GOLDER
MEMBER OF WSP

REPORT

Environmental Compliance Approval Quarterly Monitoring Report (May to July 2021)

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:

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20448776

August 2021

Distribution List

Distribution:

1 Copy - Ontario MECP Barrie District Office

1 Copy - Coco Aggregates Inc.

e Copy - Golder Associates Ltd.

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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 2021.

2.0 BACKGROUND

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

The McCarthy Quarry dewatering system includes a sump located in the northwest corner of the quarry floor which collects groundwater and surface water (hereafter referred to as "quarry discharge") accumulating at the base of the quarry. The sump is equipped with a 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 directly from the discharge outfall. 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).

A weekly water quality sample was only collected from the McCarthy Pond location on the weeks of June 14 to 18, July 12 to 16 and July 26 to 30, 2021 as quarry staff reported limited discharge was present at the sampling location at the time of sampling for the other weeks.

4.0 MONITORING RESULTS AND RECOMMENDATIONS

All laboratory certificates of analysis for the May to July 2021 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:

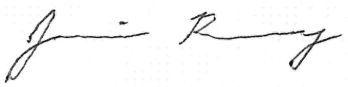
- The TSS, pH, Oil and Grease and Phenol (4AAP) concentrations were all below the daily concentration limits of the ECA (Table 1);
- The TSS, Oil and Grease and Phenol (4AAP) concentrations were all below the monthly concentration limits of the ECA (Table 2), with the exception of TSS in June 2021. Only a single sample was collected in June 2021 with during very low flow conditions, which contributed to the elevated TSS concentration. TSS concentrations decreased to an average of 4.0 mg/L in July 2021;
- The semi-annual surface water sampling results were below the PWQO (Table 3); and,
- The daily discharge rate between May to July 2021 was below the permitted rate of 4,545 L/min (76 L/sec) (Table 4).

5.0 CLOSURE

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

Signature Page

Golder Associates Ltd.



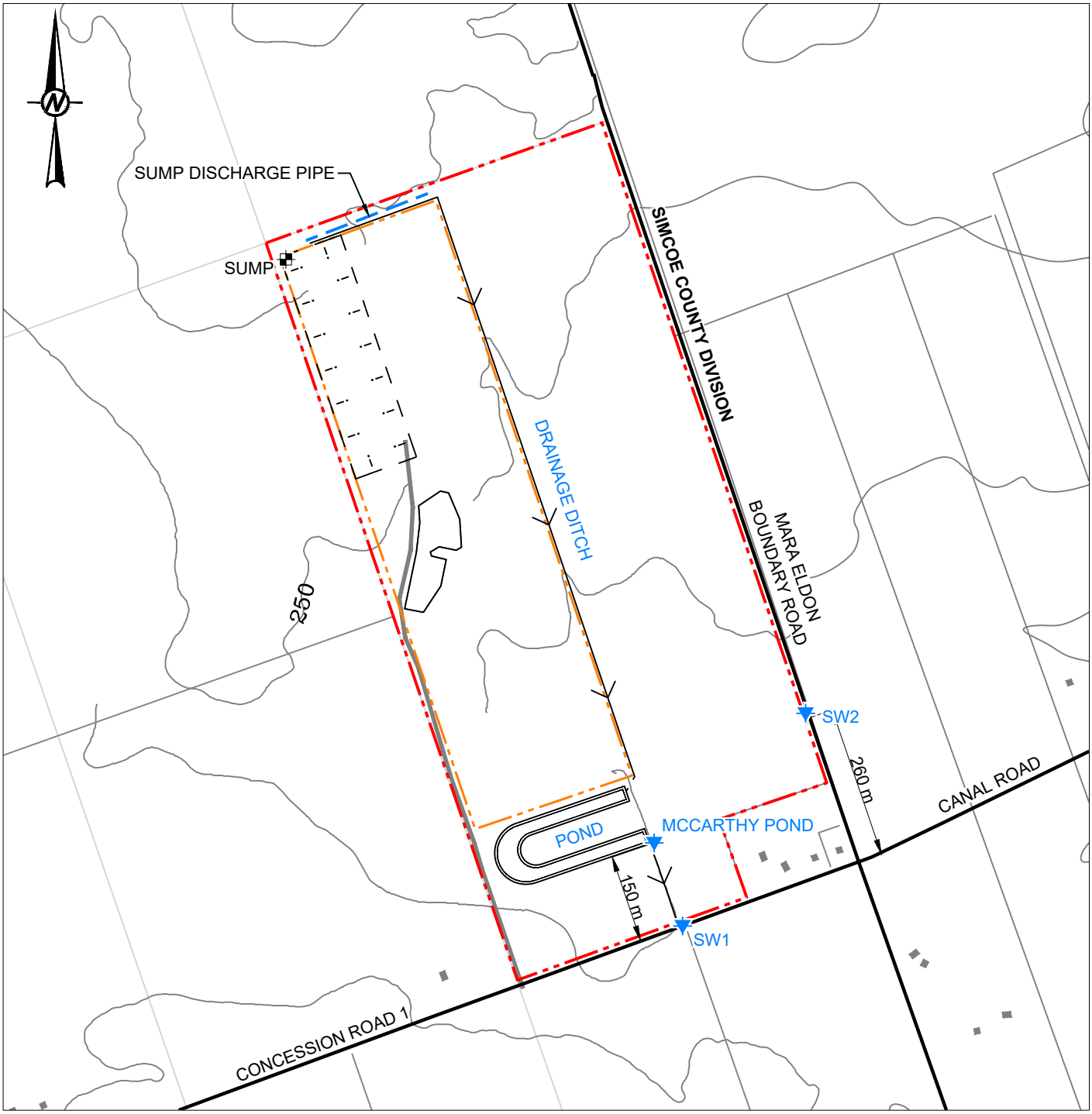
Jamie Bonany, M.A.Sc.
Project Scientist

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

JB/SM/cdr

https://golderassociates.sharepoint.com/sites/139299/project files/6 deliverables/eca reports/quarterly/eca may to aug 2021/1407634 rep 2020'11'26 eca quarterly report.docx

