REPORT

Environmental Compliance Approval Quarterly Monitoring Report (May to July 2020)

McCarthy Quarry

Submitted to:

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

Submitted by:

Golder Associates Ltd.
121 Commerce Park Drive, Unit L, Barrie, Ontario, L4N 8X1, Canada

+1 705 722 4492

1407634

August 2020

Distribution List

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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 May and July 2020.

2.0 BACKGROUND

The dewatering activities at the McCarthy Quarry in 2020 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 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 4-inch Grindex 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 m^3 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 $CaCO_3$), alkalinity(as $CaCO_3$), 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. The weekly water quality samples were sent to Maxxam Analytics Laboratory 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).

Weekly water quality samples were not collected from the McCarthy Pond location on the periods of May 18 to 22, 2020 and June 29 to July 31, 2020 as quarry staff reported that limited discharge was present at the sampling location during these periods.

4.0 MONITORING RESULTS AND RECOMMENDATIONS

All laboratory certificates of analysis for the May to July 2020 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:

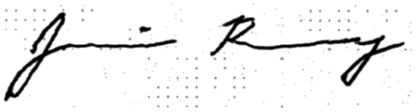
- The TSS, pH, Oil and Grease and Phenol (4AAP) concentrations were all below the daily concentration limits of the ECA (Table 1);
- The TSS, Oil and Grease and Phenol (4AAP) concentrations were all below the monthly concentration limits of the ECA (Table 2);
- The semi-annual surface water sampling results were below the PWQO (Table 3); and,
- The daily discharge rate between May to July 2020 was below the permitted rate of 4,545 L/min (76 L/sec) (Table 4) and Coco staff indicated there was no pumping completed during this period.

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

Devin Hannan, P.Eng.
Associate, Environmental Engineer

JB/DH/cdr

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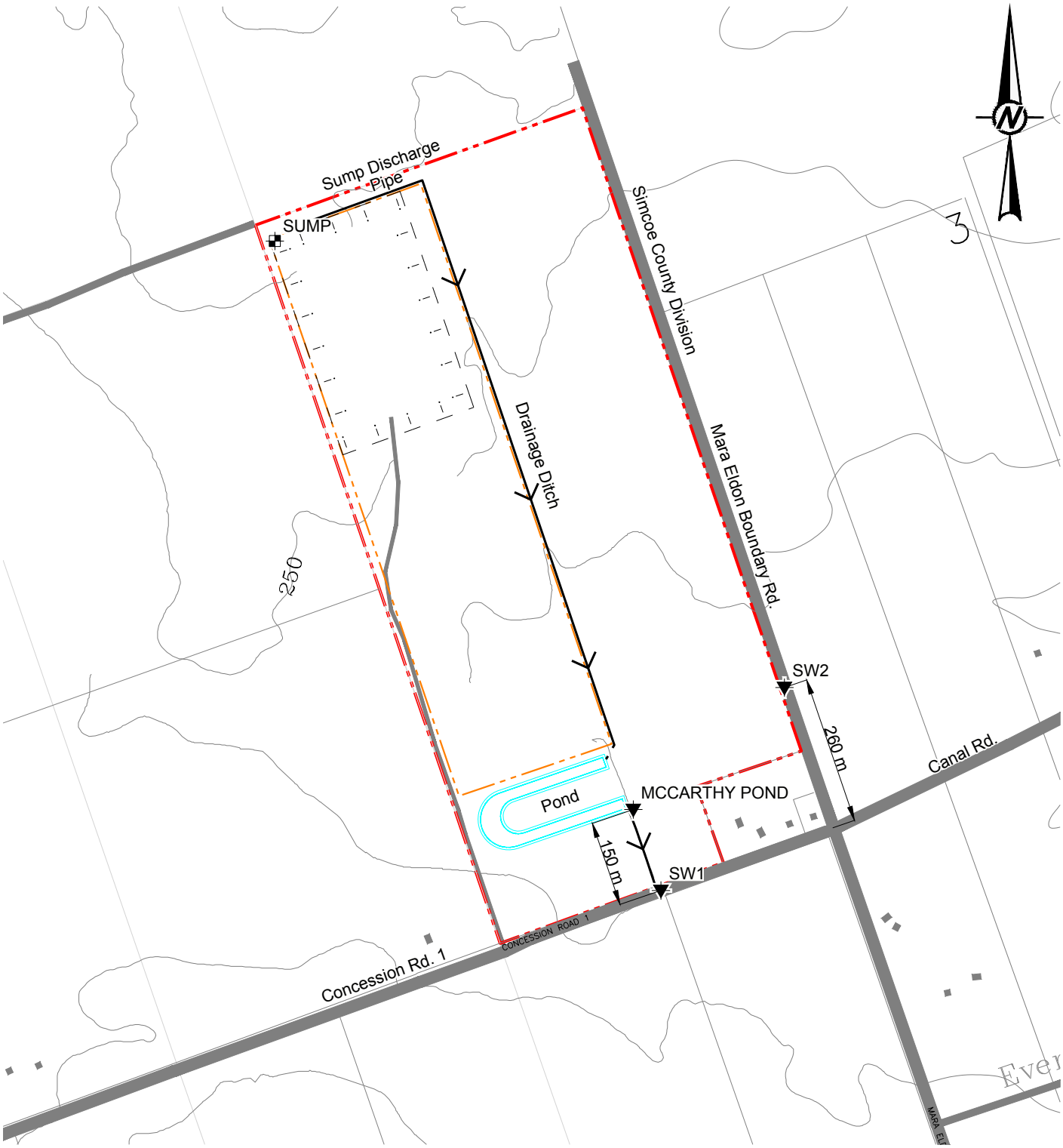
Figures



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

0 200 400 600 m

1:10000

CLIENT
COCO / QBJR AGGREGATES INC.

PROJECT
STAN McCARTHY QUARRY

TITLE
LOCATION MAP

CONSULTANT
GOLDER

YYYY-MM-DD	2019-11-08
PREPARED	STB
DESIGN	
REVIEW	
APPROVED	

PROJECT No.	SCALE	Rev.	Figure
14-07634	AS SHOWN	A	1

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI A

0 25 mm

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Tables

Table 1: McCarthy Pond Weekly Water Quality Results (May to July 2020)

	Unit	Reportable Detection Limit (RDL)	PWQO [1]	Daily Concentration Limit[2]	McCarthy Quarry						
Sample ID					**Pond**						
Date					07-May-20	14-May-20	28-May-20	04-Jun-20	11-Jun-20	18-Jun-20	25-Jun-20
pH	pH	n/a		6.0-9.5	8.00	8.13	7.90	8.08	7.62	8.19	8.10
Total Suspended Solids	mg/L	1		30	19	2	2	2	5	8	5
Total Oil and Grease	mg/L	0.5	Note 3	30	<0.5	<0.5	3.7	<0.5	<0.5	<0.5	<0.5
Phenols (4AAP)	mg/L	<0.0010		0.04	<0.001	<0.001	<0.001	<0.001	<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 Permit to Take Waters 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 discolouration 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 preceeded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).

Table 2: McCarthy Pond Monthly Water Quality Results (May to July 2020)

	Unit	Reportable Detection Limit (RDL)	PWQO [1]	Monthly Concentration Limit[2]	McCarthy Quarry		
Sample ID					**Pond**		
Date					May	June	July
Total Suspended Solids	mg/L	1		15	7.7	5.0	-
Total Oil and Grease	mg/L	0.5	Note 3	15	1.4	<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. Monthyl Concentration Limit; bolded values denote exceedances in the Permit to Take Waters 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 discolouration 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 preceeded by "<" denote concentrations that are below the laboratory Reportable Detection Limit (RDL).

