



REPORT

**Environmental Compliance Approval
Quarterly Monitoring Report (November 2021 to January
2022)**

McCarthy Quarry

Submitted to:

Chris Hyde

Ontario Ministry of Environment, Conservation and Parks
Barrie District Office
1203-54 Cedar Pointe Drive
Barrie ON L4N 5R7

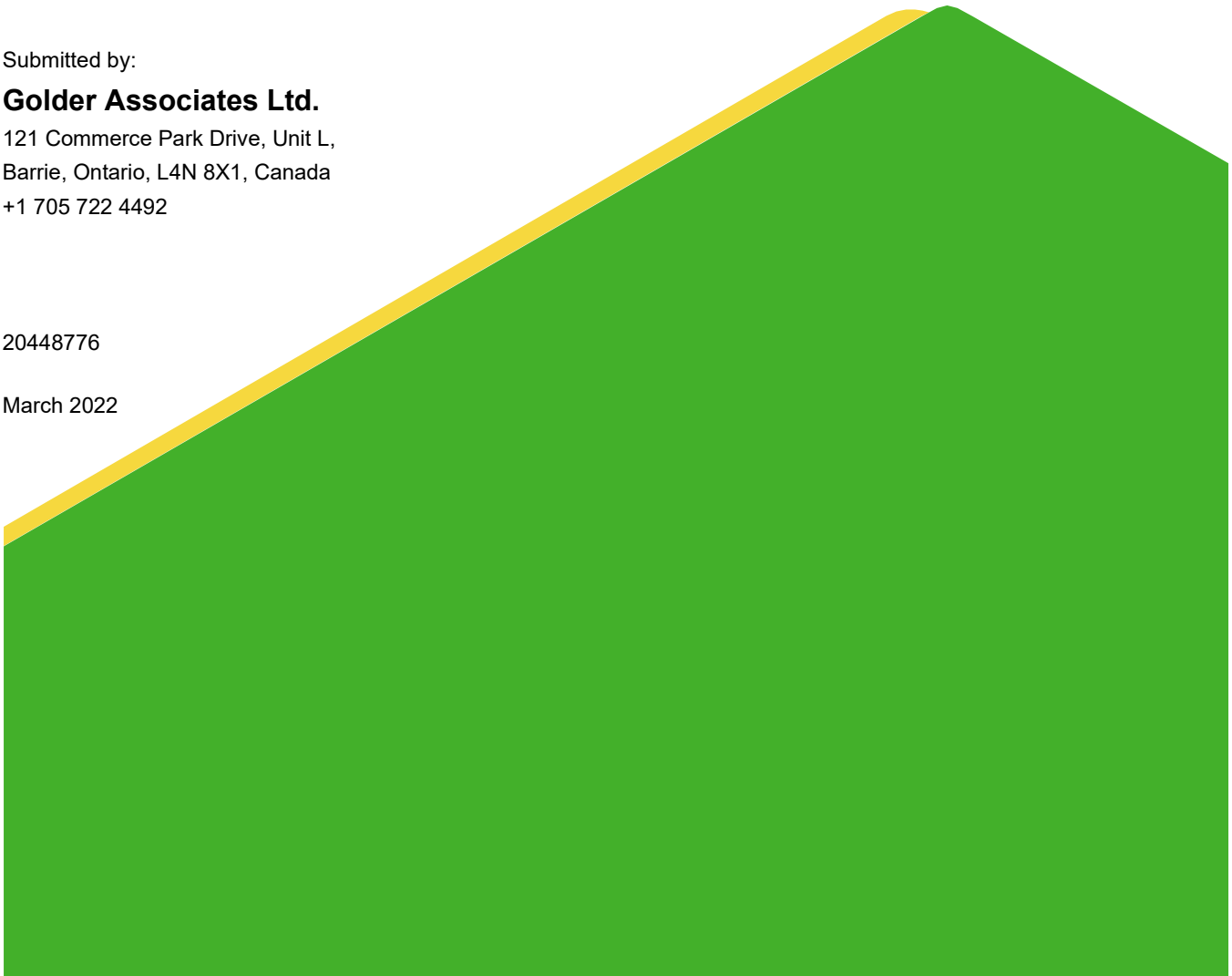
Submitted by:

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20448776

March 2022



Distribution List

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ECA No. 7737-BH6QEA

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Water Quality Data

1.0 INTRODUCTION

Golder Associates Ltd. (Golder) was retained by QBJR/Coco Aggregates Inc. (Coco) to prepare a quarterly monitoring report for the McCarthy Quarry located in the Township of Ramara, County of Simcoe (Figure 1). The preparation of a quarterly monitoring report is a requirement of the Environmental Compliance Approval (ECA) No. 7737-BH6QEA (the 'ECA') issued on October 22, 2019. A copy of the ECA is provided in Appendix A. The following report is intended to fulfill the requirements of Section 8 (4) of the ECA and documents the results of the monitoring program activities described in Section 6 of the ECA for the period between August and November 2021.

2.0 BACKGROUND

The dewatering activities at the McCarthy Quarry in 2021 and 2022 are regulated under Permit to Take Water (PTTW) No. 1603-BKTPQH, issued on January 31, 2020 and expiring on January 31, 2025. Under PTTW No. 1603-BKTPQH Coco is permitted to pump water from the quarry sump at a maximum rate of 4,545 L/min (76 L/sec). The quarry discharge monitoring plan and effluent quality limits are established in the ECA.

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 4-inch (101 mm nominal) diameter discharge line. Water is pumped from the quarry floor up the quarry face via the discharge line to a 4-inch (101 mm nominal) diameter pipeline that directs the water to a 14,000 m³ settling pond (Figure 1). 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.

3.0 QUARRY DISCHARGE MONITORING PLAN

The technical requirements of the quarry discharge monitoring plan are listed in Section 4 (Effluent [quality] Limits), Section 5 (Effluent – Visual Observations), and Section 6 (Monitoring and Recording) of the ECA. The monitoring requirements consist of:

- Weekly monitoring of the effluent quality (Total Suspended Solids [TSS], oil and grease, phenolics [4AAP] and pH) at the outfall of the settling pond (labelled as McCarthy Pond on Figure 1); and
- Semi-annual monitoring of effluent quality at three locations: 1) the McCarthy Pond outfall; 2) the culvert along Concession Road 1 at the McCarthy property (SW1 on Figure 1); and 3) 260 m north of the intersection of Concession Road 1 and the Mara Eldon Boundary Road (SW2 on Figure 1). The parameters required for semi-annual water quality monitoring (as listed in Table 3 of the ECA) include TSS, copper, lead, nickel, zinc, arsenic, oil and grease, phenolics (4AAP), hardness (as CaCO₃), alkalinity (as CaCO₃), conductivity, pH, fluoride, chloride, nitrate (as N), nitrite (as N), sulphate, calcium, magnesium, sodium, potassium, ammonia (as N), dissolved organic carbon, iron, total Kjeldahl nitrogen, phosphorus (total), cadmium, chromium, manganese, anions (sum), cations (sum) and total dissolved solids.

The weekly quarry discharge quality sampling was conducted by Coco staff directly from the discharge outfall. The weekly water quality samples were sent to Bureau Veritas Laboratories of Mississauga, Ontario for analysis. These weekly water quality results are compared to the daily concentration limits of the ECA (Table 1).

A monthly average is calculated from the weekly water quality results and compared to the monthly concentration limits of the ECA (Table 2).

A weekly water quality sample was only collected from the McCarthy Pond location on the weeks of November 15 to 19, November 29 to December 3 and December 6 to 10, 2021 as quarry staff reported limited discharge was present at the sampling location at the time of sampling for the other weeks. The semi-annual sample from the McCarthy Pond location was collected in December (Table 3).

4.0 MONITORING RESULTS

All laboratory certificates of analysis for the November 2021 to January 2022 monitoring period for both weekly and semi-annual monitoring events are provided in Appendix B. Results of the quarry discharge sample analyses are summarized below:

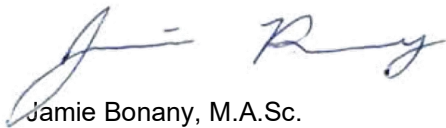
- The TSS, pH, Oil and Grease and Phenol (4AAP) concentrations were all below the daily concentration limits of the ECA (Table 1);
- The TSS, Oil and Grease and Phenol (4AAP) concentrations were all below the monthly concentration limits of the ECA (Table 2);
- The semi-annual surface water sampling results at the McCarthy Pond were below the PWQO (Table 3); and,
- The daily discharge rate between November 2021 to January 2022 was below the permitted rate of 4,545 L/min (76 L/sec) (Table 4).