Figures



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LICENCED BOUNDARY
- CONTOUR LINE (5 M INTERVAL)
- SURFACE WATER SAMPLING LOCATION
- APPROXIMATE EXTENT OF QUARRY

0 250 500
1:10,000 METRES

REFERENCE(S)

1. PROJECTION UTM NAD83 ZONE 17
2. MAPPING BASE ON ESRI GEOGRAPHIC NETWORK OBM FEATURES AND BING ORTHOPHOTOS

CLIENT
COCO PAVING

PROJECT
STAN McCARTHY QUARRY
2020 QUATERLY REPORT

TITLE
LOCATION MAP

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-05-13
DESIGNED	
PREPARED	STB
REVIEWED	JEB
APPROVED	

PROJECT NO.	CONTROL	REV.	FIGURE
20448776	0001	A	1

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

25 mm

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Last Edited By: sbowerman Date: 2021-05-13 Time:2:34:13 PM | Printed By: SBowerman Date: 2021-05-13 Time:2:35:27 PM
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Tables

Table 1: McCarthy Pond Weekly Water Quality Results (May to July 2021)

	Unit	Reportable Detection Limit (RDL)	PWQO [1]	Daily Concentration Limit[2]	McCarthy Quarry		
Sample ID					**Pond**		
Date					17-Jun-21	15-Jul-21	29-Jul-21
pH	pH	n/a		6.0-9.5	7.97	8.05	7.55
Total Suspended Solids	mg/L	1		30	19	5	3
Total Oil and Grease	mg/L	0.5	Note 3	30	<0.5	<0.5	<0.5
Phenols (4AAP)	mg/L	<0.0010		0.04	<0.001	<0.001	<0.001

Notes

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

2. Daily Concentration Limit; bolded values denote exceedances in the Environmental Compliance Approval (ECA) daily concentration limits.

3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or 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 2021)

	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	-	**19.0**	4.0
Total Oil and Grease	mg/L	0.5	Note 3	15	-	<0.5	<0.5
Phenols (4AAP)	mg/L	<0.0010		0.02	-	<0.001	<0.001

Notes

1. Provincial Water Quality Objectives (PWQO); shaded cells denote PWQO exceedance; some PWQOs are dependent on other water quality parameters hence the range in guideline values, refer to PWQO notes.
2. Monthyl Concentration Limit; bolded values denote exceedances in the Environmental Compliance Approval (ECA) monthly concentration limits.
3. The PWQO for Oil and Grease indicates that oil or petrochemicals should not be present in concentrations that: can be detected as a visible film, sheen or 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/June 2021)