Table 3: McCarthy Semi-Annual Water Quality Monitoring Results (May 2020)

	Unit	Reportable Detection Limit (RDL)	PWQO [1]	Interim PWQO [2]	PTTW Effluent Limits	McCarthy Quarry		
Sample ID						**Pond**	**SW1**	**SW2**
Date						**14-May-20**	**14-May-20**	**14-May-20**
Field Measured Parameters								
Conductivity	µS/cm					376	675	846
pH	pH	n/a	6.5-8.5		6.0-9.5	8.25	7.88	7.65
Temperature	°C	n/a				10.4	9.9	10.1
Calculated Parameters								
Hardness (CaCO3)	mg/L	1.0				210	360	400
Inorganics								
Total Ammonia-N	mg/L	0.050				<0.050	<0.050	<0.050
Conductivity	ms/cm	0.001				0.455	0.822	0.764
Total Dissolved Solids	mg/L	10				260	490	435
Fluoride (F-)	mg/L	0.10				0.13	0.11	<0.10
Total Kjeldahl Nitrogen (TKN)	mg/L	0.10				0.44	0.47	0.31
Dissolved Organic Carbon	mg/L	0.50				6.5	7.8	5.0
pH	pH	N/A	6.5-8.5		6.0-9.5	8.10	7.99	7.98
Phenols-4AAP	mg/L	0.0010	0.001		0.04	<0.0010	<0.0010	<0.0010
Total Phosphorus	mg/L	0.020		0.02[5b]		0.010	0.006	*0.012*
Total Suspended Solids	mg/L	10			30	<10	<10	<10
Dissolved Sulphate (SO4)	mg/L	1				82	140	81
Alkalinity (Total as CaCO3)	mg/L	1.0				140	230	300
Dissolved Chloride (Cl)	mg/L	1				9	43	26
Nitrite (N)	mg/L	0.010				<0.010	<0.010	<0.010
Nitrate (N)	mg/L	0.10				<0.10	<0.10	<0.10
Petroleum Hydrocarbons								
Total Oil & Grease	mg/L	0.50	Note 3		30	<0.50	<0.50	<0.50
Metals								
Total Arsenic (As)	ug/L	1	100	5		<1.0	<1.0	<1.0
Total Cadmium (Cd)	ug/L	0.1	0.2	0.1-0.5[5d]		<0.10	<0.10	<0.10
Dissolved Calcium (Ca)	mg/L	0.05				62	120	130
Total Calcium (Ca)	ug/L	200				63000	120000	120000
Total Chromium (Cr)	ug/L	5	1-89[5e]			<5.0	<5.0	<5.0
Total Copper (Cu)	ug/L	1	5	1-5[5f]		<1.0	<1.0	<1.0
Total Iron (Fe)	ug/L	100	300			140	<100	140
Total Lead (Pb)	ug/L	0.5	5-25[5g]	1-5[5h]		<0.50	<0.50	<0.50
Dissolved Magnesium (Mg)	mg/L	0.05				14	13	20
Total Magnesium (Mg)	ug/L	50				13000	12000	19000
Total Manganese (Mn)	ug/L	2				16	13	6
Total Nickel (Ni)	ug/L	1	25			1.1	<1.0	<1.0
Dissolved Potassium (K)	mg/L	1				1.8	2.4	1.1
Total Potassium (K)	ug/L	200				1700	2200	1100
Dissolved Sodium (Na)	mg/L	0.5				12	37	15
Total Sodium (Na)	ug/L	100				12000	37000	14000
Total Zinc (Zn)	ug/L	5	30	20		<5.0	<5.0	<5.0

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 PQWO 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 discolouration 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 preceeded 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;

(b) A high level of protection against aesthetic deterioration will be provided by a total phosphorus concentration for the ice-free period of 10 ug/L or less. This should apply to all lakes naturally below this value;

(c) Excessive plant growth in rivers and streams should be eliminated at a total phosphorus concentration below 30 ug/L.

5c. Beryllium :	If Hardness <75 mg/L (CaCO3), use 11 ug/L
	If Hardness >75 mg/L (CaCO3), use 1100 ug/L
5d. Cadmium: (Interim)	If Hardness 0-100 mg/L (CaCO3), then use 0.1 ug/L
	If Hardness >100 mg/L (CaCO3), then use 0.5 ug/L
5e. Chromium :	1 ug/L for hexavalent chromium (Cr VI)
	8.9 ug/L for trivalent chromium (Cr III)
5f. Copper: (Interim)	If Hardness as CaCO3 (mg/L) is 0 - 20, then use 1 ug/L
	If Hardness as CaCO3 (mg/L) is >20, then use 5 ug/L
5g. Lead :	If Alkalinity as CaCO3 (mg/L) is < 20, use 5 ug/L
	If Alkalinity as CaCO3 (mg/L) is 20 to 40, use 10 ug/L
	If Alkalinity as CaCO3 (mg/L) is 40 to 80, use 20 ug/L
	If Alkalinity as CaCO3 (mg/L) is > 80, use 25 ug/L
5h. Lead: (Interim)	If Hardness as CaCO3 (mg/L) is < 30, then use 1 ug/L
	If Hardness as CaCO3 (mg/L) is 30 to 80, then use 3 ug/L
	If Hardness as CaCO3 (mg/L) is > 80, then use 5 ug/L

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-May-20	NO PUMP		0	0	-	-	-
2-May-20	NO PUMP		0	0	-	-	-
3-May-20	NO PUMP		0	0	-	-	-
4-May-20	NO PUMP		0	0	-	-	-
5-May-20	NO PUMP		0	0	-	-	-
6-May-20	NO PUMP		0	0	-	-	-
7-May-20	NO PUMP		0	0	-	-	-
8-May-20	NO PUMP		0	0	-	-	-
9-May-20	NO PUMP		0	0	-	-	-
10-May-20	NO PUMP		0	0	-	-	-
11-May-20	NO PUMP		0	0	-	-	-
12-May-20	NO PUMP		0	0	-	-	-
13-May-20	NO PUMP		0	0	-	-	-
14-May-20	NO PUMP		0	0	-	-	-
15-May-20	NO PUMP		0	0	-	-	-
16-May-20	NO PUMP		0	0	-	-	-
17-May-20	NO PUMP		0	0	-	-	-
18-May-20	NO PUMP		0	0	-	-	-
19-May-20	NO PUMP		0	0	-	-	-
20-May-20	NO PUMP		0	0	-	-	-
21-May-20	NO PUMP		0	0	-	-	-
22-May-20	NO PUMP		0	0	-	-	-
23-May-20	NO PUMP		0	0	-	-	-
24-May-20	NO PUMP		0	0	-	-	-
25-May-20	NO PUMP		0	0	-	-	-
26-May-20	NO PUMP		0	0	-	-	-
27-May-20	NO PUMP		0	0	-	-	-
28-May-20	NO PUMP		0	0	-	-	-
29-May-20	NO PUMP		0	0	-	-	-
30-May-20	NO PUMP		0	0	-	-	-
31-May-20	NO PUMP		0	0	-	-	-
1-Jun-20	NO PUMP		0	0	-	-	-
2-Jun-20	NO PUMP		0	0	-	-	-
3-Jun-20	NO PUMP		0	0	-	-	-
4-Jun-20	NO PUMP		0	0	-	-	-
5-Jun-20	NO PUMP		0	0	-	-	-
6-Jun-20	NO PUMP		0	0	-	-	-
7-Jun-20	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**
8-Jun-20	NO PUMP		0	0	-	-	-
9-Jun-20	NO PUMP		0	0	-	-	-
10-Jun-20	NO PUMP		0	0	-	-	-
11-Jun-20	NO PUMP		0	0	-	-	-
12-Jun-20	NO PUMP		0	0	-	-	-
13-Jun-20	NO PUMP		0	0	-	-	-
14-Jun-20	NO PUMP		0	0	-	-	-
15-Jun-20	NO PUMP		0	0	-	-	-
16-Jun-20	NO PUMP		0	0	-	-	-
17-Jun-20	NO PUMP		0	0	-	-	-
18-Jun-20	NO PUMP		0	0	-	-	-
19-Jun-20	NO PUMP		0	0	-	-	-
20-Jun-20	NO PUMP		0	0	-	-	-
21-Jun-20	NO PUMP		0	0	-	-	-
22-Jun-20	NO PUMP		0	0	-	-	-
23-Jun-20	NO PUMP		0	0	-	-	-
24-Jun-20	NO PUMP		0	0	-	-	-
25-Jun-20	NO PUMP		0	0	-	-	-
26-Jun-20	NO PUMP		0	0	-	-	-
27-Jun-20	NO PUMP		0	0	-	-	-
28-Jun-20	NO PUMP		0	0	-	-	-
29-Jun-20	NO PUMP		0	0	-	-	-
30-Jun-20	NO PUMP		0	0	-	-	-
1-Jul-20	NO PUMP		0	0	-	-	-
2-Jul-20	NO PUMP		0	0	-	-	-
3-Jul-20	NO PUMP		0	0	-	-	-
4-Jul-20	NO PUMP		0	0	-	-	-
5-Jul-20	NO PUMP		0	0	-	-	-
6-Jul-20	NO PUMP		0	0	-	-	-
7-Jul-20	NO PUMP		0	0	-	-	-
8-Jul-20	NO PUMP		0	0	-	-	-
9-Jul-20	NO PUMP		0	0	-	-	-
10-Jul-20	NO PUMP		0	0	-	-	-
11-Jul-20	NO PUMP		0	0	-	-	-
12-Jul-20	NO PUMP		0	0	-	-	-
13-Jul-20	NO PUMP		0	0	-	-	-
14-Jul-20	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**
15-Jul-20	NO PUMP		0	0	-	-	-
16-Jul-20	NO PUMP		0	0	-	-	-
17-Jul-20	NO PUMP		0	0	-	-	-
18-Jul-20	NO PUMP		0	0	-	-	-
19-Jul-20	NO PUMP		0	0	-	-	-
20-Jul-20	NO PUMP		0	0	-	-	-
21-Jul-20	NO PUMP		0	0	-	-	-
22-Jul-20	NO PUMP		0	0	-	-	-
23-Jul-20	NO PUMP		0	0	-	-	-
24-Jul-20	NO PUMP		0	0	-	-	-
25-Jul-20	NO PUMP		0	0	-	-	-
26-Jul-20	NO PUMP		0	0	-	-	-
27-Jul-20	NO PUMP		0	0	-	-	-
28-Jul-20	NO PUMP		0	0	-	-	-
29-Jul-20	NO PUMP		0	0	-	-	-
30-Jul-20	NO PUMP		0	0	-	-	-
31-Jul-20	NO PUMP		0	0	-	-	-