5.0 CLOSURE

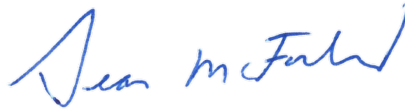
We trust this report meets your current requirements. Should you have any questions please do not hesitate to contact the undersigned.

Signature Page

Golder Associates Ltd.



Jamie Bonany, M.A.Sc.
Project Scientist



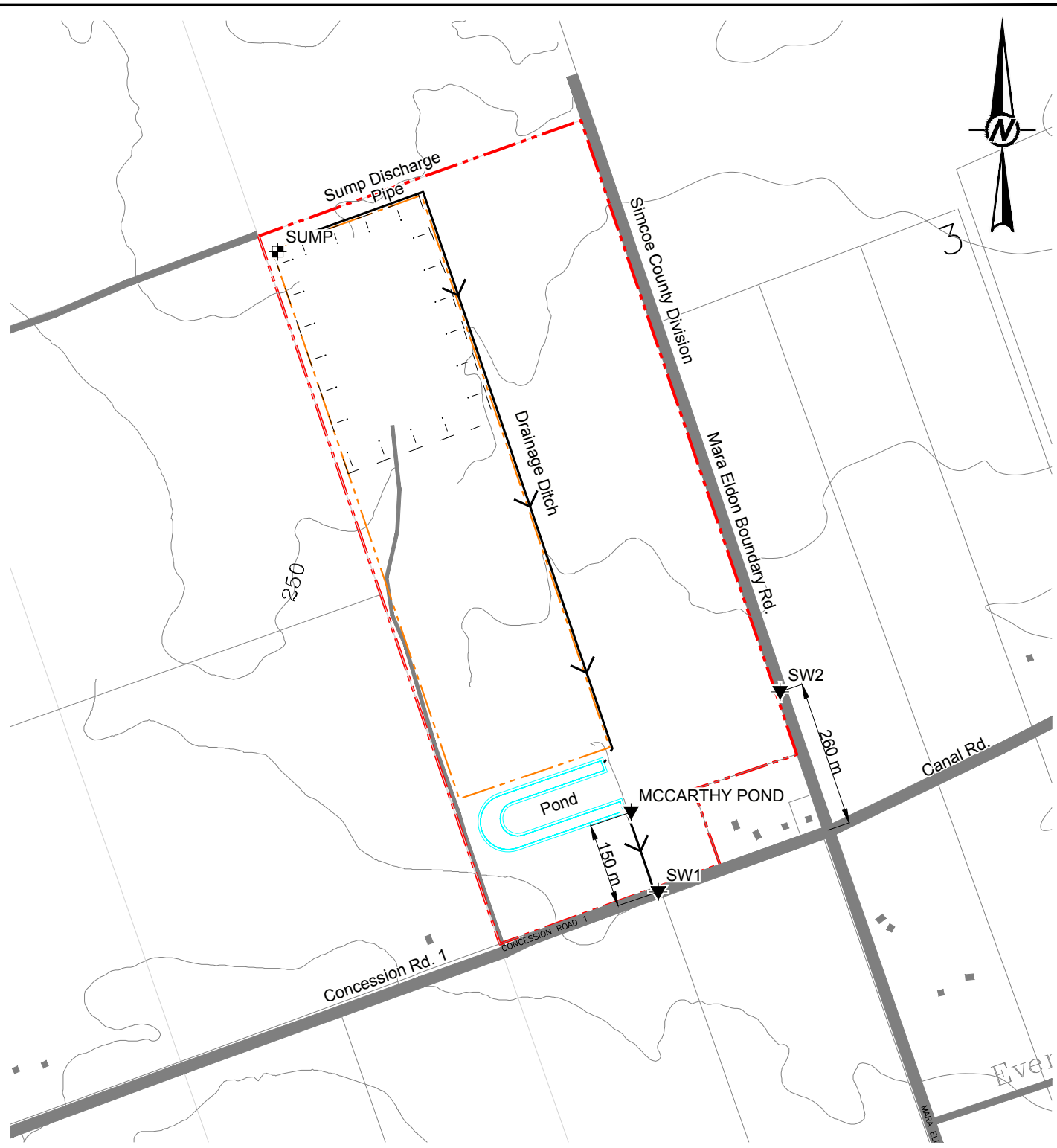
Sean McFarland, Ph.D., P.Geo.
Principal, Senior Hydrogeologist

JB/SM/cdr

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[https://golderassociates.sharepoint.com/sites/139299/project files/6 deliverables/eca reports/quarterly/eca nov to feb 2022/20448776 rep 2022'03'01 eca quarterly report.docx](https://golderassociates.sharepoint.com/sites/139299/project%20files/6%20deliverables/eca%20reports/quarterly/eca%20nov%20to%20feb%202022/20448776%20rep%202022'03'01%20eca%20quarterly%20report.docx)

Figures



LEGEND

- - - Approximate Property Boundary
- - - Approximate Licenced Boundary
- 5 m Contour Line
- ▼ Surface Water Sampling Location
- Approximate Extent of Quarry

REFERENCES AND NOTES

1. Projection UTM NAD83 Zone 17
2. Mapping based on ESRI Geography Network OBM Features and Bing Orthophotos



CLIENT
COCO / QBJR AGGREGATES INC.

PROJECT
STAN MCCARTHY QUARRY

TITLE
LOCATION MAP

CONSULTANT	YYYY-MM-DD	2021-12-08
PREPARED	DESIGN	STB
REVIEW	APPROVED	



PROJECT No. 20448776 SCALE AS SHOWN Rev. A Figure 1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANS/A 26 mm

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Tables

Table 1: McCarthy Pond Weekly Water Quality Results (November to January 2022)

	Unit	Reportable Detection Limit (RDL)	PWQO ¹	Daily Concentration Limit ²	McCarthy Quarry		
Sample ID					Pond		
Date					15-Nov-21	02-Dec-21	09-Dec-21
pH	pH	n/a		6.0-9.5	8.26	8.16	7.82
Total Suspended Solids	mg/L	1		30	2	2	14
Total Oil and Grease	mg/L	0.5	Note 3	30	0.5	<0.5	<0.5
Phenols (4AAP)	mg/L	<0.0010		0.04	<0.001	<0.001	<0.001

Notes

1. Provincial Water Quality Objectives (PWQO); shaded cells denote PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.
2. Daily Concentration Limit; bolded values denote exceedances in the Environmental Compliance Approval (ECA) daily concentration limits.
3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or discoloration on the surface, can be detected by odour, can cause tainting of edible organisms, can form detectable deposits on shorelines and bottom sediments.
4. Results that are preceded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).

Table 2: McCarthy Pond Monthly Water Quality Results (November 2021 to January 2022)

Sample ID	Unit	Reportable Detection Limit (RDL)	PWQO ¹	Monthly Concentration Limit ²	McCarthy Quarry		
					Pond		
Date					November	December	January
Total Suspended Solids	mg/L	1		15	2.0	8.0	-
Total Oil and Grease	mg/L	0.5	Note 3	15	0.5	<0.5	-
Phenols (4AAP)	mg/L	<0.0010		0.02	<0.001	<0.001	-

Notes

1. Provincial Water Quality Objectives (PWQO); shaded cells denote PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.
2. Monthly Concentration Limit; bolded values denote exceedances in the Environmental Compliance Approval (ECA) monthly concentration limits.
3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or discoloration on the surface, can be detected by odour, can cause tainting of edible organisms, can form detectable deposits on shorelines and bottom sediments.
4. Results that are preceded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).