	Unit	Reportable Detection Limit (RDL)	PWQO [1]	Interim PWQO [2]	ECA Effluent Limits	McCarthy Quarry		
Sample ID						**Pond**	**SW1**	**SW2**
Date						**29-Jun-21**	**6-May-21**	**6-May-21**
Field Measured Parameters								
Conductivity	µS/cm						732	510
pH	pH	n/a	6.5-8.5		6.0-9.5		8.09	8.05
Temperature	°C	n/a					16.9	15.1
Calculated Parameters								
Hardness (CaCO3)	mg/L	1.0				370	330	270
Inorganics								
Total Ammonia-N	mg/L	0.050				<0.050	<0.050	<0.050
Conductivity	ms/cm	0.001				1.20	0.748	0.516
Total Dissolved Solids	mg/L	10				770	445	295
Fluoride (F-)	mg/L	0.10				0.60	0.25	<0.10
Total Kjeldahl Nitrogen (TKN)	mg/L	0.10				0.34	0.34	0.33
Dissolved Organic Carbon	mg/L	0.50				6.1	7.9	6.8
pH	pH	N/A	6.5-8.5		6.0-9.5	8.45	8.11	8.09
Phenols-4AAP	mg/L	0.0010	0.001		0.04	<0.0010	<0.0010	<0.0010
Total Phosphorus	mg/L	0.020		0.03[5b]		0.022	0.008	0.011
Total Suspended Solids	mg/L	10			30	<10	3	4
Dissolved Sulphate (SO4)	mg/L	1				320	120	11
Alkalinity (Total as CaCO3)	mg/L	1.0				45	210	270
Dissolved Chloride (Cl)	mg/L	1				160	42	5
Nitrite (N)	mg/L	0.010				<0.010	<0.010	<0.010
Nitrate (N)	mg/L	0.10				<0.10	0.43	<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	0.09	0.2	0.1-0.5[5d]		<0.09	<0.09	<0.09
Dissolved Calcium (Ca)	mg/L	0.05				-	100	97
Total Calcium (Ca)	ug/L	200				69000	99000	99000
Total Chromium (Cr)	ug/L	5	1-89[5e]			<5.0	<5.0	<5.0
Total Copper (Cu)	ug/L	0.9	5	1-5[5f]		<0.9	2.7	<0.9
Total Iron (Fe)	ug/L	100	300			150	<100	<100
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				-	19	7.1
Total Magnesium (Mg)	ug/L	50				42000	18000	7000
Total Manganese (Mn)	ug/L	2				48	13	9
Total Nickel (Ni)	ug/L	1	25			1.7	1.1	<1.0
Dissolved Potassium (K)	mg/L	1				-	5.0	1.3
Total Potassium (K)	ug/L	200				13000	4800	1300
Dissolved Sodium (Na)	mg/L	0.5				-	40	4.6
Total Sodium (Na)	ug/L	100				110000	39000	4500
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-21	NO PUMP		0	0	-	-	-
2-May-21	NO PUMP		0	0	-	-	-
3-May-21	NO PUMP		0	0	-	-	-
4-May-21	NO PUMP		0	0	-	-	-
5-May-21	NO PUMP		0	0	-	-	-
6-May-21	NO PUMP		0	0	-	-	-
7-May-21	NO PUMP		0	0	-	-	-
8-May-21	NO PUMP		0	0	-	-	-
9-May-21	NO PUMP		0	0	-	-	-
10-May-21	NO PUMP		0	0	-	-	-
11-May-21	NO PUMP		0	0	-	-	-
12-May-21	7AM	4PM	32400	540	648,000	20	1,200
13-May-21	7AM	4PM	32400	540	648,000	20	1,200
14-May-21	7AM	4PM	32400	540	648,000	20	1,200
15-May-21	7AM	4PM	32400	540	648,000	20	1,200
16-May-21	7AM	4PM	32400	540	648,000	20	1,200
17-May-21	NO PUMP		0	0	-	-	-
18-May-21	NO PUMP		0	0	-	-	-
19-May-21	7AM	4PM	32400	540	648,000	20	1,200
20-May-21	7AM	4PM	32400	540	648,000	20	1,200
21-May-21	7AM	4PM	32400	540	648,000	20	1,200
22-May-21	7AM	4PM	32400	540	648,000	20	1,200
23-May-21	7AM	4PM	32400	540	648,000	20	1,200
24-May-21	NO PUMP		0	0	-	-	-
25-May-21	NO PUMP		0	0	-	-	-
26-May-21	NO PUMP		0	0	-	-	-
27-May-21	NO PUMP		0	0	-	-	-
28-May-21	NO PUMP		0	0	-	-	-
29-May-21	NO PUMP		0	0	-	-	-
30-May-21	NO PUMP		0	0	-	-	-
31-May-21	NO PUMP		0	0	-	-	-
1-Jun-21	NO PUMP		0	0	-	-	-
2-Jun-21	NO PUMP		0	0	-	-	-
3-Jun-21	NO PUMP		0	0	-	-	-
4-Jun-21	NO PUMP		0	0	-	-	-
5-Jun-21	NO PUMP		0	0	-	-	-
6-Jun-21	NO PUMP		0	0	-	-	-
7-Jun-21	NO PUMP		0	0	-	-	-
8-Jun-21	NO PUMP		0	0	-	-	-
9-Jun-21	NO PUMP		0	0	-	-	-
10-Jun-21	NO PUMP		0	0	-	-	-
11-Jun-21	NO PUMP		0	0	-	-	-

Table 4: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
12-Jun-21	NO PUMP		0	0	-	-	-
13-Jun-21	NO PUMP		0	0	-	-	-
14-Jun-21	NO PUMP		0	0	-	-	-
15-Jun-21	NO PUMP		0	0	-	-	-
16-Jun-21	NO PUMP		0	0	-	-	-
17-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
18-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
19-Jun-21	NO PUMP		0	0	-	-	-
20-Jun-21	NO PUMP		0	0	-	-	-
21-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
22-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
23-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
24-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
25-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
26-Jun-21	NO PUMP		0	0	-	-	-
27-Jun-21	NO PUMP		0	0	-	-	-
28-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
29-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
30-Jun-21	7AM	4PM	32400	540	648,000	20	1,200
1-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
2-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
3-Jul-21	NO PUMP		0	0	-	-	-
4-Jul-21	NO PUMP		0	0	-	-	-
5-Jul-21	NO PUMP		0	0	-	-	-
6-Jul-21	NO PUMP		0	0	-	-	-
7-Jul-21	NO PUMP		0	0	-	-	-
8-Jul-21	NO PUMP		0	0	-	-	-
9-Jul-21	NO PUMP		0	0	-	-	-
10-Jul-21	NO PUMP		0	0	-	-	-
11-Jul-21	NO PUMP		0	0	-	-	-
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18-Jul-21	NO PUMP		0	0	-	-	-
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22-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
23-Jul-21	7AM	4PM	32400	540	648,000	20	1,200

Table 4: Measured Water Volume and Rate of Discharge from Quarry Sump

Date	Start	Stop	Total Sec.	Total Min.	Total Litres	Rate of Taking (L/sec)	Rate of Taking (L/min)
ECA Permitted Rate					**6,550,000**	**76**	**4,545**
24-Jul-21	NO PUMP		0	0	-	-	-
25-Jul-21	NO PUMP		0	0	-	-	-
26-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
27-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
28-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
29-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
30-Jul-21	7AM	4PM	32400	540	648,000	20	1,200
31-Jul-21	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 #: 20448776
Site Location: McCarthy
Your C.O.C. #: 825325-01-01

Attention: Dawn Hoyle

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

Report Date: 2021/05/17
Report #: R6637607
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1C4086
Received: 2021/05/08, 09:51