APPENDIX A

ECA No. 7737-BH6QEA

Ontario

Ministry of the Environment, Conservation and Parks
Ministère de l'Environnement, de la Protection de la nature et des Parcs

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	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.

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 #: 1407634
Site#: McCarthy
Your C.O.C. #: 762593-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/05/15
Report #: R6175746
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B3277
Received: 2020/05/08, 09:33

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Animal and Vegetable Oil and Grease	1	N/A	2020/05/14	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/05/14	2020/05/14	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2020/05/12	2020/05/12	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/05/12	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/05/14	2020/05/14	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/05/12	2020/05/13	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs 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 BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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 #: 1407634
Site#: McCarthy
Your C.O.C. #: 762593-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/05/15
Report #: R6175746
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B3277
Received: 2020/05/08, 09:33

Encryption Key

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

==========

This report has been generated and distributed using a secure automated process.
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.

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

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B3277
Report Date: 2020/05/15

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: BR

RESULTS OF ANALYSES OF WATER

BV Labs ID			MPB379		
Sampling Date			2020/05/07 14:03		
COC Number			762593-04-01		
	UNITS	Criteria	POND	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	0.50	6717887
Inorganics					
pH	pH	**6.5:8.5**	8.00	N/A	6720542
Phenols-4AAP	mg/L	**0.001**	<0.0010	0.0010	6720126
Total Suspended Solids	mg/L	**-**	19	1	6720573
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	**-**	<0.50	0.50	6725800
Total Oil & Grease Mineral/Synthetic	mg/L	**0.5**	<0.50	0.50	6725802

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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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

GENERAL COMMENTS

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

Package 1	13.3°C

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B3277
Report Date: 2020/05/15

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: BR

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6720126	BMO	Matrix Spike	Phenols-4AAP	2020/05/12		96	%	80 - 120
6720126	BMO	Spiked Blank	Phenols-4AAP	2020/05/12		97	%	80 - 120
6720126	BMO	Method Blank	Phenols-4AAP	2020/05/12	<0.0010		mg/L	
6720126	BMO	RPD	Phenols-4AAP	2020/05/12	NC		%	20
6720542	GTO	Spiked Blank	pH	2020/05/12		100	%	98 - 103
6720542	GTO	RPD	pH	2020/05/12	0.52		%	N/A
6720573	JS7	QC Standard	Total Suspended Solids	2020/05/13		95	%	85 - 115
6720573	JS7	Method Blank	Total Suspended Solids	2020/05/13	<1		mg/L	
6720573	JS7	RPD	Total Suspended Solids	2020/05/13	7.4		%	25
6725800	KRW	Spiked Blank	Total Oil & Grease	2020/05/14		98	%	85 - 115
6725800	KRW	RPD	Total Oil & Grease	2020/05/14	3.4		%	25
6725800	KRW	Method Blank	Total Oil & Grease	2020/05/14	<0.50		mg/L	
6725802	KRW	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/05/14		91	%	85 - 115
6725802	KRW	RPD	Total Oil & Grease Mineral/Synthetic	2020/05/14	5.4		%	25
6725802	KRW	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/05/14	<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).

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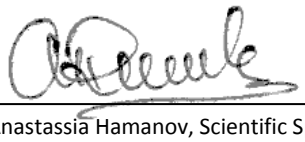
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B3277
Report Date: 2020/05/15

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: BR

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: 1407634
Your C.O.C. #: 772251-02-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/05/22
Report #: R6182339
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9782
Received: 2020/05/15, 09:52

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Animal and Vegetable Oil and Grease	1	N/A	2020/05/21	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/05/21	2020/05/21	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2020/05/21	2020/05/21	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/05/20	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/05/21	2020/05/21	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/05/20	2020/05/21	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs 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 BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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 #: 1407634
Your C.O.C. #: 772251-02-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/05/22
Report #: R6182339
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9782
Received: 2020/05/15, 09:52

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
==========
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B9782
Report Date: 2020/05/22

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID			MQM041		MQM041	
Sampling Date			2020/05/14 10:30		2020/05/14 10:30	
COC Number			772251-02-01		772251-02-01	
	UNITS	Criteria	POND	RDL	POND Lab-Dup	QC Batch
Calculated Parameters						
Total Animal/Vegetable Oil and Grease	mg/L	-	<0.50	0.50	N/A	6729239
Inorganics						
pH	pH	**6.5:8.5**	8.13	N/A	8.25	6734007
Phenols-4AAP	mg/L	**0.001**	<0.0010	0.0010	N/A	6732033
Total Suspended Solids	mg/L	**-**	2	1	N/A	6732079
Petroleum Hydrocarbons						
Total Oil & Grease	mg/L	**-**	<0.50	0.50	N/A	6734179
Total Oil & Grease Mineral/Synthetic	mg/L	**0.5**	<0.50	0.50	N/A	6734180

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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BV Labs Job #: C0B9782
Report Date: 2020/05/22

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

GENERAL COMMENTS

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

Package 1	4.7°C
Package 2	3.3°C
Package 3	4.3°C

Results relate only to the items tested.

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BV Labs Job #: C0B9782
Report Date: 2020/05/22

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6732033	BMO	Matrix Spike	Phenols-4AAP	2020/05/20		93	%	80 - 120
6732033	BMO	Spiked Blank	Phenols-4AAP	2020/05/20		96	%	80 - 120
6732033	BMO	Method Blank	Phenols-4AAP	2020/05/20	<0.0010		mg/L	
6732033	BMO	RPD	Phenols-4AAP	2020/05/20	NC		%	20
6732079	JS7	QC Standard	Total Suspended Solids	2020/05/21		96	%	85 - 115
6732079	JS7	Method Blank	Total Suspended Solids	2020/05/21	<1		mg/L	
6732079	JS7	RPD	Total Suspended Solids	2020/05/21	NC		%	25
6734007	GTO	Spiked Blank	pH	2020/05/21		99	%	98 - 103
6734007	GTO	RPD [MQM041-03]	pH	2020/05/21	1.4		%	N/A
6734179	KK4	Spiked Blank	Total Oil & Grease	2020/05/21		94	%	85 - 115
6734179	KK4	RPD	Total Oil & Grease	2020/05/21	1.8		%	25
6734179	KK4	Method Blank	Total Oil & Grease	2020/05/21	<0.50		mg/L	
6734180	KK4	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/05/21		94	%	85 - 115
6734180	KK4	RPD	Total Oil & Grease Mineral/Synthetic	2020/05/21	0.53		%	25
6734180	KK4	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/05/21	<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 (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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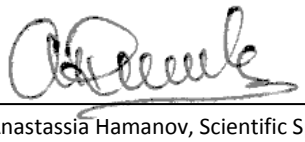
BV Labs Job #: C0B9782
Report Date: 2020/05/22

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 772254-05-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/05
Report #: R6199226
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D1869
Received: 2020/05/29, 10:03

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Animal and Vegetable Oil and Grease	1	N/A	2020/06/05	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/06/05	2020/06/05	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2020/06/03	2020/06/03	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/06/03	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/06/05	2020/06/05	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/06/03	2020/06/04	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs 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 BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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 #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 772254-05-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/05
Report #: R6199226
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D1869
Received: 2020/05/29, 10:03

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0D1869
Report Date: 2020/06/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: AL

RESULTS OF ANALYSES OF WATER

BV Labs ID		MTB539		
Sampling Date		2020/05/28 02:30		
COC Number		772254-05-01		
	UNITS	590331	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	2.9	0.50	6765747
Inorganics				
pH	pH	7.90	N/A	6766136
Phenols-4AAP	mg/L	<0.0010	0.0010	6767164
Total Suspended Solids	mg/L	11	1	6765386
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	3.7	0.50	6771502
Total Oil & Grease Mineral/Synthetic	mg/L	0.80	0.50	6771503

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

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BV Labs Job #: C0D1869
Report Date: 2020/06/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: AL

GENERAL COMMENTS

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

Package 1	20.0°C

Results relate only to the items tested.