Table 3: McCarthy Semi-Annual Water Quality Monitoring Results (December 2021)

	Unit	Reportable Detection Limit (RDL)	PWQO ¹	Interim PWQO ²	ECA Effluent Limits	McCarthy Quarry
Sample ID						Pond
Date						17-Dec-21
Field Measured Parameters						
Conductivity	µS/cm					886
pH	pH	n/a	6.5-8.5		6.0-9.5	7.87
Temperature	°C	n/a				3.9
Calculated Parameters						
Hardness (CaCO3)	mg/L	1.0				370
Inorganics						
Total Ammonia-N	mg/L	0.050				<0.050
Conductivity	ms/cm	0.001				1.10
Total Dissolved Solids	mg/L	10				645
Fluoride (F-)	mg/L	0.10				0.35
Total Kjeldahl Nitrogen (TKN)	mg/L	0.10				<0.10
Dissolved Organic Carbon	mg/L	0.50				4.1
pH	pH	N/A	6.5-8.5		6.0-9.5	8.06
Phenols-4AAP	mg/L	0.0010	0.001		0.04	<0.0010
Total Phosphorus	mg/L	0.020		0.03 ^{5b}		0.005
Total Suspended Solids	mg/L	10			30	6
Dissolved Sulphate (SO4)	mg/L	1				230
Alkalinity (Total as CaCO3)	mg/L	1.0				150
Dissolved Chloride (Cl)	mg/L	1				130
Nitrite (N)	mg/L	0.010				<0.010
Nitrate (N)	mg/L	0.10				<0.10
Petroleum Hydrocarbons						
Total Oil & Grease	mg/L	0.50	Note 3		30	<0.50
Metals						
Total Arsenic (As)	ug/L	1	100	5		<1.0
Total Cadmium (Cd)	ug/L	0.09	0.2	0.1-0.5 ^{5d}		<0.09
Dissolved Calcium (Ca)	mg/L	0.05				99
Total Calcium (Ca)	ug/L	200				98000
Total Chromium (Cr)	ug/L	5	1-8g ^{5e}			<5.0
Total Copper (Cu)	ug/L	0.9	5	1-5 ^{5f}		<0.9
Total Iron (Fe)	ug/L	100	300			190
Total Lead (Pb)	ug/L	0.5	5-25 ^{5g}	1-5 ^{5h}		<0.50
Dissolved Magnesium (Mg)	mg/L	0.05				30
Total Magnesium (Mg)	ug/L	50				31000
Total Manganese (Mn)	ug/L	2				38
Total Nickel (Ni)	ug/L	1	25			<1.0
Dissolved Potassium (K)	mg/L	1				8.0
Total Potassium (K)	ug/L	200				8300
Dissolved Sodium (Na)	mg/L	0.5				84
Total Sodium (Na)	ug/L	100				82000
Total Zinc (Zn)	ug/L	5	30	20		84

1. Provincial Water Quality Objectives (PWQO); shaded cells denote PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.

2. Interim Provincial Water Quality Objectives (Interim PWQO); shaded cells and italics denote Interim PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.

3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or discoloration on the surface, can be detected by odour, can cause tainting of edible organisms, can form detectable deposits on shorelines and bottom sediments.

4. Results that are preceded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).

5a. Aluminum (Interim):

- At pH 4.5 to 5.5 the Interim PWQO is 15 ug/L based on inorganic monomeric aluminum measured in clay-free samples.
- At pH >5.5 to 6.5, no condition should be permitted which would increase the acid soluble inorganic aluminum concentration in clay-free samples to more than 10% above natural background concentrations for waters representative of that geological area of the Province that are unaffected by man-made inputs.
- At pH >6.5 to 9.0, the Interim PWQO is 75 ug/L based on total aluminum measured in clay-free samples.
- If natural background aluminum concentrations in water bodies unaffected by manmade inputs are greater than the numerical Interim PWQO (above), no condition is permitted that would increase the aluminum concentration in clay-free samples by more than 10% of the natural background level.

5b. Phosphorus (Interim):

- Current scientific evidence is insufficient to develop a firm Objective at this time.
- Accordingly, the following phosphorus concentrations should be considered as general guidelines which should be supplemented by site-specific studies:
 - (a) To avoid nuisance concentrations of algae in lakes, average total phosphorus concentrations for the ice-free period should not exceed 20 ug/L;

5c. Beryllium: If Hardness <75 mc If Hardness >75 mc

5d. Cadmium (Interim): If Hardness 0-100 r If Hardness >100 r

5e. Chromium: 1 ug/L for hexavalent 8.9 ug/L for trivalent

5f. Copper (Interim): If Hardness as CaC If Hardness as CaC

5g. Lead: If Alkalinity as CaC If Alkalinity as CaC If Alkalinity as CaC

5h. Lead (Interim): If Hardness as CaC If Hardness as CaC If Hardness as CaC

Table 4: 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					6,550,000	76	4,545
1-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
2-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
3-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
4-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
5-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
6-Nov-21	NO PUMP		0	0	-	-	-
7-Nov-21	NO PUMP		0	0	-	-	-
8-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
9-Nov-21	NO PUMP		0	0	-	-	-
10-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
11-Nov-21	NO PUMP		0	0	-	-	-
12-Nov-21	NO PUMP		0	0	-	-	-
13-Nov-21	NO PUMP		0	0	-	-	-
14-Nov-21	NO PUMP		0	0	-	-	-
15-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
16-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
17-Nov-21	7AM	4PM	32400	540	648,000	20	1,200
18-Nov-21	NO PUMP		0	0	-	-	-
19-Nov-21	NO PUMP		0	0	-	-	-
20-Nov-21	NO PUMP		0	0	-	-	-
21-Nov-21	NO PUMP		0	0	-	-	-
22-Nov-21	7AM	4PM	32400	540	432,000	13	800
23-Nov-21	7AM	4PM	32400	540	432,000	13	800
24-Nov-21	7AM	4PM	32400	540	432,000	13	800
25-Nov-21	7AM	4PM	32400	540	432,000	13	800
26-Nov-21	7AM	4PM	32400	540	432,000	13	800
27-Nov-21	NO PUMP		0	0	-	-	-
28-Nov-21	NO PUMP		0	0	-	-	-
29-Nov-21	7AM	4PM	32400	540	432,000	13	800
30-Nov-21	7AM	4PM	32400	540	432,000	13	800
1-Dec-21	7AM	4PM	32400	540	432,000	13	800
2-Dec-21	7AM	4PM	32400	540	432,000	13	800
3-Dec-21	7AM	4PM	32400	540	432,000	13	800
4-Dec-21	NO PUMP		0	0	-	-	-
5-Dec-21	NO PUMP		0	0	-	-	-
6-Dec-21	7AM	4PM	32400	540	432,000	13	800
7-Dec-21	7AM	4PM	32400	540	432,000	13	800
8-Dec-21	7AM	4PM	32400	540	432,000	13	800
9-Dec-21	7AM	4PM	32400	540	432,000	13	800
10-Dec-21	7AM	4PM	32400	540	432,000	13	800
11-Dec-21	NO PUMP		0	0	-	-	-
12-Dec-21	NO PUMP		0	0	-	-	-

Table 4: 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					6,550,000	76	4,545
13-Dec-21	7AM	4PM	32400	540	432,000	13	800
14-Dec-21	7AM	4PM	32400	540	432,000	13	800
15-Dec-21	7AM	4PM	32400	540	432,000	13	800
16-Dec-21	7AM	4PM	32400	540	432,000	13	800
17-Dec-21	NO PUMP		0	0	-	-	-
18-Dec-21	NO PUMP		0	0	-	-	-
19-Dec-21	NO PUMP		0	0	-	-	-
20-Dec-21	NO PUMP		0	0	-	-	-
21-Dec-21	NO PUMP		0	0	-	-	-
22-Dec-21	NO PUMP		0	0	-	-	-
23-Dec-21	NO PUMP		0	0	-	-	-
24-Dec-21	NO PUMP		0	0	-	-	-
25-Dec-21	NO PUMP		0	0	-	-	-
26-Dec-21	NO PUMP		0	0	-	-	-
27-Dec-21	NO PUMP		0	0	-	-	-
28-Dec-21	NO PUMP		0	0	-	-	-
29-Dec-21	NO PUMP		0	0	-	-	-
30-Dec-21	NO PUMP		0	0	-	-	-
31-Dec-21	NO PUMP		0	0	-	-	-
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	-	-	-

Table 4: 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					6,550,000	76	4,545
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	-	-	-

APPENDIX A

ECA No. 7737-BH6QEA

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 7737-BH6QEA
Issue Date: October 22, 2019

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

Site Location: McCarthy Quarry
Lot 1, Concession 1,
Original Township of Mara
Township of Ramara
County of Simcoe
L0K 1B0

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

sewage works for the collection, transmission, treatment and disposal of stormwater and groundwater collecting within the confines of the Quarry, consisting of the following:

- one (1) sump, measuring 20 metres long, 10 metres wide and 3 metres deep, located at the base of the quarry floor, equipped with two (2) submersible pumps each rated at 38 litres per second with a suction intake approximately one (1) metre above the bottom of the sump, discharging to a settling pond via a 203 millimetre diameter pipeline; and
- one (1) horse-shoe shaped settling pond with an approximate volume of 14,000 cubic metres (at elevation 248.2 metres), with a Hickenbottom control structure equipped with a 150 millimetre diameter orifice plate, discharging to the roadside ditch along Concession Road 1 with ultimate discharge to the Talbot River via a private ditch.

all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works.

all in accordance with supporting documents listed in **Schedule A**.