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	2	N/A	2021/05/12	CAM SOP-00448	SM 23 2320 B m
Chloride by Automated Colourimetry	2	N/A	2021/05/12	CAM SOP-00463	SM 23 4500-Cl E m
Conductivity	2	N/A	2021/05/12	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	2	N/A	2021/05/13	CAM SOP-00446	SM 23 5310 B m
Fluoride	2	2021/05/11	2021/05/12	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	2	N/A	2021/05/13	CAM SOP 00102/00408/00447	SM 2340 B
Lab Filtered Metals by ICPMS	2	2021/05/14	2021/05/17	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	2	N/A	2021/05/13	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	2	N/A	2021/05/17		
Anion and Cation Sum	2	N/A	2021/05/17		
Total Ammonia-N	2	N/A	2021/05/13	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	2	N/A	2021/05/11	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Animal and Vegetable Oil and Grease	2	N/A	2021/05/12	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	2	2021/05/11	2021/05/12	CAM SOP-00326	EPA1664B m,SM5520B m
pH	2	2021/05/11	2021/05/12	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	2	N/A	2021/05/11	CAM SOP-00444	OMOE E3179 m
Sulphate by Automated Colourimetry	2	N/A	2021/05/12	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids	2	2021/05/12	2021/05/13	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	2	2021/05/11	2021/05/11	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	2	2021/05/11	2021/05/12	CAM SOP-00407	SM 23 4500 P B H m
Mineral/Synthetic O & G (TPH Heavy Oil) (3)	2	2021/05/11	2021/05/12	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	2	2021/05/13	2021/05/13	CAM SOP-00428	SM 23 2540D m

Remarks:

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

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

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Your Project #: 20448776
Site Location: McCarthy
Your C.O.C. #: 825325-01-01

Attention: Dawn Hoyle

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

Report Date: 2021/05/17
Report #: R6637607
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1C4086
Received: 2021/05/08, 09:51

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

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

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

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

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829
==========
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

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

BV Labs ID		PND759	PND760		
Sampling Date		2021/05/06 05:00	2021/05/06 02:00		
COC Number		825325-01-01	825325-01-01		
	UNITS	SW1	SW2	RDL	QC Batch
Calculated Parameters					
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	<0.50	0.50	7341836
Petroleum Hydrocarbons					
Total Oil & Grease	mg/L	<0.50	<0.50	0.50	7345900
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	<0.50	0.50	7345904

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

RESULTS OF ANALYSES OF WATER

BV Labs ID		PND759			PND759			PND760		
Sampling Date		2021/05/06 05:00			2021/05/06 05:00			2021/05/06 02:00		
COC Number		825325-01-01			825325-01-01			825325-01-01		
	UNITS	SW1	RDL	QC Batch	SW1 Lab-Dup	RDL	QC Batch	SW2	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L	8.00	N/A	7341797				5.76	N/A	7341797
Cation Sum	me/L	8.39	N/A	7341797				5.66	N/A	7341797
Hardness (CaCO3)	mg/L	330	1.0	7341977				270	1.0	7341977
Ion Balance (% Difference)	%	2.41	N/A	7341795				0.850	N/A	7341795
Inorganics										
Total Ammonia-N	mg/L	<0.050	0.050	7345283				<0.050	0.050	7345283
Conductivity	mS/cm	0.748	0.001	7346329	0.748	0.001	7346329	0.516	0.001	7346329
Total Dissolved Solids	mg/L	445	10	7343520				295	10	7343520
Fluoride (F-)	mg/L	0.25	0.10	7346328	0.23	0.10	7346328	<0.10	0.10	7346328
Total Kjeldahl Nitrogen (TKN)	mg/L	0.34	0.10	7345249				0.33	0.10	7345249
Dissolved Organic Carbon	mg/L	7.9	0.40	7347531				6.8	0.40	7347531
pH	pH	8.11		7346332	8.13		7346332	8.09		7346332
Phenols-4AAP	mg/L	<0.0010	0.0010	7343276				<0.0010	0.0010	7343276
Total Phosphorus	mg/L	0.008	0.004	7345457				0.011	0.004	7345457
Total Suspended Solids	mg/L	3	1	7344347				4	1	7344347
Dissolved Sulphate (SO4)	mg/L	120	1.0	7345266				11	1.0	7345266
Alkalinity (Total as CaCO3)	mg/L	210	1.0	7346334	210	1.0	7346334	270	1.0	7346334
Dissolved Chloride (Cl-)	mg/L	42	1.0	7345277				5.4	1.0	7345277
Nitrite (N)	mg/L	<0.010	0.010	7345371				<0.010	0.010	7345371
Nitrate (N)	mg/L	0.43	0.10	7345371				<0.10	0.10	7345371
Nitrate + Nitrite (N)	mg/L	0.43	0.10	7345371				<0.10	0.10	7345371

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 #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

RESULTS OF ANALYSES OF WATER

BV Labs ID		PND760		
Sampling Date		2021/05/06 02:00		
COC Number		825325-01-01		
	UNITS	SW2 Lab-Dup	RDL	QC Batch
Inorganics				
Total Dissolved Solids	mg/L	290	10	7343520