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BV Labs Job #: C0D1869
Report Date: 2020/06/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: AL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6765386	JS7	QC Standard	Total Suspended Solids	2020/06/04		95	%	85 - 115
6765386	JS7	Method Blank	Total Suspended Solids	2020/06/04	<1		mg/L	
6765386	JS7	RPD	Total Suspended Solids	2020/06/04	18		%	25
6766136	SAU	Spiked Blank	pH	2020/06/03		101	%	98 - 103
6766136	SAU	RPD	pH	2020/06/03	0.11		%	N/A
6767164	BMO	Matrix Spike	Phenols-4AAP	2020/06/03		96	%	80 - 120
6767164	BMO	Spiked Blank	Phenols-4AAP	2020/06/03		96	%	80 - 120
6767164	BMO	Method Blank	Phenols-4AAP	2020/06/03	<0.0010		mg/L	
6767164	BMO	RPD	Phenols-4AAP	2020/06/03	NC		%	20
6771502	GSG	Spiked Blank	Total Oil & Grease	2020/06/05		98	%	85 - 115
6771502	GSG	RPD	Total Oil & Grease	2020/06/05	2.1		%	25
6771502	GSG	Method Blank	Total Oil & Grease	2020/06/05	<0.50		mg/L	
6771503	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/06/05		97	%	85 - 115
6771503	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2020/06/05	4.8		%	25
6771503	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/06/05	<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).

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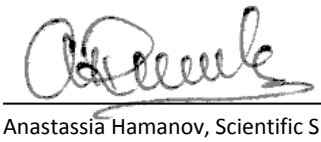
BV Labs Job #: C0D1869
Report Date: 2020/06/05

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: AL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

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Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 772254-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/10
Report #: R6205041
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D8171
Received: 2020/06/05, 09:19

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Animal and Vegetable Oil and Grease	1	N/A	2020/06/10	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/06/10	2020/06/10	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2020/06/05	2020/06/08	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/06/08	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/06/10	2020/06/10	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/06/08	2020/06/10	CAM SOP-00428	SM 23 2540D m

Remarks:

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All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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 #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 772254-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/10
Report #: R6205041
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0D8171
Received: 2020/06/05, 09:19

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0D8171
Report Date: 2020/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY

RESULTS OF ANALYSES OF WATER

BV Labs ID		MUK965		
Sampling Date		2020/06/04 14:00		
COC Number		772254-04-01		
	UNITS	590331	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	6772314
Inorganics				
pH	pH	8.08	N/A	6772731
Phenols-4AAP	mg/L	<0.0010	0.0010	6774647
Total Suspended Solids	mg/L	2	1	6774004
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	<0.50	0.50	6778820
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	6778821

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

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

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BV Labs Job #: C0D8171
Report Date: 2020/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY

GENERAL COMMENTS

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

Package 1	22.0°C

Results relate only to the items tested.

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

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BV Labs Job #: C0D8171
Report Date: 2020/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6772731	NYS	Spiked Blank	pH	2020/06/08		102	%	98 - 103
6772731	NYS	RPD	pH	2020/06/08	0.023		%	N/A
6774004	MJ1	QC Standard	Total Suspended Solids	2020/06/10		100	%	85 - 115
6774004	MJ1	Method Blank	Total Suspended Solids	2020/06/10	<1		mg/L	
6774004	MJ1	RPD	Total Suspended Solids	2020/06/10	18		%	25
6774647	BMO	Matrix Spike	Phenols-4AAP	2020/06/08		97	%	80 - 120
6774647	BMO	Spiked Blank	Phenols-4AAP	2020/06/08		95	%	80 - 120
6774647	BMO	Method Blank	Phenols-4AAP	2020/06/08	<0.0010		mg/L	
6774647	BMO	RPD	Phenols-4AAP	2020/06/08	NC		%	20
6778820	GSG	Spiked Blank	Total Oil & Grease	2020/06/10		99	%	85 - 115
6778820	GSG	RPD	Total Oil & Grease	2020/06/10	2.1		%	25
6778820	GSG	Method Blank	Total Oil & Grease	2020/06/10	<0.50		mg/L	
6778821	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/06/10		97	%	85 - 115
6778821	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2020/06/10	3.2		%	25
6778821	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/06/10	<0.50		mg/L	

N/A = Not Applicable

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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).

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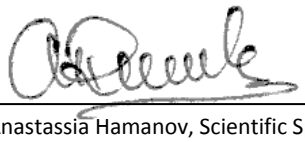
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0D8171
Report Date: 2020/06/10

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

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

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 728212-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/17
Report #: R6213420
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0E5310
Received: 2020/06/12, 09:12

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Animal and Vegetable Oil and Grease	1	N/A	2020/06/17	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/06/17	2020/06/17	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2020/06/13	2020/06/15	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/06/15	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/06/17	2020/06/17	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/06/16	2020/06/17	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs 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 BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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 #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 728212-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/17
Report #: R6213420
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0E5310
Received: 2020/06/12, 09:12

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
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BV Labs Job #: C0E5310
Report Date: 2020/06/17

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SH

RESULTS OF ANALYSES OF WATER

BV Labs ID		MVY862		MVY862	
Sampling Date		2020/06/11 11:30		2020/06/11 11:30	
COC Number		728212-03-01		728212-03-01	
	UNITS	POND	RDL	POND Lab-Dup	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	N/A	6785224
Inorganics					
pH	pH	7.62	N/A	7.61	6785911
Phenols-4AAP	mg/L	<0.0010	0.0010	N/A	6786445
Total Suspended Solids	mg/L	5	1	N/A	6785680
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	<0.50	0.50	N/A	6790397
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	N/A	6790398

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

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BV Labs Job #: C0E5310
Report Date: 2020/06/17

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SH

GENERAL COMMENTS

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

Package 1	17.7°C

Results relate only to the items tested.

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

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BV Labs Job #: C0E5310
Report Date: 2020/06/17

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SH

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6785680	JS7	QC Standard	Total Suspended Solids	2020/06/17		97	%	85 - 115
6785680	JS7	Method Blank	Total Suspended Solids	2020/06/17	<1		mg/L	
6785680	JS7	RPD	Total Suspended Solids	2020/06/17	5.4		%	25
6785911	SAU	Spiked Blank	pH	2020/06/15		101	%	98 - 103
6785911	SAU	RPD [MVY862-03]	pH	2020/06/15	0.13		%	N/A
6786445	BMO	Matrix Spike	Phenols-4AAP	2020/06/15		101	%	80 - 120
6786445	BMO	Spiked Blank	Phenols-4AAP	2020/06/15		100	%	80 - 120
6786445	BMO	Method Blank	Phenols-4AAP	2020/06/15	<0.0010		mg/L	
6786445	BMO	RPD	Phenols-4AAP	2020/06/15	NC		%	20
6790397	GSG	Spiked Blank	Total Oil & Grease	2020/06/17		97	%	85 - 115
6790397	GSG	RPD	Total Oil & Grease	2020/06/17	1.8		%	25
6790397	GSG	Method Blank	Total Oil & Grease	2020/06/17	<0.50		mg/L	
6790398	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/06/17		92	%	85 - 115
6790398	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2020/06/17	4.8		%	25
6790398	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/06/17	<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).