For the purpose of this environmental compliance approval, the following definitions apply:

"Application" means the application for an environmental compliance approval submitted to the Ministry for approval by or on behalf of the Owner and dated August 8, 2019.

"Approval" means this environmental compliance approval, any schedules attached to it, and the Application;

"Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

"District Manager" means the District Manager of the appropriate local District Office of the Ministry, where the Works are geographically located;

"EPA" means the *Environmental Protection Act, R.S.O. 1990, c.E.19* , as amended;

"Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

"Owner" means QBJR Aggregates Inc., and includes its successors and assignees;

"OWRA" means the *Ontario Water Resources Act, R.S.O. 1990, c. O.40* , as amended; and

"Works" means the sewage works described in the Approval.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL CONDITION

- (1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.
- (2) Except as otherwise provided by these terms and conditions, the Owner shall design, build, install, operate and maintain the Works in accordance with this Approval.
- (3) Where there is a conflict between a provision of this environmental compliance approval and any document submitted by the Owner, the conditions in this environmental compliance approval shall take precedence. Where there is a conflict between one or more of the documents submitted by the Owner, the Application shall take precedence

unless it is clear that the purpose of the document was to amend the Application

- (4) Where there is a conflict between the documents listed in the Schedule A, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.
- (5) The terms and conditions of this Approval are severable. If any term and condition of this environmental compliance approval, or the application of any requirement of this environmental compliance approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.
- (6) The issuance of, and compliance with the conditions of, this Approval does not:
 - a) relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including, but not limited to, the obligation to obtain approval from the local conservation authority necessary to construct or operate the sewage Works; or
 - b) limit in any way the authority of the Ministry to require certain steps be taken to require the Owner to furnish any further information related to compliance with this Approval.

2. CHANGE OF OWNER

- (1) The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within **thirty (30) days** of the change occurring:
 - (a) change of address of Owner or operating authority;
 - (b) change of Owner or operating authority or both, including address of new Owner or operating authority, or both;
 - (c) change of partners where the Owner or operating authority is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17* ; and
 - (d) change of name of the corporation where the Owner or operator is or at any time becomes a corporation, and a copy of the “Initial Return” or “Notice of Change” filed under the *Corporations Information Act, R.S.O. 1990, c. C.39* , shall be included in the notification to the District Manager.
- (2) In the event of any change in ownership of the Works, the Owner shall notify in writing the succeeding owner of the existence of this Approval, and a copy of such notice shall be

forwarded to the District Manager.

- (3) The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this environmental compliance approval.

3. OPERATION AND MAINTENANCE

- (1) The Owner shall prepare an operations manual of the Works that includes, but is not limited to, the following information:
 - (a) operating procedures for routine operation of the Works;
 - (b) inspection programs, including frequency of inspection, for the Works and the methods or tests to be employed to detect when maintenance is necessary;
 - (c) repair and maintenance programs, including the frequency of repair and maintenance for the Works;
 - (d) contingency plans and procedures for dealing with a potential spill, bypasses or any other abnormal situations, including notifying the District Manager of the situation; and
 - (e) procedures for receiving and responding to public complaints.
- (2) The Owner shall ensure that the Works and related equipment and appurtenances which are installed or used to achieve compliance with this Approval are properly operated and maintained.
- (3) The Owner shall inspect the sump, discharge pump and settling pond on a monthly basis and keep a log or record of the inspections at the Quarry.
- (4) The Owner shall carry out on an as-needed basis, specific maintenance requirements like removing build-up, associated with the sump, pump and settling pond.
- (5) The Owner shall, upon identification of a loss of oil and fuel, take immediate action to prevent the further occurrence of such loss and prevent the spill from entering into the sump and/or the settling pond.
- (6) In furtherance of, but without limiting the generality of, the obligation imposed by subsection (2), the Owner shall ensure that equipment and material for the containment, clean-up and disposal of oil and fuel and materials contaminated with oil or fuel are kept on hand and in good repair for immediate use in the event of:
 - (a) loss of oil or fuel during refuelling or equipment maintenance;

- (b) a spill within the meaning of Part X of the Environmental Protection Act; and/or
- (c) the identification of an abnormal amount of oil or fuel in the sump and/or settling pond.

4. EFFLUENT LIMITS

- (1) The Owner shall construct, operate and maintain the Works such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the Works.

Table 1 - Effluent Limits		
Effluent Parameter	Daily Concentration (milligrams per litre unless otherwise indicated)	Monthly Average Concentration (milligrams per litre unless otherwise indicated)
Column 1	Column 2	Column 3
Oil and Grease	30	15
Phenolics (4AAP)	0.04	0.02
Total Suspended Solids	30	15
pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times		

- (2) For the purposes of determining compliance with and enforcing subsection (1):
 - (a) non-compliance with respect to a Daily Concentration is deemed to have occurred when any single grab sample analyzed for a parameter named in Column 1 of subsection (1) is greater than the corresponding daily concentration set out in Column 2 of subsection (1);
 - (b) non-compliance with respect to an Monthly Average Concentration is deemed to have occurred when the arithmetic mean concentration of all samples taken in a month, analyzed for a parameter named in Column 1 of subsection (1) is greater than the corresponding monthly average concentration set out in Column 3 of subsection (1); and
 - (c) non-compliance with respect to pH is deemed to have occurred when any single measurement is outside of the indicated range.

5. EFFLUENT - VISUAL OBSERVATIONS

- (1) Notwithstanding any other condition in this Approval, the Owner shall ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film, sheen or foam on the receiving waters.
- (2) Notwithstanding any other condition in this Approval, the Owner shall ensure that the

effluent from the Works shall not cause flooding or erosion to the downstream receiver and in particular Road flooding.

6. **MONITORING AND RECORDING**

The Owner shall, upon the Issuance of this Approval, carry out the following monitoring program:

- (1) All samples and measurements taken for the purposes of this Approval are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.
- (2) Samples shall be collected and analyzed at the following sampling point, at the sampling frequencies and using the sample type specified for each parameter listed:

Table 2 - Effluent Monitoring	
Sample Point	Outfall of settling pond approximately 150 metres north of Concession 1 (i.e. end of pipe discharge).
Frequency	Weekly
Sample Type	Grab
Parameters	Oil and Grease, Phenolics (4AAP), and Total Suspended Solid (TSS).

Table 3 - Effluent and Surface Water Monitoring	
Sample Point	<ol style="list-style-type: none"> 1. Outfall of settling pond approximately 150 metres north of Concession 1 (i.e. end of pipe discharge). 2. Box culvert on Eldon-Ramara Townline approximately 260 metres north of the intersection of Ramara Concession 1 and Eldon-Ramara Townline (i.e. upgradient of end of pipe discharge). 3. 80 centimetre CSP located at Concession 1 Road on McCarthy property (i.e. downgradient of end of pipe discharge).
Frequency	Semi-Annually during discharge event.
Sample Type	Grab
Parameters	Total Suspended Solids, Copper, Lead, Nickel, Zinc, Arsenic, Oil and Grease, Phenolics (4AAP), Hardness (as CaCO ₃), Alkalinity(as CaCO ₃), Conductivity, pH, Fluoride, Chloride, Nitrate (N), Nitrite (N), Sulphate, Calcium, Magnesium, Sodium, Potassium, Ammonia (N), Dissolved Organic Carbon, Iron, Total Kjeldahl Nitrogen, Phosphorus (Total), Cadmium, Chromium, Manganese, Anion (Sum), Cation (Sum) and Total Dissolved Solids.

