters									
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	270	1.0	300	1.0	130	1.0	8321280
Calculated TDS	mg/L	-	3200	1.0	1400	1.0	47000	1.0	8321279
Hardness (CaCO3)	mg/L	-	1300	1.0	640	1.0	26000	1.0	8321281
Inorganics									
Total Ammonia-N	mg/L	-	2.6	0.050	1.1	0.050	2.1	0.050	8326279
Colour	TCU	-	<2	2	<2	2	6	2	8324469
Conductivity	umho/cm	-	5600	1.0	2400	1.0	60000	1.0	8324108
Fluoride (F-)	mg/L	-	1.0	0.10	0.84	0.10	<0.10	0.10	8324096
Dissolved Organic Carbon	mg/L	-	2.0	0.40	1.3	0.40	9.0	0.40	8324654
Orthophosphate (P)	mg/L	-	<0.010	0.010	<0.010	0.010	<0.010	0.010	8322087
pH	pH	6.5:8.5	7.80		7.77		7.15		8324112
Dissolved Sulphate (SO4)	mg/L	-	58	1.0	35	1.0	1300	5.0	8322086
Alkalinity (Total as CaCO3)	mg/L	-	270	1.0	300	1.0	130	1.0	8324109
Dissolved Chloride (Cl-)	mg/L	-	1800	20	610	6.0	28000	500	8322082
Nitrite (N)	mg/L	-	<0.010	0.010	<0.010	0.010	<0.10	0.10	8322267
Nitrate (N)	mg/L	-	<0.10	0.10	<0.10	0.10	1.6	1.0	8322267
Nitrate + Nitrite (N)	mg/L	-	<0.10	0.10	<0.10	0.10	1.6	1.0	8322267

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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Bureau Veritas Job #: C2V8178
Report Date: 2022/11/08

Golder Associates Ltd
Client Project #: 21508089
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			UDY836		UDY837		
Sampling Date			2022/10/28		2022/10/28		
COC Number			901521-02-01		901521-02-01		
	UNITS	Criteria	DUP2	RDL	DUP4	RDL	QC Batch
Calculated Parameters							
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	-	160	1.0	320	1.0	8321280
Calculated TDS	mg/L	-	4000	1.0	440	1.0	8321279
Hardness (CaCO3)	mg/L	-	1800	1.0	260	1.0	8321281
Inorganics							
Total Ammonia-N	mg/L	-	2.0	0.050	0.66	0.050	8326279
Colour	TCU	-	2	2	3	2	8324469
Conductivity	umho/cm	-	6000	1.0	710	1.0	8324108
Fluoride (F-)	mg/L	-	0.93	0.10	0.61	0.10	8324096
Dissolved Organic Carbon	mg/L	-	0.53	0.40	1.5	0.40	8324654
Orthophosphate (P)	mg/L	-	<0.010	0.010	<0.010	0.010	8322087
pH	pH	6.5:8.5	7.81		7.88		8324112
Dissolved Sulphate (SO4)	mg/L	-	990	5.0	51	1.0	8322086
Alkalinity (Total as CaCO3)	mg/L	-	160	1.0	330	1.0	8324109
Dissolved Chloride (Cl-)	mg/L	-	1500	15	19	1.0	8322082
Nitrite (N)	mg/L	-	0.034	0.010	<0.010	0.010	8322267
Nitrate (N)	mg/L	-	<0.10	0.10	0.41	0.10	8322267
Nitrate + Nitrite (N)	mg/L	-	<0.10	0.10	0.41	0.10	8322267

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Criteria: Ontario Provincial Water Quality Objectives
Ref. to MOEE Water Management document dated Feb.1999

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		UDY814		UDY815		UDY816		UDY817	UDY818		
Sampling Date		2022/10/28 10:30		2022/10/28 10:40		2022/10/28 14:20		2022/10/28 10:10	2022/10/28 10:45		
COC Number		901521-01-01		901521-01-01		901521-01-01		901521-01-01	901521-01-01		
	UNITS	AM1b	RDL	AMx-R	RDL	TW1-1	RDL	Bored	OW4-1	RDL	QC Batch
Metals											
Dissolved Calcium (Ca)	ug/L	67000	200	700000	2000	140000	1000	69000	25000	200	8324680
Dissolved Magnesium (Mg)	ug/L	37000	50	460000	250	87000	50	31000	17000	50	8324680
Dissolved Phosphorus (P)	ug/L	<100	100	600	500	120	100	<100	110	100	8324680
Dissolved Potassium (K)	ug/L	2600	200	46000	1000	13000	200	6800	6600	200	8324680
Dissolved Sodium (Na)	ug/L	5900	100	2300000	500	480000	100	20000	200000	100	8324680