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0E5310
Report Date: 2020/06/17

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: SH

VALIDATION SIGNATURE PAGE

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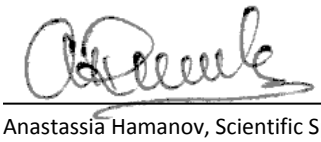

Anastassia Hamanov, Scientific Specialist

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 772254-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/24
Report #: R6222243
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F2926
Received: 2020/06/19, 09:46

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Animal and Vegetable Oil and Grease	1	N/A	2020/06/24	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/06/24	2020/06/24	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2020/06/22	2020/06/23	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/06/23	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/06/24	2020/06/24	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/06/23	2020/06/24	CAM SOP-00428	SM 23 2540D m

Remarks:

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* 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 #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 772254-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/06/24
Report #: R6222243
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F2926
Received: 2020/06/19, 09:46

Encryption Key

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Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F2926
Report Date: 2020/06/24

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: S

RESULTS OF ANALYSES OF WATER

BV Labs ID		MXN242		
Sampling Date		2020/06/18 14:30		
COC Number		772254-03-01		
	UNITS	POND	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	6795247
Inorganics				
pH	pH	8.19	N/A	6799638
Phenols-4AAP	mg/L	<0.0010	0.0010	6798084
Total Suspended Solids	mg/L	8	1	6800869
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	<0.50	0.50	6802335
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	6802336

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

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F2926
Report Date: 2020/06/24

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: S

GENERAL COMMENTS

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

Package 1	22.0°C

Results relate only to the items tested.

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BV Labs Job #: C0F2926
Report Date: 2020/06/24

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: S

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6798084	BMO	Matrix Spike	Phenols-4AAP	2020/06/23		105	%	80 - 120
6798084	BMO	Spiked Blank	Phenols-4AAP	2020/06/23		104	%	80 - 120
6798084	BMO	Method Blank	Phenols-4AAP	2020/06/23	<0.0010		mg/L	
6798084	BMO	RPD	Phenols-4AAP	2020/06/23	15		%	20
6799638	SAU	Spiked Blank	pH	2020/06/23		102	%	98 - 103
6799638	SAU	RPD	pH	2020/06/23	0.93		%	N/A
6800869	JS7	QC Standard	Total Suspended Solids	2020/06/24		100	%	N/A
6800869	JS7	Method Blank	Total Suspended Solids	2020/06/24	<1		mg/L	
6800869	JS7	RPD	Total Suspended Solids	2020/06/24	0		%	25
6802335	GSG	Spiked Blank	Total Oil & Grease	2020/06/24		99	%	85 - 115
6802335	GSG	RPD	Total Oil & Grease	2020/06/24	2.3		%	25
6802335	GSG	Method Blank	Total Oil & Grease	2020/06/24	<0.50		mg/L	
6802336	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/06/24		97	%	85 - 115
6802336	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2020/06/24	5.3		%	25
6802336	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/06/24	<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.

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BV Labs Job #: C0F2926
Report Date: 2020/06/24

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: S

VALIDATION SIGNATURE PAGE

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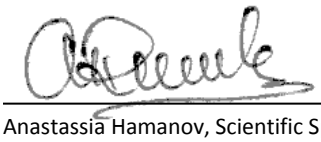

Anastassia Hamanov, Scientific Specialist

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Your Project #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 752753-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/07/06
Report #: R6235892
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F9331
Received: 2020/06/26, 09:10

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Animal and Vegetable Oil and Grease	1	N/A	2020/07/04	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2020/07/04	2020/07/04	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2020/07/02	2020/07/02	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2020/07/03	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2020/07/04	2020/07/04	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2020/07/02	2020/07/03	CAM SOP-00428	SM 23 2540D m

Remarks:

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* 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 #: 1407634
Site#: 1407634
Site Location: MCCARTHY
Your C.O.C. #: 752753-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2020/07/06
Report #: R6235892
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0F9331
Received: 2020/06/26, 09:10

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F9331
Report Date: 2020/07/06

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: B

RESULTS OF ANALYSES OF WATER

BV Labs ID		MYY959	MYY959		
Sampling Date		2020/06/25 13:30	2020/06/25 13:30		
COC Number		752753-03-01	752753-03-01		
	UNITS	POND	POND Lab-Dup	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	N/A	0.50	6812780
Inorganics					
pH	pH	8.10	N/A	N/A	6815381
Phenols-4AAP	mg/L	<0.0010	<0.0010	0.0010	6817198
Total Suspended Solids	mg/L	5	N/A	1	6812736
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	<0.50	N/A	0.50	6818998
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	N/A	0.50	6818999

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

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F9331
Report Date: 2020/07/06

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: B

GENERAL COMMENTS

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

Package 1	23.0°C

Results relate only to the items tested.

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BV Labs Job #: C0F9331
Report Date: 2020/07/06

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: B

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6812736	JS7	QC Standard	Total Suspended Solids	2020/07/03		95	%	85 - 115
6812736	JS7	Method Blank	Total Suspended Solids	2020/07/03	<1		mg/L	
6812736	JS7	RPD	Total Suspended Solids	2020/07/03	10		%	25
6815381	NYS	Spiked Blank	pH	2020/07/02		102	%	98 - 103
6815381	NYS	RPD	pH	2020/07/02	0.31		%	N/A
6817198	LHA	Matrix Spike [MYY959-04]	Phenols-4AAP	2020/07/03		94	%	80 - 120
6817198	LHA	Spiked Blank	Phenols-4AAP	2020/07/03		99	%	80 - 120
6817198	LHA	Method Blank	Phenols-4AAP	2020/07/03	<0.0010		mg/L	
6817198	LHA	RPD [MYY959-04]	Phenols-4AAP	2020/07/03	NC		%	20
6818998	GSG	Spiked Blank	Total Oil & Grease	2020/07/04		98	%	85 - 115
6818998	GSG	RPD	Total Oil & Grease	2020/07/04	1.8		%	25
6818998	GSG	Method Blank	Total Oil & Grease	2020/07/04	<0.50		mg/L	
6818999	GSG	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2020/07/04		96	%	85 - 115
6818999	GSG	RPD	Total Oil & Grease Mineral/Synthetic	2020/07/04	3.2		%	25
6818999	GSG	Method Blank	Total Oil & Grease Mineral/Synthetic	2020/07/04	<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).

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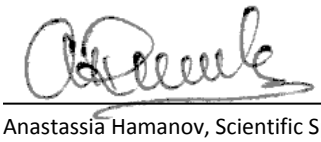
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0F9331
Report Date: 2020/07/06

Golder Associates Ltd
Client Project #: 1407634
Site Location: MCCARTHY
Sampler Initials: B

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, Scientific Specialist

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

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: 1407634
Your C.O.C. #: 772251-01-01

Attention: Jamie Bonany

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

Report Date: 2020/05/25
Report #: R6185519
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9834
Received: 2020/05/15, 09:54

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	4	N/A	2020/05/21	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	4	N/A	2020/05/21	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	4	N/A	2020/05/21	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	1	N/A	2020/05/21	CAM SOP-00446	SM 23 5310 B m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2020/05/23	CAM SOP-00446	SM 23 5310 B m
Fluoride	4	2020/05/21	2020/05/21	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	4	N/A	2020/05/22	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals by ICPMS	4	2020/05/20	2020/05/21	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	4	N/A	2020/05/21	CAM SOP-00447	EPA 6020B m
Anion and Cation Sum	4	N/A	2020/05/22		
Total Ammonia-N	4	N/A	2020/05/22	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	4	N/A	2020/05/21	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Total Oil and Grease	4	2020/05/21	2020/05/21	CAM SOP-00326	EPA1664B m,SM5520B m
pH	4	2020/05/21	2020/05/21	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	4	N/A	2020/05/20	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	4	N/A	2020/05/21	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	4	2020/05/20	2020/05/21	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	3	2020/05/22	2020/05/22	CAM SOP-00938	OMOE E3516 m
Total Kjeldahl Nitrogen in Water	1	2020/05/22	2020/05/25	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	4	2020/05/22	2020/05/25	CAM SOP-00407	SM 23 4500 P B H m
Total Suspended Solids	3	2020/05/20	2020/05/21	CAM SOP-00428	SM 23 2540D m
Total Suspended Solids	1	2020/05/21	2020/05/21	CAM SOP-00428	SM 23 2540D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs 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 BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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

Your Project #: 1407634
Your C.O.C. #: 772251-01-01

Attention: Jamie Bonany

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

Report Date: 2020/05/25
Report #: R6185519
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C0B9834
Received: 2020/05/15, 09:54