- (3) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:
 - (a) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (August 1994), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and
 - (b) the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.
- (4) The Owner shall measure, record and calculate the discharge rate and volume from the Works on a daily basis during discharging period.
- (5) The Owner shall retain for a minimum of **five (5) years** from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

7. RECEIVER INSPECTION

- (1) The Owner shall, at least once per year, undertake a visual inspection of the downstream ditches for evidence of erosion and/or flooding and shall report the observations in the annual report.

8. REPORTING

- (1) The Owner shall report to the District Manager or designate, any exceedance of any parameter specified in condition 4 orally, forthwith, and in writing within **seven (7) days** of the exceedance.
- (2) In addition to the obligations under Part X of the EPA, the Owner shall, within **ten (10) working days** of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.
- (3) The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.
- (4) The Owner shall submit quarterly reports of the information obtained under condition 6 within **30 days** of the end of each quarter.
- (5) The Owner shall prepare, and submit to the District Manager, a **performance report**, on

an annual basis, on or before March 31st. The reports shall contain, but shall not be limited to, the following information:

- (a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in condition 4, including an overview of the success and adequacy of the sewage Works;
- (b) a description of any operating problems encountered and corrective actions taken;
- (c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the sewage works;
- (d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;
- (e) any other information the District Manager requires from time to time.

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

1. Condition 1 is imposed to ensure that the Works are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. Condition 1.(6) is included to emphasize that the issuance of this Approval does not diminish any other statutory and regulatory obligations to which the Owner is subject in the construction, maintenance and operation of the Works. The Condition specifically highlights the need to obtain any necessary conservation authority approvals. The Condition also emphasizes the fact that this Approval doesn't limit the authority of the Ministry to require further information.
2. Condition 2 is included to ensure that the Ministry records are kept accurate and current with respect to approved Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the works in compliance with it.
3. Condition 3 is included to ensure that a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner and made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the Works. The condition is also included to ensure that the Works will be operated and maintained in a manner enabling compliance with the terms and conditions of this Approval, such that the environment is protected and deterioration, loss, injury or damage to

any person or property is minimised and/or prevented.

4. Conditions 4 and 5 are imposed to ensure that the effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver.
5. Condition 6 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the Approval and that the Works does not cause any impairment to the receiver.
6. Condition 7 is included in order to determine if the ongoing discharge of quarry water is having a negative impact on the downstream ditches so that abatement measures can be taken to prevent such occurrences.
7. Condition 8 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

SCHEDULE 'A'

1. Environmental Compliance Approval Application for Industrial Sewage Works submitted by John Easton, P.Geo., Golder Associates Ltd., and signed by Mr. Anthony Rossi, Director Land Development & Government Relations, QBJR Aggregates Inc., dated August 8, 2019; and all supporting documentation and information.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s).
4731-987KM8 issued on October 15, 2013.**

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

- a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
- b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part
II.1 of the Environmental Protection Act
Ministry of the Environment, Conservation and
Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 22nd day of October, 2019



Fariha Pannu, P.Eng.

Director

appointed for the purposes of Part II.1 of the
Environmental Protection Act

AA/

c: District Manager, MECP Barrie District Office
John Easton, P.Geo., Golder Associates Ltd.

APPENDIX B

Water Quality Data



Your Project #: 20448776
 Site Location: MCCARTHY
 Your C.O.C. #: 804626-09-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/12/13
 Report #: R6917850
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X6426

Received: 2021/11/16, 08:50

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2021/12/11	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/11/30	2021/12/10	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2021/11/18	2021/11/19	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/11/18	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2021/11/30	2021/12/10	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2021/11/18	2021/11/19	CAM SOP-00428	SM 23 2540D 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.

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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 20448776
Site Location: MCCARTHY
Your C.O.C. #: 804626-09-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/12/13
Report #: R6917850
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1X6426
Received: 2021/11/16, 08:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829

=====

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RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		RFX043		
Sampling Date		2021/11/15 02:00		
COC Number		804626-09-01		
	UNITS	590331 POND	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	0.50	0.50	7705484
Inorganics				
pH	pH	8.26	N/A	7709684
Phenols-4AAP	mg/L	<0.0010	0.0010	7708373
Total Suspended Solids	mg/L	2	1	7708594
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	0.50	0.50	7714449
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	7714453
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable				



BUREAU
VERITAS

Bureau Veritas Job #: C1X6426
Report Date: 2021/12/13

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: J

GENERAL COMMENTS

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

Package 1	14.7°C
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Project number updated as requested.

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C1X6426
Report Date: 2021/12/13

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: J

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7708373	DRM	Matrix Spike	Phenols-4AAP	2021/11/18		96	%	80 - 120
7708373	DRM	Spiked Blank	Phenols-4AAP	2021/11/18		100	%	80 - 120
7708373	DRM	Method Blank	Phenols-4AAP	2021/11/18	<0.0010		mg/L	
7708373	DRM	RPD	Phenols-4AAP	2021/11/18	NC		%	20
7708594	KCB	QC Standard	Total Suspended Solids	2021/11/19		95	%	85 - 115
7708594	KCB	Method Blank	Total Suspended Solids	2021/11/19	<1		mg/L	
7708594	KCB	RPD	Total Suspended Solids	2021/11/19	0		%	25
7709684	SAU	Spiked Blank	pH	2021/11/19		102	%	98 - 103
7709684	SAU	RPD	pH	2021/11/19	0.50		%	N/A
7714449	MPZ	Spiked Blank	Total Oil & Grease	2021/12/10		100	%	85 - 115
7714449	MPZ	RPD	Total Oil & Grease	2021/11/30	1.3		%	25
7714449	MPZ	Method Blank	Total Oil & Grease	2021/12/10	<0.50		mg/L	
7714453	MPZ	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/12/10		97	%	85 - 115
7714453	MPZ	RPD	Total Oil & Grease Mineral/Synthetic	2021/11/30	1.0		%	25
7714453	MPZ	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/12/10	<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 (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).




BUREAU
VERITAS

Bureau Veritas Job #: C1X6426
Report Date: 2021/12/13

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: J

VALIDATION SIGNATURE PAGE

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

Eva Pranjić


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

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Your Project #: 20448776
 Site Location: MCCARTHY
 Your C.O.C. #: 851932-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/12/16
 Report #: R6923483
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y4787

Received: 2021/12/10, 08:50

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2021/12/16	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/12/15	2021/12/16	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2021/12/11	2021/12/13	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/12/13	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2021/12/15	2021/12/16	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2021/12/14	2021/12/15	CAM SOP-00428	SM 23 2540D 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.

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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 20448776
Site Location: MCCARTHY
Your C.O.C. #: 851932-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/12/16
Report #: R6923483
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y4787
Received: 2021/12/10, 08:50

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829

=====

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RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		RHQ822	RHQ822		
Sampling Date		2021/12/09 02:00	2021/12/09 02:00		
COC Number		851932-03-01	851932-03-01		
	UNITS	POND	POND Lab-Dup	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	N/A	0.50	7719672
Inorganics					
pH	pH	7.82	N/A	N/A	7719974
Phenols-4AAP	mg/L	<0.0010	<0.0010	0.0010	7721189
Total Suspended Solids	mg/L	14	N/A	1	7721856
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	<0.50	N/A	0.50	7729242
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	N/A	0.50	7729251
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable					



BUREAU
VERITAS

Bureau Veritas Job #: C1Y4787
Report Date: 2021/12/16

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: JOH

GENERAL COMMENTS

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

Package 1	12.3°C
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Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7719974	TAK	Spiked Blank	pH	2021/12/13		102	%	98 - 103
7719974	TAK	RPD	pH	2021/12/13	0.068		%	N/A
7721189	LHA	Matrix Spike [RHQ822-03]	Phenols-4AAP	2021/12/13		102	%	80 - 120
7721189	LHA	Spiked Blank	Phenols-4AAP	2021/12/13		98	%	80 - 120
7721189	LHA	Method Blank	Phenols-4AAP	2021/12/13	<0.0010		mg/L	
7721189	LHA	RPD [RHQ822-03]	Phenols-4AAP	2021/12/13	NC		%	20
7721856	KCB	QC Standard	Total Suspended Solids	2021/12/15		95	%	85 - 115
7721856	KCB	Method Blank	Total Suspended Solids	2021/12/15	<1		mg/L	
7721856	KCB	RPD	Total Suspended Solids	2021/12/15	NC		%	25
7729242	SA5	Spiked Blank	Total Oil & Grease	2021/12/16		100	%	85 - 115
7729242	SA5	RPD	Total Oil & Grease	2021/12/16	1.3		%	25
7729242	SA5	Method Blank	Total Oil & Grease	2021/12/16	<0.50		mg/L	
7729251	SA5	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/12/16		95	%	85 - 115
7729251	SA5	RPD	Total Oil & Grease Mineral/Synthetic	2021/12/16	2.7		%	25
7729251	SA5	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/12/16	<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 (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).