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		UDY819	UDY820		UDY821	UDY822		UDY823		
Sampling Date		2022/10/28 10:55	2022/10/28 12:10		2022/10/28 12:30	2022/10/28 12:15		2022/10/28 10:15		
COC Number		901521-01-01	901521-01-01		901521-01-01	901521-01-01		901521-01-01		
	UNITS	OW4-2	OW5-1	RDL	OW5-2	OW5-3	RDL	OW6-2	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	53000	52000	200	1300000	1400000	5000	360000	1000	8324680
Dissolved Magnesium (Mg)	ug/L	36000	34000	50	760000	820000	250	210000	250	8324680
Dissolved Phosphorus (P)	ug/L	100	100	100	640	640	500	<500	500	8324680
Dissolved Potassium (K)	ug/L	11000	7900	200	75000	76000	1000	19000	1000	8324680
Dissolved Sodium (Na)	ug/L	290000	61000	100	4100000	4000000	1000	860000	500	8324680

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		UDY832		UDY833		UDY834		UDY835		
Sampling Date		2022/10/28 13:35		2022/10/28 13:35		2022/10/28 16:15		2022/10/28 15:15		
COC Number		901521-02-01		901521-02-01		901521-02-01		901521-02-01		
	UNITS	OW7-1	RDL	OW7-2	RDL	OW8-1	RDL	OW9-2	RDL	QC Batch
Metals										
Dissolved Calcium (Ca)	ug/L	220000	1000	260000	1000	170000	200	5800000	10000	8324680
Dissolved Magnesium (Mg)	ug/L	88000	50	150000	50	52000	50	2800000	500	8324680
Dissolved Phosphorus (P)	ug/L	110	100	130	100	100	100	<1000	1000	8324680
Dissolved Potassium (K)	ug/L	18000	200	19000	200	8900	200	130000	2000	8324680
Dissolved Sodium (Na)	ug/L	250000	100	780000	500	280000	100	9000000	5000	8324680

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		UDY836		UDY837	UDY837		
Sampling Date		2022/10/28		2022/10/28	2022/10/28		
COC Number		901521-02-01		901521-02-01	901521-02-01		
	UNITS	DUP2	RDL	DUP4	DUP4 Lab-Dup	RDL	QC Batch
Metals							
Dissolved Calcium (Ca)	ug/L	360000	1000	50000	49000	200	8324680
Dissolved Magnesium (Mg)	ug/L	210000	250	33000	33000	50	8324680
Dissolved Phosphorus (P)	ug/L	<500	500	110	<100	100	8324680
Dissolved Potassium (K)	ug/L	19000	1000	7700	7700	200	8324680
Dissolved Sodium (Na)	ug/L	840000	500	59000	60000	100	8324680

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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TEST SUMMARY

Bureau Veritas ID: UDY814
Sample ID: AM1b
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY815
Sample ID: AMx-R
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY815 Dup
Sample ID: AMx-R
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law

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TEST SUMMARY

Bureau Veritas ID: UDY816
Sample ID: TW1-1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY816 Dup
Sample ID: TW1-1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz

Bureau Veritas ID: UDY817
Sample ID: Bored
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

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TEST SUMMARY

Bureau Veritas ID: UDY817 Dup
Sample ID: Bored
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru

Bureau Veritas ID: UDY818
Sample ID: OW4-1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY819
Sample ID: OW4-2
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8324064	N/A	2022/11/07	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

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TEST SUMMARY

Bureau Veritas ID: UDY820
Sample ID: OW5-1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY821
Sample ID: OW5-2
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY822
Sample ID: OW5-3
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law

TEST SUMMARY

Bureau Veritas ID: UDY822
Sample ID: OW5-3
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8324064	N/A	2022/11/07	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY822 Dup
Sample ID: OW5-3
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran

Bureau Veritas ID: UDY823
Sample ID: OW6-2
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

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TEST SUMMARY

Bureau Veritas ID: UDY832
Sample ID: OW7-1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8324064	N/A	2022/11/07	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY833
Sample ID: OW7-2
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY834
Sample ID: OW8-1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law

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TEST SUMMARY

Bureau Veritas ID: UDY834
Sample ID: OW8-1
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY835
Sample ID: OW9-2
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY836
Sample ID: DUP2
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz