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

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BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		PND759	PND760			PND760		
Sampling Date		2021/05/06 05:00	2021/05/06 02:00			2021/05/06 02:00		
COC Number		825325-01-01	825325-01-01			825325-01-01		
	UNITS	SW1	SW2	RDL	QC Batch	SW2 Lab-Dup	RDL	QC Batch
Metals								
Total Arsenic (As)	ug/L	<1.0	<1.0	1.0	7349666			
Total Cadmium (Cd)	ug/L	<0.090	<0.090	0.090	7349666			
Dissolved Calcium (Ca)	ug/L	100000	97000	200	7353595	97000	200	7353595
Total Calcium (Ca)	ug/L	99000	99000	200	7349666			
Total Chromium (Cr)	ug/L	<5.0	<5.0	5.0	7349666			
Total Copper (Cu)	ug/L	2.7	<0.90	0.90	7349666			
Total Iron (Fe)	ug/L	<100	<100	100	7349666			
Total Lead (Pb)	ug/L	<0.50	<0.50	0.50	7349666			
Dissolved Magnesium (Mg)	ug/L	19000	7100	50	7353595	7100	50	7353595
Total Magnesium (Mg)	ug/L	18000	7000	50	7349666			
Total Manganese (Mn)	ug/L	13	9.1	2.0	7349666			
Total Nickel (Ni)	ug/L	1.1	<1.0	1.0	7349666			
Dissolved Potassium (K)	ug/L	5000	1300	200	7353595	1300	200	7353595
Total Potassium (K)	ug/L	4800	1300	200	7349666			
Dissolved Sodium (Na)	ug/L	40000	4600	100	7353595	4700	100	7353595
Total Sodium (Na)	ug/L	39000	4500	100	7349666			
Total Zinc (Zn)	ug/L	<5.0	<5.0	5.0	7349666			

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

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BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

TEST SUMMARY

BV Labs ID: PND759
Sample ID: SW1
Matrix: Water

Collected: 2021/05/06
Shipped:
Received: 2021/05/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7346334	N/A	2021/05/12	Surinder Rai
Chloride by Automated Colourimetry	KONE	7345277	N/A	2021/05/12	Alina Dobreanu
Conductivity	AT	7346329	N/A	2021/05/12	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7347531	N/A	2021/05/13	Nimarta Singh
Fluoride	ISE	7346328	2021/05/11	2021/05/12	Surinder Rai
Hardness (calculated as CaCO3)		7341977	N/A	2021/05/13	Automated Statchk
Lab Filtered Metals by ICPMS	ICP/MS	7353595	2021/05/14	2021/05/17	Nan Raykha
Total Metals Analysis by ICPMS	ICP/MS	7349666	N/A	2021/05/13	Azita Fazaeli
Ion Balance (% Difference)	CALC	7341795	N/A	2021/05/17	Automated Statchk
Anion and Cation Sum	CALC	7341797	N/A	2021/05/17	Automated Statchk
Total Ammonia-N	LACH/NH4	7345283	N/A	2021/05/13	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7345371	N/A	2021/05/11	Chandra Nandlal
Animal and Vegetable Oil and Grease	BAL	7341836	N/A	2021/05/12	Automated Statchk
Total Oil and Grease	BAL	7345900	2021/05/11	2021/05/12	Saumya Modh
pH	AT	7346332	2021/05/11	2021/05/12	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7343276	N/A	2021/05/11	Louise Harding
Sulphate by Automated Colourimetry	KONE	7345266	N/A	2021/05/12	Alina Dobreanu
Total Dissolved Solids	BAL	7343520	2021/05/12	2021/05/13	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7345249	2021/05/11	2021/05/11	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7345457	2021/05/11	2021/05/12	Shivani Shivani
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	7345904	2021/05/11	2021/05/12	Saumya Modh
Low Level Total Suspended Solids	BAL	7344347	2021/05/13	2021/05/13	Shivani Desai

BV Labs ID: PND759 Dup
Sample ID: SW1
Matrix: Water

Collected: 2021/05/06
Shipped:
Received: 2021/05/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7346334	N/A	2021/05/12	Surinder Rai
Conductivity	AT	7346329	N/A	2021/05/12	Surinder Rai
Fluoride	ISE	7346328	2021/05/11	2021/05/12	Surinder Rai
pH	AT	7346332	2021/05/11	2021/05/12	Surinder Rai

BV Labs ID: PND760
Sample ID: SW2
Matrix: Water

Collected: 2021/05/06
Shipped:
Received: 2021/05/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7346334	N/A	2021/05/12	Surinder Rai
Chloride by Automated Colourimetry	KONE	7345277	N/A	2021/05/12	Alina Dobreanu
Conductivity	AT	7346329	N/A	2021/05/12	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7347531	N/A	2021/05/13	Nimarta Singh
Fluoride	ISE	7346328	2021/05/11	2021/05/12	Surinder Rai
Hardness (calculated as CaCO3)		7341977	N/A	2021/05/13	Automated Statchk

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BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

TEST SUMMARY

BV Labs ID: PND760
Sample ID: SW2
Matrix: Water

Collected: 2021/05/06
Shipped:
Received: 2021/05/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	7353595	2021/05/14	2021/05/17	Nan Raykha
Total Metals Analysis by ICPMS	ICP/MS	7349666	N/A	2021/05/13	Azita Fazaeli
Ion Balance (% Difference)	CALC	7341795	N/A	2021/05/17	Automated Statchk
Anion and Cation Sum	CALC	7341797	N/A	2021/05/17	Automated Statchk
Total Ammonia-N	LACH/NH4	7345283	N/A	2021/05/13	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7345371	N/A	2021/05/11	Chandra Nandlal
Animal and Vegetable Oil and Grease	BAL	7341836	N/A	2021/05/12	Automated Statchk
Total Oil and Grease	BAL	7345900	2021/05/11	2021/05/12	Saumya Modh
pH	AT	7346332	2021/05/11	2021/05/12	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7343276	N/A	2021/05/11	Louise Harding
Sulphate by Automated Colourimetry	KONE	7345266	N/A	2021/05/12	Alina Dobreanu
Total Dissolved Solids	BAL	7343520	2021/05/12	2021/05/13	Shaneil Hall
Total Kjeldahl Nitrogen in Water	SKAL	7345249	2021/05/11	2021/05/11	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7345457	2021/05/11	2021/05/12	Shivani Shivani
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	7345904	2021/05/11	2021/05/12	Saumya Modh
Low Level Total Suspended Solids	BAL	7344347	2021/05/13	2021/05/13	Shivani Desai

BV Labs ID: PND760 Dup
Sample ID: SW2
Matrix: Water

Collected: 2021/05/06
Shipped:
Received: 2021/05/08

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Lab Filtered Metals by ICPMS	ICP/MS	7353595	2021/05/14	2021/05/17	Nan Raykha
Total Dissolved Solids	BAL	7343520	2021/05/12	2021/05/13	Shaneil Hall

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BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

GENERAL COMMENTS

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

Package 1	6.0°C
Package 2	3.3°C

Results relate only to the items tested.