BUREAU
VERITAS

Bureau Veritas Job #: C1Y4787
Report Date: 2021/12/16

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: JOH

VALIDATION SIGNATURE PAGE

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

A handwritten signature in black ink, appearing to read 'Brad Newman', written over a horizontal line.

Brad Newman, B.Sc., C.Chem., Scientific Service Specialist

BV Labs 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.



Your Project #: 20448776
 Site Location: MCCARTHY
 Your C.O.C. #: 842513-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2022/01/11
 Report #: R6957982
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y6834

Received: 2021/12/03, 08:55

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Animal and Vegetable Oil and Grease	1	N/A	2022/01/04	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/12/23	2021/12/23	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2021/12/10	2021/12/06	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/12/03	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2021/12/23	2021/12/23	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2021/12/03	2021/12/06	CAM SOP-00428	SM 23 2540D 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.

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) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease



Your Project #: 20448776
Site Location: MCCARTHY
Your C.O.C. #: 842513-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2022/01/11
Report #: R6957982
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1Y6834
Received: 2021/12/03, 08:55

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829

=====

BV Labs 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.



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		RIC151		
Sampling Date		2021/12/02 13:30		
COC Number		842513-04-01		
	UNITS	590331 POND	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	7751075
Inorganics				
pH	pH	8.16	N/A	7717878
Phenols-4AAP	mg/L	<0.0010	0.0010	7754056
Total Suspended Solids	mg/L	2	1	7753099
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	<0.50	0.50	7743757
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	7746713
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable				



BUREAU
VERITAS

Bureau Veritas Job #: C1Y6834
Report Date: 2022/01/11

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY

GENERAL COMMENTS

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

Package 1	13.7°C
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Results relate only to the items tested.



QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7717878	SAU	Spiked Blank	pH	2021/12/06		101	%	98 - 103
7717878	SAU	RPD	pH	2021/12/06	0.70		%	N/A
7743757	MPZ	Spiked Blank	Total Oil & Grease	2021/12/20		98	%	85 - 115
7743757	MPZ	RPD	Total Oil & Grease	2021/12/23	0.51		%	25
7743757	MPZ	Method Blank	Total Oil & Grease	2021/12/20	<0.50		mg/L	
7746713	MPZ	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/12/21		95	%	85 - 115
7746713	MPZ	RPD	Total Oil & Grease Mineral/Synthetic	2021/12/23	1.0		%	25
7746713	MPZ	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/12/21	<0.50		mg/L	
7753099	SHD	QC Standard	Total Suspended Solids	2021/12/06		99	%	85 - 115
7753099	SHD	Method Blank	Total Suspended Solids	2021/12/06	<1		mg/L	
7753099	SHD	RPD	Total Suspended Solids	2021/12/06	NC		%	25
7754056	DRM	Matrix Spike	Phenols-4AAP	2021/12/03		99	%	80 - 120
7754056	DRM	Spiked Blank	Phenols-4AAP	2021/12/03		101	%	80 - 120
7754056	DRM	Method Blank	Phenols-4AAP	2021/12/03	<0.0010		mg/L	
7754056	DRM	RPD	Phenols-4AAP	2021/12/03	0		%	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.

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 (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).




BUREAU
VERITAS

Bureau Veritas Job #: C1Y6834
Report Date: 2022/01/11

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY

VALIDATION SIGNATURE PAGE

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

Eva P.


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

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Your Project #: 20448776
 Site Location: MCCARTHY
 Your C.O.C. #: 859350-01-01

Attention: Dawn Hoyle

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

Report Date: 2022/01/19
 Report #: R6968027
 Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1AA376

Received: 2021/12/21, 08:10

Sample Matrix: Water
 # Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	1	N/A	2021/12/23	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	1	N/A	2021/12/23	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	1	N/A	2021/12/23	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2021/12/23	CAM SOP-00446	SM 23 5310 B m
Fluoride	1	2021/12/23	2021/12/23	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	1	N/A	2022/01/19	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals Analysis by ICP	1	2021/12/23	2021/12/24	CAM SOP-00408	EPA 6010D m
Total Metals Analysis by ICPMS	1	N/A	2021/12/29	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	1	N/A	2022/01/19		
Anion and Cation Sum	1	N/A	2022/01/19		
Total Ammonia-N	1	N/A	2021/12/29	CAM SOP-00441	USGS I-2522-90 m
Nitrate & Nitrite as Nitrogen in Water (2)	1	N/A	2022/01/06	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Animal and Vegetable Oil and Grease	1	N/A	2021/12/24	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/12/23	2021/12/24	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2021/12/23	2021/12/23	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/12/24	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	1	N/A	2021/12/29	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	1	2021/12/23	2021/12/24	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	1	2021/12/24	2022/01/04	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2021/12/29	2022/01/06	CAM SOP-00407	SM 23 4500 P B H m
Mineral/Synthetic O & G (TPH Heavy Oil) (3)	1	2021/12/23	2021/12/24	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2021/12/23	2021/12/24	CAM SOP-00428	SM 23 2540D 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 #: 20448776
Site Location: MCCARTHY
Your C.O.C. #: 859350-01-01

Attention: Dawn Hoyle

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

Report Date: 2022/01/19
Report #: R6968027
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1AA376

Received: 2021/12/21, 08:10

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.

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.
- (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.

Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829

=====
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BUREAU
VERITAS

Bureau Veritas Job #: C1AA376
Report Date: 2022/01/19

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: CI

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

Bureau Veritas ID			RLF513		
Sampling Date			2021/12/17 13:10		
COC Number			859350-01-01		
	UNITS	Criteria	POND	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	0.50	7747211
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	-	<0.50	0.50	7753023
Total Oil & Grease Mineral/Synthetic	mg/L	0.5	<0.50	0.50	7753037
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					



BUREAU
VERITAS

Bureau Veritas Job #: C1AA376
Report Date: 2022/01/19

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: CI

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID			RLF513			RLF513		
Sampling Date			2021/12/17 13:10			2021/12/17 13:10		
COC Number			859350-01-01			859350-01-01		
	UNITS	Criteria	POND	RDL	QC Batch	POND Lab-Dup	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	-	11.4	N/A	7746308			
Cation Sum	me/L	-	11.3	N/A	7746308			
Hardness (CaCO3)	mg/L	-	370	1.0	7747192			
Ion Balance (% Difference)	%	-	0.380	N/A	7745577			
Inorganics								
Total Ammonia-N	mg/L	-	<0.050	0.050	7754737			
Conductivity	umho/cm	-	1100	1.0	7751038	1100	1.0	7751038
Total Dissolved Solids	mg/L	-	645	10	7752666			
Fluoride (F-)	mg/L	-	0.35	0.10	7751029	0.33	0.10	7751029
Total Kjeldahl Nitrogen (TKN)	mg/L	-	<0.10	0.10	7754304			
Dissolved Organic Carbon	mg/L	-	4.1	0.40	7752594			
pH	pH	6.5:8.5	8.06		7751021	8.14		7751021
Phenols-4AAP	mg/L	0.001	<0.0010	0.0010	7753857			
Total Phosphorus	mg/L	0.01	0.005	0.004	7757223			
Total Suspended Solids	mg/L	-	6	1	7751919			
Dissolved Sulphate (SO4)	mg/L	-	230	1.0	7751056			
Alkalinity (Total as CaCO3)	mg/L	-	150	1.0	7751017	150	1.0	7751017
Dissolved Chloride (Cl-)	mg/L	-	130	1.0	7751063			
Nitrite (N)	mg/L	-	<0.010	0.010	7750986			
Nitrate (N)	mg/L	-	<0.10	0.10	7750986			
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								