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TEST SUMMARY

Bureau Veritas ID: UDY836
Sample ID: DUP2
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY837
Sample ID: DUP4
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	8324109	N/A	2022/11/03	Kien Tran
Carbonate, Bicarbonate and Hydroxide	CALC	8321280	N/A	2022/11/04	Automated Statchk
Chloride by Automated Colourimetry	KONE	8322082	N/A	2022/11/04	Samuel Law
Colour	SPEC	8324469	N/A	2022/11/04	Viorica Rotaru
Conductivity	AT	8324108	N/A	2022/11/03	Kien Tran
Dissolved Organic Carbon (DOC)	TOCV/NDIR	8324654	N/A	2022/11/03	Gyulshen Idriz
Fluoride	ISE	8324096	2022/11/03	2022/11/03	Kien Tran
Hardness (calculated as CaCO3)		8321281	N/A	2022/11/04	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill
Total Ammonia-N	LACH/NH4	8326279	N/A	2022/11/06	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	8322267	N/A	2022/11/05	Chandra Nandlal
pH	AT	8324112	2022/11/03	2022/11/03	Kien Tran
Orthophosphate	KONE	8322087	N/A	2022/11/03	Samuel Law
Sulphate by Automated Colourimetry	KONE	8322086	N/A	2022/11/07	Samuel Law
Total Dissolved Solids (TDS calc)	CALC	8321279	N/A	2022/11/07	Automated Statchk

Bureau Veritas ID: UDY837 Dup
Sample ID: DUP4
Matrix: Water

Collected: 2022/10/28
Shipped:
Received: 2022/10/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals by ICPMS	ICP/MS	8324680	N/A	2022/11/04	Rupinder Gill