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BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7343276	LHA	Matrix Spike	Phenols-4AAP	2021/05/11		105	%	80 - 120
7343276	LHA	Spiked Blank	Phenols-4AAP	2021/05/11		96	%	80 - 120
7343276	LHA	Method Blank	Phenols-4AAP	2021/05/11	<0.0010		mg/L	
7343276	LHA	RPD	Phenols-4AAP	2021/05/11	NC		%	20
7343520	SHD	QC Standard	Total Dissolved Solids	2021/05/13		98	%	90 - 110
7343520	SHD	Method Blank	Total Dissolved Solids	2021/05/13	<10		mg/L	
7343520	SHD	RPD [PND760-04]	Total Dissolved Solids	2021/05/13	1.7		%	25
7344347	SDE	QC Standard	Total Suspended Solids	2021/05/13		95	%	85 - 115
7344347	SDE	Method Blank	Total Suspended Solids	2021/05/13	<1		mg/L	
7344347	SDE	RPD	Total Suspended Solids	2021/05/13	6.1		%	25
7345249	MJ1	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2021/05/11		109	%	80 - 120
7345249	MJ1	QC Standard	Total Kjeldahl Nitrogen (TKN)	2021/05/11		96	%	80 - 120
7345249	MJ1	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2021/05/11		99	%	80 - 120
7345249	MJ1	Method Blank	Total Kjeldahl Nitrogen (TKN)	2021/05/11	<0.10		mg/L	
7345249	MJ1	RPD	Total Kjeldahl Nitrogen (TKN)	2021/05/11	NC		%	20
7345266	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2021/05/12		107	%	75 - 125
7345266	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2021/05/12		101	%	80 - 120
7345266	ADB	Method Blank	Dissolved Sulphate (SO4)	2021/05/12	<1.0		mg/L	
7345266	ADB	RPD	Dissolved Sulphate (SO4)	2021/05/12	3.4		%	20
7345277	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2021/05/12		NC	%	80 - 120
7345277	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2021/05/12		101	%	80 - 120
7345277	ADB	Method Blank	Dissolved Chloride (Cl-)	2021/05/12	<1.0		mg/L	
7345277	ADB	RPD	Dissolved Chloride (Cl-)	2021/05/12	2.0		%	20
7345283	ASP	Matrix Spike	Total Ammonia-N	2021/05/13		100	%	75 - 125
7345283	ASP	Spiked Blank	Total Ammonia-N	2021/05/13		99	%	80 - 120
7345283	ASP	Method Blank	Total Ammonia-N	2021/05/13	<0.050		mg/L	
7345283	ASP	RPD	Total Ammonia-N	2021/05/13	1.6		%	20
7345371	C_N	Matrix Spike	Nitrite (N)	2021/05/11		107	%	80 - 120
			Nitrate (N)	2021/05/11		98	%	80 - 120
7345371	C_N	Spiked Blank	Nitrite (N)	2021/05/11		105	%	80 - 120
			Nitrate (N)	2021/05/11		97	%	80 - 120
7345371	C_N	Method Blank	Nitrite (N)	2021/05/11	<0.010		mg/L	
			Nitrate (N)	2021/05/11	<0.10		mg/L	
7345371	C_N	RPD	Nitrite (N)	2021/05/11	NC		%	20
			Nitrate (N)	2021/05/11	NC		%	20
7345457	SSV	Matrix Spike	Total Phosphorus	2021/05/12		NC	%	80 - 120
7345457	SSV	QC Standard	Total Phosphorus	2021/05/12		92	%	80 - 120
7345457	SSV	Spiked Blank	Total Phosphorus	2021/05/12		98	%	80 - 120
7345457	SSV	Method Blank	Total Phosphorus	2021/05/12	<0.004		mg/L	
7345457	SSV	RPD	Total Phosphorus	2021/05/12	1.0		%	20
7345900	SA5	Spiked Blank	Total Oil & Grease	2021/05/12		100	%	85 - 115
7345900	SA5	RPD	Total Oil & Grease	2021/05/12	2.0		%	25
7345900	SA5	Method Blank	Total Oil & Grease	2021/05/12	<0.50		mg/L	
7345904	SA5	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/05/12		95	%	85 - 115
7345904	SA5	RPD	Total Oil & Grease Mineral/Synthetic	2021/05/12	2.7		%	25
7345904	SA5	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/05/12	<0.50		mg/L	
7346328	SAU	Matrix Spike [PND759-03]	Fluoride (F-)	2021/05/12		99	%	80 - 120
7346328	SAU	Spiked Blank	Fluoride (F-)	2021/05/12		99	%	80 - 120
7346328	SAU	Method Blank	Fluoride (F-)	2021/05/12	<0.10		mg/L	
7346328	SAU	RPD [PND759-03]	Fluoride (F-)	2021/05/12	7.5		%	20
7346329	SAU	Spiked Blank	Conductivity	2021/05/12		101	%	85 - 115