BUREAU
VERITAS

Bureau Veritas Job #: C1AA376
Report Date: 2022/01/19

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: CI

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID			RLF513			RLF513		
Sampling Date			2021/12/17 13:10			2021/12/17 13:10		
COC Number			859350-01-01			859350-01-01		
	UNITS	Criteria	POND	RDL	QC Batch	POND Lab-Dup	RDL	QC Batch
Metals								
Dissolved Calcium (Ca)	mg/L	-	99	0.05	7752455	99	0.05	7752455
Dissolved Magnesium (Mg)	mg/L	-	30	0.05	7752455	30	0.05	7752455
Dissolved Potassium (K)	mg/L	-	8	1	7752455	8	1	7752455
Dissolved Sodium (Na)	mg/L	-	84	0.5	7752455	84	0.5	7752455
Total Arsenic (As)	ug/L	100	<1.0	1.0	7753852			
Total Cadmium (Cd)	ug/L	0.2	<0.090	0.090	7753852			
Total Calcium (Ca)	ug/L	-	98000	200	7753852			
Total Chromium (Cr)	ug/L	-	<5.0	5.0	7753852			
Total Copper (Cu)	ug/L	5	<0.90	0.90	7753852			
Total Iron (Fe)	ug/L	300	190	100	7753852			
Total Lead (Pb)	ug/L	5	<0.50	0.50	7753852			
Total Magnesium (Mg)	ug/L	-	31000	50	7753852			
Total Manganese (Mn)	ug/L	-	38	2.0	7753852			
Total Nickel (Ni)	ug/L	25	<1.0	1.0	7753852			
Total Potassium (K)	ug/L	-	8300	200	7753852			
Total Sodium (Na)	ug/L	-	82000	100	7753852			
Total Zinc (Zn)	ug/L	30	<5.0	5.0	7753852			
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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Ref. to MOEE Water Management document dated Feb.1999								



BUREAU
VERITAS

Bureau Veritas Job #: C1AA376
Report Date: 2022/01/19

Golder Associates Ltd
Client Project #: 20448776
Site Location: MCCARTHY
Sampler Initials: CI

TEST SUMMARY

Bureau Veritas ID: RLF513
Sample ID: POND
Matrix: Water

Collected: 2021/12/17
Shipped:
Received: 2021/12/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7751017	N/A	2021/12/23	Surinder Rai
Chloride by Automated Colourimetry	KONE	7751063	N/A	2021/12/23	Avneet Kour Sudan
Conductivity	AT	7751038	N/A	2021/12/23	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7752594	N/A	2021/12/23	Anna-Kay Gooden
Fluoride	ISE	7751029	2021/12/23	2021/12/23	Surinder Rai
Hardness (calculated as CaCO3)		7747192	N/A	2022/01/19	Automated Statchk
Lab Filtered Metals Analysis by ICP	ICP	7752455	2021/12/23	2021/12/24	Suban Kanapathipplai
Total Metals Analysis by ICPMS	ICP/MS	7753852	N/A	2021/12/29	Azita Fazaeli
Ion Balance (% Difference)	CALC	7745577	N/A	2022/01/19	Automated Statchk
Anion and Cation Sum	CALC	7746308	N/A	2022/01/19	Automated Statchk
Total Ammonia-N	LACH/NH4	7754737	N/A	2021/12/29	Amanpreet Sappal
Nitrate & Nitrite as Nitrogen in Water	LACH	7750986	N/A	2022/01/06	Chandra Nandlal
Animal and Vegetable Oil and Grease	BAL	7747211	N/A	2021/12/24	Automated Statchk
Total Oil and Grease	BAL	7753023	2021/12/23	2021/12/24	Saumya Modh
pH	AT	7751021	2021/12/23	2021/12/23	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7753857	N/A	2021/12/24	Louise Harding
Sulphate by Automated Colourimetry	KONE	7751056	N/A	2021/12/29	Avneet Kour Sudan
Total Dissolved Solids	BAL	7752666	2021/12/23	2021/12/24	Kristen Chan
Total Kjeldahl Nitrogen in Water	SKAL	7754304	2021/12/24	2022/01/04	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	7757223	2021/12/29	2022/01/06	Shivani Shivani
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	7753037	2021/12/23	2021/12/24	Saumya Modh
Low Level Total Suspended Solids	BAL	7751919	2021/12/23	2021/12/24	Kristen Chan

Bureau Veritas ID: RLF513 Dup
Sample ID: POND
Matrix: Water

Collected: 2021/12/17
Shipped:
Received: 2021/12/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7751017	N/A	2021/12/23	Surinder Rai
Conductivity	AT	7751038	N/A	2021/12/23	Surinder Rai
Fluoride	ISE	7751029	2021/12/23	2021/12/23	Surinder Rai
Lab Filtered Metals Analysis by ICP	ICP	7752455	2021/12/23	2021/12/24	Suban Kanapathipplai
pH	AT	7751021	2021/12/23	2021/12/23	Surinder Rai



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GENERAL COMMENTS

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

Package 1	4.3°C
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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
7750986	C_N	Matrix Spike	Nitrite (N)	2022/01/06		108	%	80 - 120
			Nitrate (N)	2022/01/06		108	%	80 - 120
7750986	C_N	Spiked Blank	Nitrite (N)	2022/01/06		110	%	80 - 120
			Nitrate (N)	2022/01/06		104	%	80 - 120
7750986	C_N	Method Blank	Nitrite (N)	2022/01/06	<0.010		mg/L	
			Nitrate (N)	2022/01/06	<0.10		mg/L	
7750986	C_N	RPD	Nitrite (N)	2022/01/06	2.9		%	20
			Nitrate (N)	2022/01/06	0.14		%	20
7751017	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2021/12/23		95	%	85 - 115
7751017	SAU	Method Blank	Alkalinity (Total as CaCO3)	2021/12/23	<1.0		mg/L	
7751017	SAU	RPD [RLF513-03]	Alkalinity (Total as CaCO3)	2021/12/23	0.16		%	20
7751021	SAU	Spiked Blank	pH	2021/12/23		102	%	98 - 103
7751021	SAU	RPD [RLF513-03]	pH	2021/12/23	0.99		%	N/A
7751029	SAU	Matrix Spike [RLF513-03]	Fluoride (F-)	2021/12/23		110	%	80 - 120
7751029	SAU	Spiked Blank	Fluoride (F-)	2021/12/23		105	%	80 - 120
7751029	SAU	Method Blank	Fluoride (F-)	2021/12/23	<0.10		mg/L	
7751029	SAU	RPD [RLF513-03]	Fluoride (F-)	2021/12/23	5.2		%	20
7751038	SAU	Spiked Blank	Conductivity	2021/12/23		97	%	85 - 115
7751038	SAU	Method Blank	Conductivity	2021/12/23	<1.0		umho/cm	
7751038	SAU	RPD [RLF513-03]	Conductivity	2021/12/23	0		%	25
7751056	AKD	Matrix Spike	Dissolved Sulphate (SO4)	2021/12/29		NC	%	75 - 125
7751056	AKD	Spiked Blank	Dissolved Sulphate (SO4)	2021/12/23		105	%	80 - 120
7751056	AKD	Method Blank	Dissolved Sulphate (SO4)	2021/12/23	<1.0		mg/L	
7751056	AKD	RPD	Dissolved Sulphate (SO4)	2021/12/29	0.54		%	20
7751063	AKD	Matrix Spike	Dissolved Chloride (Cl-)	2021/12/23		NC	%	80 - 120
7751063	AKD	Spiked Blank	Dissolved Chloride (Cl-)	2021/12/23		101	%	80 - 120
7751063	AKD	Method Blank	Dissolved Chloride (Cl-)	2021/12/23	<1.0		mg/L	
7751063	AKD	RPD	Dissolved Chloride (Cl-)	2021/12/23	4.1		%	20
7751919	KCB	QC Standard	Total Suspended Solids	2021/12/24		100	%	85 - 115
7751919	KCB	Method Blank	Total Suspended Solids	2021/12/24	<1		mg/L	
7751919	KCB	RPD	Total Suspended Solids	2021/12/24	NC		%	25
7752455	SUK	Matrix Spike [RLF513-03]	Dissolved Calcium (Ca)	2021/12/24		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2021/12/24		NC	%	80 - 120
			Dissolved Potassium (K)	2021/12/24		98	%	80 - 120
			Dissolved Sodium (Na)	2021/12/24		NC	%	80 - 120
7752455	SUK	Spiked Blank	Dissolved Calcium (Ca)	2021/12/24		96	%	80 - 120
			Dissolved Magnesium (Mg)	2021/12/24		94	%	80 - 120
			Dissolved Potassium (K)	2021/12/24		96	%	80 - 120
			Dissolved Sodium (Na)	2021/12/24		96	%	80 - 120
7752455	SUK	Method Blank	Dissolved Calcium (Ca)	2021/12/24	<0.05		mg/L	
			Dissolved Magnesium (Mg)	2021/12/24	<0.05		mg/L	
			Dissolved Potassium (K)	2021/12/24	<1		mg/L	
			Dissolved Sodium (Na)	2021/12/24	<0.5		mg/L	
7752455	SUK	RPD [RLF513-03]	Dissolved Calcium (Ca)	2021/12/24	0.19		%	25
			Dissolved Magnesium (Mg)	2021/12/24	0.40		%	25
			Dissolved Potassium (K)	2021/12/24	0.26		%	25
			Dissolved Sodium (Na)	2021/12/24	0.12		%	25
7752594	AGD	Matrix Spike	Dissolved Organic Carbon	2021/12/23		93	%	80 - 120
7752594	AGD	Spiked Blank	Dissolved Organic Carbon	2021/12/23		97	%	80 - 120
7752594	AGD	Method Blank	Dissolved Organic Carbon	2021/12/23	<0.40		mg/L	
7752594	AGD	RPD	Dissolved Organic Carbon	2021/12/23	1.1		%	20