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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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 your Project Manager.
Ema Gitej, Senior Project Manager
Email: Ema.Gitej@bvlabs.com
Phone# (905)817-5829
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BV Labs Job #: C0B9834
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID		MQM269			MQM269			MQM270		
Sampling Date		2020/05/14 10:30			2020/05/14 10:30			2020/05/14 10:00		
COC Number		772251-01-01			772251-01-01			772251-01-01		
	UNITS	POND	RDL	QC Batch	POND Lab-Dup	RDL	QC Batch	SW1	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	4.78	N/A	6729238				8.65	N/A	6729238
Cation Sum	me/L	4.84	N/A	6729238				8.86	N/A	6729238
Hardness (CaCO3)	mg/L	210	1.0	6729230				360	1.0	6729230
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	6737479				<0.050	0.050	6737479
Conductivity	mS/cm	0.455	0.001	6733875				0.822	0.001	6733875
Total Dissolved Solids	mg/L	260	10	6732144				490	10	6732144
Fluoride (F-)	mg/L	0.13	0.10	6733876				0.11	0.10	6733876
Total Kjeldahl Nitrogen (TKN)	mg/L	0.44	0.10	6738282				0.47	0.10	6738282
Dissolved Organic Carbon	mg/L	6.5	0.40	6740975				7.8	0.40	6732269
pH	pH	8.10		6733880				7.99		6733880
Phenols-4AAP	mg/L	<0.0010	0.0010	6732033	<0.0010	0.0010	6732033	<0.0010	0.0010	6732033
Total Phosphorus	mg/L	0.010	0.004	6738035				0.006	0.004	6738035
Total Suspended Solids	mg/L	<10	10	6731213				<10	10	6731213
Dissolved Sulphate (SO4)	mg/L	82	1.0	6732599				140	1.0	6732599
Alkalinity (Total as CaCO3)	mg/L	140	1.0	6733873				230	1.0	6733873
Dissolved Chloride (Cl-)	mg/L	9.3	1.0	6732594				43	1.0	6732594
Nitrite (N)	mg/L	<0.010	0.010	6733860				<0.010	0.010	6733860
Nitrate (N)	mg/L	<0.10	0.10	6733860				<0.10	0.10	6733860
Nitrate + Nitrite (N)	mg/L	<0.10	0.10	6733860				<0.10	0.10	6733860
Petroleum Hydrocarbons										
Total Oil & Grease	mg/L	<0.50	0.50	6734179				<0.50	0.50	6734179

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

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B9834
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

RESULTS OF ANALYSES OF WATER

BV Labs ID		MQM270			MQM271		MQM272		
Sampling Date		2020/05/14 10:00			2020/05/14 12:00		2020/05/14 10:00		
COC Number		772251-01-01			772251-01-01		772251-01-01		
	UNITS	SW1 Lab-Dup	RDL	QC Batch	SW2	QC Batch	SW1-D	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L				8.40	6729238	8.64	N/A	6729238
Cation Sum	me/L				8.73	6729238	8.99	N/A	6729238
Hardness (CaCO3)	mg/L				400	6729230	360	1.0	6729230
Inorganics									
Total Ammonia-N	mg/L				<0.050	6737479	<0.050	0.050	6737479
Conductivity	mS/cm	0.820	0.001	6733875	0.764	6733875	0.820	0.001	6733875
Total Dissolved Solids	mg/L				435	6732144	495	10	6732144
Fluoride (F-)	mg/L	0.10	0.10	6733876	<0.10	6733876	0.10	0.10	6733876
Total Kjeldahl Nitrogen (TKN)	mg/L	0.45	0.10	6738282	0.31	6738282	0.36	0.10	6738282
Dissolved Organic Carbon	mg/L				5.0	6740975	8.0	0.40	6740975
pH	pH	7.99		6733880	7.98	6733880	7.98		6733880
Phenols-4AAP	mg/L				<0.0010	6732033	<0.0010	0.0010	6732033
Total Phosphorus	mg/L				0.012	6738035	0.005	0.004	6738035
Total Suspended Solids	mg/L				<10	6731213	<10	10	6732172
Dissolved Sulphate (SO4)	mg/L				81	6732599	140	1.0	6732599
Alkalinity (Total as CaCO3)	mg/L	230	1.0	6733873	300	6733873	230	1.0	6733873
Dissolved Chloride (Cl-)	mg/L				26	6732594	43	1.0	6732594
Nitrite (N)	mg/L				<0.010	6733860	<0.010	0.010	6733860
Nitrate (N)	mg/L				<0.10	6733860	<0.10	0.10	6733860
Nitrate + Nitrite (N)	mg/L				<0.10	6733860	<0.10	0.10	6733860
Petroleum Hydrocarbons									
Total Oil & Grease	mg/L				<0.50	6734179	<0.50	0.50	6734179

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

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B9834
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		MQM269	MQM270	MQM271	MQM272			MQM272		
Sampling Date		2020/05/14 10:30	2020/05/14 10:00	2020/05/14 12:00	2020/05/14 10:00			2020/05/14 10:00		
COC Number		772251-01-01	772251-01-01	772251-01-01	772251-01-01			772251-01-01		
	UNITS	POND	SW1	SW2	SW1-D	RDL	QC Batch	SW1-D Lab-Dup	RDL	QC Batch
Metals										
Dissolved Aluminum (Al)	ug/L	<5.0	9.6	<5.0	<5.0	5.0	6732680	<5.0	5.0	6732680
Total Arsenic (As)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	6734006			
Total Cadmium (Cd)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	6734006			
Dissolved Calcium (Ca)	ug/L	62000	120000	130000	120000	200	6732680	120000	200	6732680
Total Calcium (Ca)	ug/L	63000	120000	120000	120000	200	6734006			
Total Chromium (Cr)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	6734006			
Total Copper (Cu)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	6734006			
Total Iron (Fe)	ug/L	140	<100	140	<100	100	6734006			
Total Lead (Pb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	6734006			
Dissolved Magnesium (Mg)	ug/L	14000	13000	20000	13000	50	6732680	13000	50	6732680
Total Magnesium (Mg)	ug/L	13000	12000	19000	12000	50	6734006			
Total Manganese (Mn)	ug/L	16	13	6.4	14	2.0	6734006			
Total Nickel (Ni)	ug/L	1.1	<1.0	<1.0	<1.0	1.0	6734006			
Dissolved Potassium (K)	ug/L	1800	2400	1100	2400	200	6732680	2400	200	6732680
Total Potassium (K)	ug/L	1700	2200	1100	2300	200	6734006			
Dissolved Sodium (Na)	ug/L	12000	37000	15000	38000	100	6732680	37000	100	6732680
Total Sodium (Na)	ug/L	12000	37000	14000	37000	100	6734006			
Total Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	6734006			

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

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

TEST SUMMARY

BV Labs ID: MQM269
Sample ID: POND
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733873	N/A	2020/05/21	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732594	N/A	2020/05/21	Deonarine Ramnarine
Conductivity	AT	6733875	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6740975	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733876	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6729230	N/A	2020/05/22	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	6732680	2020/05/20	2020/05/21	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	6734006	N/A	2020/05/21	Azita Fazaeli
Anion and Cation Sum	CALC	6729238	N/A	2020/05/22	Automated Statchk
Total Ammonia-N	LACH/NH4	6737479	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Total Oil and Grease	BAL	6734179	2020/05/21	2020/05/21	Khushboo Kapoor
pH	AT	6733880	2020/05/21	2020/05/21	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6732599	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732144	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6738282	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738035	2020/05/22	2020/05/25	Shivani Shivani
Total Suspended Solids	BAL	6731213	2020/05/20	2020/05/21	Massarat Jan

BV Labs ID: MQM269 Dup
Sample ID: POND
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram

BV Labs ID: MQM270
Sample ID: SW1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733873	N/A	2020/05/21	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732594	N/A	2020/05/21	Deonarine Ramnarine
Conductivity	AT	6733875	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6732269	N/A	2020/05/21	Nimarta Singh
Fluoride	ISE	6733876	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6729230	N/A	2020/05/22	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	6732680	2020/05/20	2020/05/21	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	6734006	N/A	2020/05/21	Azita Fazaeli
Anion and Cation Sum	CALC	6729238	N/A	2020/05/22	Automated Statchk
Total Ammonia-N	LACH/NH4	6737479	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Total Oil and Grease	BAL	6734179	2020/05/21	2020/05/21	Khushboo Kapoor
pH	AT	6733880	2020/05/21	2020/05/21	Surinder Rai