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7346329	SAU	Method Blank	Conductivity	2021/05/12	<0.001		mS/cm	
7346329	SAU	RPD [PND759-03]	Conductivity	2021/05/12	0		%	25
7346332	SAU	Spiked Blank	pH	2021/05/12		102	%	98 - 103
7346332	SAU	RPD [PND759-03]	pH	2021/05/12	0.32		%	N/A
7346334	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2021/05/12		94	%	85 - 115
7346334	SAU	Method Blank	Alkalinity (Total as CaCO3)	2021/05/12	<1.0		mg/L	
7346334	SAU	RPD [PND759-03]	Alkalinity (Total as CaCO3)	2021/05/12	0.57		%	20
7347531	NS3	Matrix Spike	Dissolved Organic Carbon	2021/05/13		96	%	80 - 120
7347531	NS3	Spiked Blank	Dissolved Organic Carbon	2021/05/13		96	%	80 - 120
7347531	NS3	Method Blank	Dissolved Organic Carbon	2021/05/13	<0.40		mg/L	
7347531	NS3	RPD	Dissolved Organic Carbon	2021/05/13	0.65		%	20
7349666	AFZ	Matrix Spike	Total Arsenic (As)	2021/05/13		101	%	80 - 120
			Total Cadmium (Cd)	2021/05/13		101	%	80 - 120
			Total Calcium (Ca)	2021/05/13		NC	%	80 - 120
			Total Chromium (Cr)	2021/05/13		98	%	80 - 120
			Total Copper (Cu)	2021/05/13		100	%	80 - 120
			Total Iron (Fe)	2021/05/13		96	%	80 - 120
			Total Lead (Pb)	2021/05/13		94	%	80 - 120
			Total Magnesium (Mg)	2021/05/13		NC	%	80 - 120
			Total Manganese (Mn)	2021/05/13		99	%	80 - 120
			Total Nickel (Ni)	2021/05/13		97	%	80 - 120
			Total Potassium (K)	2021/05/13		97	%	80 - 120
			Total Sodium (Na)	2021/05/13		NC	%	80 - 120
			Total Zinc (Zn)	2021/05/13		99	%	80 - 120
7349666	AFZ	Spiked Blank	Total Arsenic (As)	2021/05/13		102	%	80 - 120
			Total Cadmium (Cd)	2021/05/13		103	%	80 - 120
			Total Calcium (Ca)	2021/05/13		101	%	80 - 120
			Total Chromium (Cr)	2021/05/13		100	%	80 - 120
			Total Copper (Cu)	2021/05/13		102	%	80 - 120
			Total Iron (Fe)	2021/05/13		98	%	80 - 120
			Total Lead (Pb)	2021/05/13		99	%	80 - 120
			Total Magnesium (Mg)	2021/05/13		99	%	80 - 120
			Total Manganese (Mn)	2021/05/13		101	%	80 - 120
			Total Nickel (Ni)	2021/05/13		100	%	80 - 120
			Total Potassium (K)	2021/05/13		99	%	80 - 120
			Total Sodium (Na)	2021/05/13		101	%	80 - 120
			Total Zinc (Zn)	2021/05/13		105	%	80 - 120
7349666	AFZ	Method Blank	Total Arsenic (As)	2021/05/13	<1.0		ug/L	
			Total Cadmium (Cd)	2021/05/13	<0.090		ug/L	
			Total Calcium (Ca)	2021/05/13	<200		ug/L	
			Total Chromium (Cr)	2021/05/13	<5.0		ug/L	
			Total Copper (Cu)	2021/05/13	<0.90		ug/L	
			Total Iron (Fe)	2021/05/13	<100		ug/L	
			Total Lead (Pb)	2021/05/13	<0.50		ug/L	
			Total Magnesium (Mg)	2021/05/13	<50		ug/L	
			Total Manganese (Mn)	2021/05/13	<2.0		ug/L	
			Total Nickel (Ni)	2021/05/13	<1.0		ug/L	
			Total Potassium (K)	2021/05/13	<200		ug/L	
			Total Sodium (Na)	2021/05/13	<100		ug/L	
			Total Zinc (Zn)	2021/05/13	<5.0		ug/L	
7349666	AFZ	RPD	Total Arsenic (As)	2021/05/13	NC		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2021/05/13	NC		%	20
			Total Chromium (Cr)	2021/05/13	NC		%	20
			Total Copper (Cu)	2021/05/13	0.21		%	20
			Total Iron (Fe)	2021/05/13	2.8		%	20
			Total Lead (Pb)	2021/05/13	NC		%	20
			Total Manganese (Mn)	2021/05/13	2.2		%	20
			Total Nickel (Ni)	2021/05/13	9.5		%	20
			Total Zinc (Zn)	2021/05/13	0.73		%	20
7353595	N_R	Matrix Spike [PND760-03]	Dissolved Calcium (Ca)	2021/05/17		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2021/05/17		103	%	80 - 120
			Dissolved Potassium (K)	2021/05/17		103	%	80 - 120
			Dissolved Sodium (Na)	2021/05/17		101	%	80 - 120
7353595	N_R	Spiked Blank	Dissolved Calcium (Ca)	2021/05/17		99	%	80 - 120
			Dissolved Magnesium (Mg)	2021/05/17		101	%	80 - 120
			Dissolved Potassium (K)	2021/05/17		101	%	80 - 120
			Dissolved Sodium (Na)	2021/05/17		101	%	80 - 120
7353595	N_R	Method Blank	Dissolved Calcium (Ca)	2021/05/17	<200		ug/L	
			Dissolved Magnesium (Mg)	2021/05/17	<50		ug/L	
			Dissolved Potassium (K)	2021/05/17	<200		ug/L	
			Dissolved Sodium (Na)	2021/05/17	<100		ug/L	
7353595	N_R	RPD [PND760-03]	Dissolved Calcium (Ca)	2021/05/17	0.075		%	20
			Dissolved Magnesium (Mg)	2021/05/17	0.58		%	20
			Dissolved Potassium (K)	2021/05/17	1.9		%	20
			Dissolved Sodium (Na)	2021/05/17	1.3		%	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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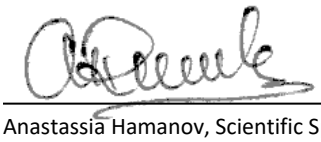
BV Labs Job #: C1C4086
Report Date: 2021/05/17