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	7752666	KCB	QC Standard	Total Dissolved Solids	2021/12/24		97	%	90 - 110
	7752666	KCB	Method Blank	Total Dissolved Solids	2021/12/24	<10		mg/L	
	7752666	KCB	RPD	Total Dissolved Solids	2021/12/24	1.3		%	25
	7753023	SA5	Spiked Blank	Total Oil & Grease	2021/12/24		97	%	85 - 115
	7753023	SA5	RPD	Total Oil & Grease	2021/12/24	2.3		%	25
	7753023	SA5	Method Blank	Total Oil & Grease	2021/12/24	<0.50		mg/L	
	7753037	SA5	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/12/24		92	%	85 - 115
	7753037	SA5	RPD	Total Oil & Grease Mineral/Synthetic	2021/12/24	2.2		%	25
	7753037	SA5	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/12/24	<0.50		mg/L	
	7753852	AFZ	Matrix Spike	Total Arsenic (As)	2021/12/29		103	%	80 - 120
				Total Cadmium (Cd)	2021/12/29		101	%	80 - 120
				Total Calcium (Ca)	2021/12/29		NC	%	80 - 120
				Total Chromium (Cr)	2021/12/29		98	%	80 - 120
				Total Copper (Cu)	2021/12/29		100	%	80 - 120
				Total Iron (Fe)	2021/12/29		98	%	80 - 120
				Total Lead (Pb)	2021/12/29		95	%	80 - 120
				Total Magnesium (Mg)	2021/12/29		103	%	80 - 120
				Total Manganese (Mn)	2021/12/29		98	%	80 - 120
				Total Nickel (Ni)	2021/12/29		97	%	80 - 120
				Total Potassium (K)	2021/12/29		100	%	80 - 120
				Total Sodium (Na)	2021/12/29		NC	%	80 - 120
				Total Zinc (Zn)	2021/12/29		99	%	80 - 120
	7753852	AFZ	Spiked Blank	Total Arsenic (As)	2021/12/29		100	%	80 - 120
				Total Cadmium (Cd)	2021/12/29		100	%	80 - 120
				Total Calcium (Ca)	2021/12/29		96	%	80 - 120
				Total Chromium (Cr)	2021/12/29		96	%	80 - 120
				Total Copper (Cu)	2021/12/29		98	%	80 - 120
				Total Iron (Fe)	2021/12/29		97	%	80 - 120
				Total Lead (Pb)	2021/12/29		94	%	80 - 120
				Total Magnesium (Mg)	2021/12/29		94	%	80 - 120
				Total Manganese (Mn)	2021/12/29		97	%	80 - 120
				Total Nickel (Ni)	2021/12/29		96	%	80 - 120
				Total Potassium (K)	2021/12/29		96	%	80 - 120
				Total Sodium (Na)	2021/12/29		96	%	80 - 120
				Total Zinc (Zn)	2021/12/29		102	%	80 - 120
	7753852	AFZ	Method Blank	Total Arsenic (As)	2021/12/29	<1.0		ug/L	
				Total Cadmium (Cd)	2021/12/29	<0.090		ug/L	
				Total Calcium (Ca)	2021/12/29	<200		ug/L	
				Total Chromium (Cr)	2021/12/29	<5.0		ug/L	
				Total Copper (Cu)	2021/12/29	<0.90		ug/L	
				Total Iron (Fe)	2021/12/29	<100		ug/L	
				Total Lead (Pb)	2021/12/29	<0.50		ug/L	
				Total Magnesium (Mg)	2021/12/29	<50		ug/L	
				Total Manganese (Mn)	2021/12/29	<2.0		ug/L	
				Total Nickel (Ni)	2021/12/29	<1.0		ug/L	
				Total Potassium (K)	2021/12/29	<200		ug/L	
				Total Sodium (Na)	2021/12/29	<100		ug/L	
				Total Zinc (Zn)	2021/12/29	<5.0		ug/L	
	7753852	AFZ	RPD	Total Cadmium (Cd)	2021/12/29	NC		%	20
				Total Chromium (Cr)	2021/12/29	NC		%	20
				Total Copper (Cu)	2021/12/29	4.5		%	20



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Iron (Fe)	2021/12/29	NC		%	20
			Total Lead (Pb)	2021/12/29	NC		%	20
			Total Nickel (Ni)	2021/12/29	18		%	20
			Total Zinc (Zn)	2021/12/29	2.4		%	20
7753857	LHA	Matrix Spike	Phenols-4AAP	2021/12/24		100	%	80 - 120
7753857	LHA	Spiked Blank	Phenols-4AAP	2021/12/24		99	%	80 - 120
7753857	LHA	Method Blank	Phenols-4AAP	2021/12/24	<0.0010		mg/L	
7753857	LHA	RPD	Phenols-4AAP	2021/12/24	NC		%	20
7754304	RTY	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2022/01/04		99	%	80 - 120
7754304	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2022/01/04		101	%	80 - 120
7754304	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2022/01/04		95	%	80 - 120
7754304	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2022/01/04	<0.10		mg/L	
7754304	RTY	RPD	Total Kjeldahl Nitrogen (TKN)	2022/01/04	NC		%	20
7754737	ASP	Matrix Spike	Total Ammonia-N	2021/12/29		100	%	75 - 125
7754737	ASP	Spiked Blank	Total Ammonia-N	2021/12/29		101	%	80 - 120
7754737	ASP	Method Blank	Total Ammonia-N	2021/12/29	<0.050		mg/L	
7754737	ASP	RPD	Total Ammonia-N	2021/12/29	6.9		%	20
7757223	SSV	Matrix Spike	Total Phosphorus	2022/01/06		96	%	80 - 120
7757223	SSV	QC Standard	Total Phosphorus	2022/01/06		104	%	80 - 120
7757223	SSV	Spiked Blank	Total Phosphorus	2022/01/06		97	%	80 - 120
7757223	SSV	Method Blank	Total Phosphorus	2022/01/06	<0.004		mg/L	
7757223	SSV	RPD	Total Phosphorus	2022/01/06	2.0		%	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.

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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VALIDATION SIGNATURE PAGE

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

Eva Pranjić

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

BV Labs 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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