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

TEST SUMMARY

BV Labs ID: MQM270
Sample ID: SW1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6732599	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732144	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6738282	2020/05/22	2020/05/25	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738035	2020/05/22	2020/05/25	Shivani Shivani
Total Suspended Solids	BAL	6731213	2020/05/20	2020/05/21	Massarat Jan

BV Labs ID: MQM270 Dup
Sample ID: SW1
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733873	N/A	2020/05/21	Surinder Rai
Conductivity	AT	6733875	N/A	2020/05/21	Surinder Rai
Fluoride	ISE	6733876	2020/05/21	2020/05/21	Surinder Rai
pH	AT	6733880	2020/05/21	2020/05/21	Surinder Rai
Total Kjeldahl Nitrogen in Water	SKAL	6738282	2020/05/22	2020/05/25	Rajni Tyagi

BV Labs ID: MQM271
Sample ID: SW2
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733873	N/A	2020/05/21	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732594	N/A	2020/05/21	Deonarine Ramnarine
Conductivity	AT	6733875	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6740975	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733876	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6729230	N/A	2020/05/22	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	6732680	2020/05/20	2020/05/21	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	6734006	N/A	2020/05/21	Azita Fazaeli
Anion and Cation Sum	CALC	6729238	N/A	2020/05/22	Automated Statchk
Total Ammonia-N	LACH/NH4	6737479	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Total Oil and Grease	BAL	6734179	2020/05/21	2020/05/21	Khushboo Kapoor
pH	AT	6733880	2020/05/21	2020/05/21	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6732599	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732144	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6738282	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738035	2020/05/22	2020/05/25	Shivani Shivani
Total Suspended Solids	BAL	6731213	2020/05/20	2020/05/21	Massarat Jan

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B9834
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

TEST SUMMARY

BV Labs ID: MQM272
Sample ID: SW1-D
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	6733873	N/A	2020/05/21	Surinder Rai
Chloride by Automated Colourimetry	KONE	6732594	N/A	2020/05/21	Deonarine Ramnarine
Conductivity	AT	6733875	N/A	2020/05/21	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	6740975	N/A	2020/05/23	Nimarta Singh
Fluoride	ISE	6733876	2020/05/21	2020/05/21	Surinder Rai
Hardness (calculated as CaCO3)		6729230	N/A	2020/05/22	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	6732680	2020/05/20	2020/05/21	Arefa Dabhad
Total Metals Analysis by ICPMS	ICP/MS	6734006	N/A	2020/05/21	Azita Fazaeli
Anion and Cation Sum	CALC	6729238	N/A	2020/05/22	Automated Statchk
Total Ammonia-N	LACH/NH4	6737479	N/A	2020/05/22	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	6733860	N/A	2020/05/21	Chandra Nandlal
Total Oil and Grease	BAL	6734179	2020/05/21	2020/05/21	Khushboo Kapoor
pH	AT	6733880	2020/05/21	2020/05/21	Surinder Rai
Phenols (4AAP)	TECH/PHEN	6732033	N/A	2020/05/20	Bramdeo Motiram
Sulphate by Automated Colourimetry	KONE	6732599	N/A	2020/05/21	Deonarine Ramnarine
Total Dissolved Solids	BAL	6732144	2020/05/20	2020/05/21	Jingwei (Alvin) Shi
Total Kjeldahl Nitrogen in Water	SKAL	6738282	2020/05/22	2020/05/22	Rajni Tyagi
Total Phosphorus (Colourimetric)	LACH/P	6738035	2020/05/22	2020/05/25	Shivani Shivani
Total Suspended Solids	BAL	6732172	2020/05/21	2020/05/21	Massarat Jan

BV Labs ID: MQM272 Dup
Sample ID: SW1-D
Matrix: Water

Collected: 2020/05/14
Shipped:
Received: 2020/05/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	6732680	2020/05/20	2020/05/21	Arefa Dabhad

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

GENERAL COMMENTS

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

Package 1	4.7°C
Package 2	3.3°C
Package 3	4.3°C

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
6731213	MJ1	QC Standard	Total Suspended Solids	2020/05/21		102	%	85 - 115
6731213	MJ1	Method Blank	Total Suspended Solids	2020/05/21	<10		mg/L	
6731213	MJ1	RPD	Total Suspended Solids	2020/05/21	NC		%	25
6732033	BMO	Matrix Spike [MQM269-07]	Phenols-4AAP	2020/05/20		93	%	80 - 120
6732033	BMO	Spiked Blank	Phenols-4AAP	2020/05/20		96	%	80 - 120
6732033	BMO	Method Blank	Phenols-4AAP	2020/05/20	<0.0010		mg/L	
6732033	BMO	RPD [MQM269-07]	Phenols-4AAP	2020/05/20	NC		%	20
6732144	JS7	QC Standard	Total Dissolved Solids	2020/05/21		100	%	90 - 110
6732144	JS7	Method Blank	Total Dissolved Solids	2020/05/21	<10		mg/L	
6732144	JS7	RPD	Total Dissolved Solids	2020/05/21	0.60		%	25
6732172	MJ1	QC Standard	Total Suspended Solids	2020/05/21		101	%	85 - 115
6732172	MJ1	Method Blank	Total Suspended Solids	2020/05/21	<10		mg/L	
6732172	MJ1	RPD	Total Suspended Solids	2020/05/21	NC		%	25
6732269	NS3	Matrix Spike	Dissolved Organic Carbon	2020/05/21		NC	%	80 - 120
6732269	NS3	Spiked Blank	Dissolved Organic Carbon	2020/05/21		96	%	80 - 120
6732269	NS3	Method Blank	Dissolved Organic Carbon	2020/05/21	<0.40		mg/L	
6732269	NS3	RPD	Dissolved Organic Carbon	2020/05/21	1.0		%	20
6732594	DRM	Matrix Spike	Dissolved Chloride (Cl-)	2020/05/21		NC	%	80 - 120
6732594	DRM	Spiked Blank	Dissolved Chloride (Cl-)	2020/05/21		101	%	80 - 120
6732594	DRM	Method Blank	Dissolved Chloride (Cl-)	2020/05/21	<1.0		mg/L	
6732594	DRM	RPD	Dissolved Chloride (Cl-)	2020/05/21	1.9		%	20
6732599	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2020/05/21		NC	%	75 - 125
6732599	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2020/05/21		104	%	80 - 120
6732599	DRM	Method Blank	Dissolved Sulphate (SO4)	2020/05/21	<1.0		mg/L	
6732599	DRM	RPD	Dissolved Sulphate (SO4)	2020/05/21	0.19		%	20
6732680	ADA	Matrix Spike [MQM272-01]	Dissolved Aluminum (Al)	2020/05/21		100	%	80 - 120
			Dissolved Calcium (Ca)	2020/05/21		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/21		106	%	80 - 120
			Dissolved Potassium (K)	2020/05/21		106	%	80 - 120
			Dissolved Sodium (Na)	2020/05/21		NC	%	80 - 120
6732680	ADA	Spiked Blank	Dissolved Aluminum (Al)	2020/05/21		95	%	80 - 120
			Dissolved Calcium (Ca)	2020/05/21		107	%	80 - 120
			Dissolved Magnesium (Mg)	2020/05/21		101	%	80 - 120
			Dissolved Potassium (K)	2020/05/21		101	%	80 - 120
			Dissolved Sodium (Na)	2020/05/21		97	%	80 - 120
6732680	ADA	Method Blank	Dissolved Aluminum (Al)	2020/05/21	<5.0		ug/L	
			Dissolved Calcium (Ca)	2020/05/21	<200		ug/L	
			Dissolved Magnesium (Mg)	2020/05/21	<50		ug/L	
			Dissolved Potassium (K)	2020/05/21	<200		ug/L	
			Dissolved Sodium (Na)	2020/05/21	<100		ug/L	
6732680	ADA	RPD [MQM272-01]	Dissolved Aluminum (Al)	2020/05/21	NC		%	20
			Dissolved Calcium (Ca)	2020/05/21	1.2		%	20
			Dissolved Magnesium (Mg)	2020/05/21	4.2		%	20
			Dissolved Potassium (K)	2020/05/21	1.6		%	20
			Dissolved Sodium (Na)	2020/05/21	2.7		%	20
6733860	C_N	Matrix Spike	Nitrite (N)	2020/05/21		107	%	80 - 120
			Nitrate (N)	2020/05/21		103	%	80 - 120
6733860	C_N	Spiked Blank	Nitrite (N)	2020/05/21		108	%	80 - 120
			Nitrate (N)	2020/05/21		104	%	80 - 120
6733860	C_N	Method Blank	Nitrite (N)	2020/05/21	<0.010		mg/L	