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C

Sample UDY815 [AMx-R] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample UDY821 [OW5-2] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample UDY822 [OW5-3] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample UDY823 [OW6-2] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Sample UDY835 [OW9-2] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Nitrite/Nitrate: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample UDY836 [DUP2] : Metals Analysis: Due to the sample matrix, the sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8322082	S1L	Matrix Spike [UDY815-01]	Dissolved Chloride (Cl-)	2022/11/04		NC	%	80 - 120
8322082	S1L	Spiked Blank	Dissolved Chloride (Cl-)	2022/11/04		107	%	80 - 120
8322082	S1L	Method Blank	Dissolved Chloride (Cl-)	2022/11/04	<1.0		mg/L	
8322082	S1L	RPD [UDY815-01]	Dissolved Chloride (Cl-)	2022/11/04	1.9		%	20
8322086	S1L	Matrix Spike [UDY815-01]	Dissolved Sulphate (SO4)	2022/11/07		118	%	75 - 125
8322086	S1L	Spiked Blank	Dissolved Sulphate (SO4)	2022/11/07		109	%	80 - 120
8322086	S1L	Method Blank	Dissolved Sulphate (SO4)	2022/11/07	<1.0		mg/L	
8322086	S1L	RPD [UDY815-01]	Dissolved Sulphate (SO4)	2022/11/07	NC		%	20
8322087	S1L	Matrix Spike [UDY815-01]	Orthophosphate (P)	2022/11/03		100	%	75 - 125
8322087	S1L	Spiked Blank	Orthophosphate (P)	2022/11/03		102	%	80 - 120
8322087	S1L	Method Blank	Orthophosphate (P)	2022/11/03	<0.010		mg/L	
8322087	S1L	RPD [UDY815-01]	Orthophosphate (P)	2022/11/03	NC		%	25
8322267	C_N	Matrix Spike	Nitrite (N)	2022/11/05		103	%	80 - 120
			Nitrate (N)	2022/11/05		91	%	80 - 120
8322267	C_N	Spiked Blank	Nitrite (N)	2022/11/05		108	%	80 - 120
			Nitrate (N)	2022/11/05		95	%	80 - 120
8322267	C_N	Method Blank	Nitrite (N)	2022/11/05	<0.010		mg/L	
			Nitrate (N)	2022/11/05	<0.10		mg/L	
8322267	C_N	RPD	Nitrite (N)	2022/11/05	NC		%	20
			Nitrate (N)	2022/11/05	3.5		%	20
8324064	C_N	Matrix Spike	Nitrite (N)	2022/11/07		105	%	80 - 120
			Nitrate (N)	2022/11/07		98	%	80 - 120
8324064	C_N	Spiked Blank	Nitrite (N)	2022/11/07		108	%	80 - 120
			Nitrate (N)	2022/11/07		101	%	80 - 120
8324064	C_N	Method Blank	Nitrite (N)	2022/11/07	<0.010		mg/L	
			Nitrate (N)	2022/11/07	<0.10		mg/L	
8324064	C_N	RPD	Nitrite (N)	2022/11/07	4.8		%	20
			Nitrate (N)	2022/11/07	1.2		%	20
8324096	KIT	Matrix Spike [UDY822-01]	Fluoride (F-)	2022/11/03		58 (1)	%	80 - 120
8324096	KIT	Spiked Blank	Fluoride (F-)	2022/11/03		103	%	80 - 120
8324096	KIT	Method Blank	Fluoride (F-)	2022/11/03	<0.10		mg/L	
8324096	KIT	RPD [UDY822-01]	Fluoride (F-)	2022/11/03	0		%	20
8324108	KIT	Spiked Blank	Conductivity	2022/11/03		102	%	85 - 115
8324108	KIT	Method Blank	Conductivity	2022/11/03	<1.0		umho/cm	
8324108	KIT	RPD [UDY822-01]	Conductivity	2022/11/03	1.3		%	25
8324109	KIT	Spiked Blank	Alkalinity (Total as CaCO3)	2022/11/03		100	%	85 - 115
8324109	KIT	Method Blank	Alkalinity (Total as CaCO3)	2022/11/03	<1.0		mg/L	
8324109	KIT	RPD [UDY822-01]	Alkalinity (Total as CaCO3)	2022/11/03	1.9		%	20
8324112	KIT	Spiked Blank	pH	2022/11/03		102	%	98 - 103
8324112	KIT	RPD [UDY822-01]	pH	2022/11/03	0.52		%	N/A
8324469	VRO	Spiked Blank	Colour	2022/11/04		98	%	80 - 120
8324469	VRO	Method Blank	Colour	2022/11/04	<2		TCU	
8324469	VRO	RPD [UDY817-01]	Colour	2022/11/04	NC		%	25
8324654	GID	Matrix Spike [UDY816-02]	Dissolved Organic Carbon	2022/11/03		99	%	80 - 120
8324654	GID	Spiked Blank	Dissolved Organic Carbon	2022/11/03		99	%	80 - 120
8324654	GID	Method Blank	Dissolved Organic Carbon	2022/11/03	<0.40		mg/L	
8324654	GID	RPD [UDY816-02]	Dissolved Organic Carbon	2022/11/03	4.3		%	20
8324680	RG4	Matrix Spike [UDY837-03]	Dissolved Calcium (Ca)	2022/11/04		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2022/11/04		NC	%	80 - 120
			Dissolved Phosphorus (P)	2022/11/04		104	%	80 - 120
			Dissolved Potassium (K)	2022/11/04		102	%	80 - 120
			Dissolved Sodium (Na)	2022/11/04		NC	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
8324680	RG4	Spiked Blank	Dissolved Calcium (Ca)	2022/11/04		101	%	80 - 120
			Dissolved Magnesium (Mg)	2022/11/04		100	%	80 - 120
			Dissolved Phosphorus (P)	2022/11/04		120	%	80 - 120
			Dissolved Potassium (K)	2022/11/04		101	%	80 - 120
			Dissolved Sodium (Na)	2022/11/04		100	%	80 - 120
8324680	RG4	Method Blank	Dissolved Calcium (Ca)	2022/11/04	<200		ug/L	
			Dissolved Magnesium (Mg)	2022/11/04	<50		ug/L	
			Dissolved Phosphorus (P)	2022/11/04	<100		ug/L	
			Dissolved Potassium (K)	2022/11/04	<200		ug/L	
			Dissolved Sodium (Na)	2022/11/04	<100		ug/L	
8324680	RG4	RPD [UDY837-03]	Dissolved Calcium (Ca)	2022/11/04	1.7		%	20
			Dissolved Magnesium (Mg)	2022/11/04	0.055		%	20
			Dissolved Phosphorus (P)	2022/11/04	11		%	20
			Dissolved Potassium (K)	2022/11/04	0.089		%	20
			Dissolved Sodium (Na)	2022/11/04	1.1		%	20
8326279	ASP	Matrix Spike	Total Ammonia-N	2022/11/06		94	%	75 - 125
8326279	ASP	Spiked Blank	Total Ammonia-N	2022/11/06		104	%	80 - 120
8326279	ASP	Method Blank	Total Ammonia-N	2022/11/06	<0.050		mg/L	
8326279	ASP	RPD	Total Ammonia-N	2022/11/06	1.2		%	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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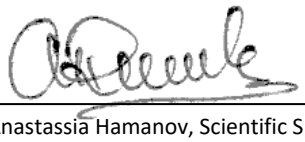
VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Scientific Specialist

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Exceedance Summary Table – Prov. Water Quality Obj.

Result Exceedances

Sample ID	Bureau Veritas ID	Parameter	Criteria	Result	DL	UNITS
No Exceedances						

The exceedance summary table is for information purposes only and should not be considered a comprehensive listing or statement of conformance to applicable regulatory guidelines.

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