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Nitrate (N)	2020/05/21	<0.10		mg/L	
6733860	C_N	RPD	Nitrite (N)	2020/05/21	10		%	20
			Nitrate (N)	2020/05/21	NC		%	20
6733873	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2020/05/21		95	%	85 - 115
6733873	SAU	Method Blank	Alkalinity (Total as CaCO3)	2020/05/21	<1.0		mg/L	
6733873	SAU	RPD [MQM270-01]	Alkalinity (Total as CaCO3)	2020/05/21	0.47		%	20
6733875	SAU	Spiked Blank	Conductivity	2020/05/21		100	%	85 - 115
6733875	SAU	Method Blank	Conductivity	2020/05/21	<0.001		mS/cm	
6733875	SAU	RPD [MQM270-01]	Conductivity	2020/05/21	0.24		%	25
6733876	SAU	Matrix Spike [MQM270-01]	Fluoride (F-)	2020/05/21		97	%	80 - 120
6733876	SAU	Spiked Blank	Fluoride (F-)	2020/05/21		106	%	80 - 120
6733876	SAU	Method Blank	Fluoride (F-)	2020/05/21	<0.10		mg/L	
6733876	SAU	RPD [MQM270-01]	Fluoride (F-)	2020/05/21	6.7		%	20
6733880	SAU	Spiked Blank	pH	2020/05/21		102	%	98 - 103
6733880	SAU	RPD [MQM270-01]	pH	2020/05/21	0.053		%	N/A
6734006	AFZ	Matrix Spike	Total Arsenic (As)	2020/05/21		101	%	80 - 120
			Total Cadmium (Cd)	2020/05/21		89	%	80 - 120
			Total Calcium (Ca)	2020/05/21		NC	%	80 - 120
			Total Chromium (Cr)	2020/05/21		NC	%	80 - 120
			Total Copper (Cu)	2020/05/21		99	%	80 - 120
			Total Iron (Fe)	2020/05/21		91	%	80 - 120
			Total Lead (Pb)	2020/05/21		82	%	80 - 120
			Total Magnesium (Mg)	2020/05/21		93	%	80 - 120
			Total Manganese (Mn)	2020/05/21		93	%	80 - 120
			Total Nickel (Ni)	2020/05/21		88	%	80 - 120
			Total Potassium (K)	2020/05/21		NC	%	80 - 120
			Total Sodium (Na)	2020/05/21		NC	%	80 - 120
			Total Zinc (Zn)	2020/05/21		84	%	80 - 120
6734006	AFZ	Spiked Blank	Total Arsenic (As)	2020/05/21		98	%	80 - 120
			Total Cadmium (Cd)	2020/05/21		98	%	80 - 120
			Total Calcium (Ca)	2020/05/21		98	%	80 - 120
			Total Chromium (Cr)	2020/05/21		93	%	80 - 120
			Total Copper (Cu)	2020/05/21		96	%	80 - 120
			Total Iron (Fe)	2020/05/21		93	%	80 - 120
			Total Lead (Pb)	2020/05/21		92	%	80 - 120
			Total Magnesium (Mg)	2020/05/21		93	%	80 - 120
			Total Manganese (Mn)	2020/05/21		93	%	80 - 120
			Total Nickel (Ni)	2020/05/21		93	%	80 - 120
			Total Potassium (K)	2020/05/21		93	%	80 - 120
			Total Sodium (Na)	2020/05/21		95	%	80 - 120
			Total Zinc (Zn)	2020/05/21		101	%	80 - 120
6734006	AFZ	Method Blank	Total Arsenic (As)	2020/05/21	<1.0		ug/L	
			Total Cadmium (Cd)	2020/05/21	<0.10		ug/L	
			Total Calcium (Ca)	2020/05/21	<200		ug/L	
			Total Chromium (Cr)	2020/05/21	<5.0		ug/L	
			Total Copper (Cu)	2020/05/21	<1.0		ug/L	
			Total Iron (Fe)	2020/05/21	<100		ug/L	
			Total Lead (Pb)	2020/05/21	<0.50		ug/L	
			Total Magnesium (Mg)	2020/05/21	<50		ug/L	
			Total Manganese (Mn)	2020/05/21	<2.0		ug/L	
			Total Nickel (Ni)	2020/05/21	<1.0		ug/L	

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Potassium (K)	2020/05/21	<200		ug/L	
			Total Sodium (Na)	2020/05/21	<100		ug/L	
			Total Zinc (Zn)	2020/05/21	<5.0		ug/L	
6734006	AFZ	RPD	Total Arsenic (As)	2020/05/21	NC		%	20
			Total Cadmium (Cd)	2020/05/21	3.0		%	20
			Total Calcium (Ca)	2020/05/21	0.090		%	20
			Total Chromium (Cr)	2020/05/21	0.24		%	20
			Total Copper (Cu)	2020/05/21	7.0		%	20
			Total Iron (Fe)	2020/05/21	1.0		%	20
			Total Lead (Pb)	2020/05/21	4.6		%	20
			Total Magnesium (Mg)	2020/05/21	1.0		%	20
			Total Manganese (Mn)	2020/05/21	NC		%	20
			Total Nickel (Ni)	2020/05/21	0.47		%	20
			Total Potassium (K)	2020/05/21	1.0		%	20
			Total Sodium (Na)	2020/05/21	0.030		%	20
			Total Zinc (Zn)	2020/05/21	NC		%	20
6734179	KK4	Spiked Blank	Total Oil & Grease	2020/05/21		94	%	85 - 115
6734179	KK4	RPD	Total Oil & Grease	2020/05/21	1.8		%	25
6734179	KK4	Method Blank	Total Oil & Grease	2020/05/21	<0.50		mg/L	
6737479	ASP	Matrix Spike	Total Ammonia-N	2020/05/22		98	%	75 - 125
6737479	ASP	Spiked Blank	Total Ammonia-N	2020/05/22		100	%	80 - 120
6737479	ASP	Method Blank	Total Ammonia-N	2020/05/22	<0.050		mg/L	
6737479	ASP	RPD	Total Ammonia-N	2020/05/22	0.57		%	20
6738035	SSV	Matrix Spike	Total Phosphorus	2020/05/25		90	%	80 - 120
6738035	SSV	QC Standard	Total Phosphorus	2020/05/25		96	%	80 - 120
6738035	SSV	Spiked Blank	Total Phosphorus	2020/05/25		101	%	80 - 120
6738035	SSV	Method Blank	Total Phosphorus	2020/05/25	<0.004		mg/L	
6738035	SSV	RPD	Total Phosphorus	2020/05/25	NC		%	20
6738282	RTY	Matrix Spike [MQM270-05]	Total Kjeldahl Nitrogen (TKN)	2020/05/25		104	%	80 - 120
6738282	RTY	QC Standard	Total Kjeldahl Nitrogen (TKN)	2020/05/22		110	%	80 - 120
6738282	RTY	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2020/05/22		106	%	80 - 120
6738282	RTY	Method Blank	Total Kjeldahl Nitrogen (TKN)	2020/05/22	<0.10		mg/L	
6738282	RTY	RPD [MQM270-05]	Total Kjeldahl Nitrogen (TKN)	2020/05/25	2.8		%	20
6740975	NS3	Matrix Spike	Dissolved Organic Carbon	2020/05/23		94	%	80 - 120
6740975	NS3	Spiked Blank	Dissolved Organic Carbon	2020/05/23		98	%	80 - 120
6740975	NS3	Method Blank	Dissolved Organic Carbon	2020/05/23	<0.40		mg/L	
6740975	NS3	RPD	Dissolved Organic Carbon	2020/05/23	0.64		%	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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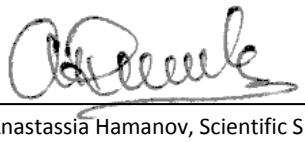
Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C0B9834
Report Date: 2020/05/25

Golder Associates Ltd
Client Project #: 1407634
Sampler Initials: DH

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Anastassia Hamanov, 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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