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: DS

VALIDATION SIGNATURE PAGE

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



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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Your Project #: 20448776
Site#: 20448776
Your C.O.C. #: 825330-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/06/24
Report #: R6691056
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G8086
Received: 2021/06/18, 09:17

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	2021/06/24	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/06/23	2021/06/24	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2021/06/22	2021/06/23	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/06/22	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2021/06/23	2021/06/24	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2021/06/23	2021/06/24	CAM SOP-00428	SM 23 2540D m

Remarks:

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

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

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

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

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

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

Your Project #: 20448776
Site#: 20448776
Your C.O.C. #: 825330-04-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/06/24
Report #: R6691056
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1G8086
Received: 2021/06/18, 09:17

Encryption Key

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

BV Labs Job #: C1G8086
Report Date: 2021/06/24

Golder Associates Ltd
Client Project #: 20448776
Sampler Initials: SHA

RESULTS OF ANALYSES OF WATER

BV Labs ID		PWI189		
Sampling Date		2021/06/17 15:00		
COC Number		825330-04-01		
	UNITS	590331 POND	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	7419505
Inorganics				
pH	pH	7.97	N/A	7423329
Phenols-4AAP	mg/L	<0.0010	0.0010	7421509
Total Suspended Solids	mg/L	19	1	7423669
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	<0.50	0.50	7425616
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	7425626

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

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GENERAL COMMENTS

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

Package 1	20.3°C

Results relate only to the items tested.

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BV Labs Job #: C1G8086
Report Date: 2021/06/24

Golder Associates Ltd
Client Project #: 20448776
Sampler Initials: SHA

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7421509	DRM	Matrix Spike	Phenols-4AAP	2021/06/22		103	%	80 - 120
7421509	DRM	Spiked Blank	Phenols-4AAP	2021/06/22		101	%	80 - 120
7421509	DRM	Method Blank	Phenols-4AAP	2021/06/22	<0.0010		mg/L	
7421509	DRM	RPD	Phenols-4AAP	2021/06/22	NC		%	20
7423329	SAU	Spiked Blank	pH	2021/06/23		102	%	98 - 103
7423329	SAU	RPD	pH	2021/06/23	0.87		%	N/A
7423669	SHD	QC Standard	Total Suspended Solids	2021/06/24		98	%	85 - 115
7423669	SHD	Method Blank	Total Suspended Solids	2021/06/24	<1		mg/L	
7423669	SHD	RPD	Total Suspended Solids	2021/06/24	0		%	25
7425616	SA5	Spiked Blank	Total Oil & Grease	2021/06/24		97	%	85 - 115
7425616	SA5	RPD	Total Oil & Grease	2021/06/24	1.5		%	25
7425616	SA5	Method Blank	Total Oil & Grease	2021/06/24	<0.50		mg/L	
7425626	SA5	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/06/24		95	%	85 - 115
7425626	SA5	RPD	Total Oil & Grease Mineral/Synthetic	2021/06/24	1.1		%	25
7425626	SA5	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/06/24	<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.

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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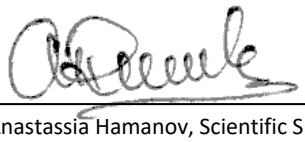
BV Labs Job #: C1G8086
Report Date: 2021/06/24

Golder Associates Ltd
Client Project #: 20448776
Sampler Initials: SHA

VALIDATION SIGNATURE PAGE

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



Anastassia Hamanov, Scientific Specialist

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Your Project #: 20448776
Your C.O.C. #: 829401-04-01

Attention: Dawn Hoyle

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

Report Date: 2021/07/22
Report #: R6731448
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1I4834
Received: 2021/07/05, 16:30

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity	3	N/A	2021/07/08	CAM SOP-00448	SM 23 2320 B m
Carbonate, Bicarbonate and Hydroxide	2	N/A	2021/07/09	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	3	N/A	2021/07/08	CAM SOP-00463	SM 23 4500-Cl E m
Colour	2	N/A	2021/07/07	CAM SOP-00412	SM 23 2120C m
Conductivity	3	N/A	2021/07/08	CAM SOP-00414	SM 23 2510 m
Dissolved Organic Carbon (DOC) (1)	3	N/A	2021/07/07	CAM SOP-00446	SM 23 5310 B m
Fluoride	3	2021/07/07	2021/07/08	CAM SOP-00449	SM 23 4500-F C m
Hardness (calculated as CaCO3)	2	N/A	2021/07/07	CAM SOP 00102/00408/00447	SM 2340 B
Hardness (calculated as CaCO3)	1	N/A	2021/07/09	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals by ICPMS	1	N/A	2021/07/07	CAM SOP-00447	EPA 6020B m
Metals Analysis by ICPMS (as received) (2)	1	N/A	2021/07/07	CAM SOP-00447	EPA 6020B m
Total Metals Analysis by ICPMS	1	N/A	2021/07/08	CAM SOP-00447	EPA 6020B m
Ion Balance (% Difference)	2	N/A	2021/07/09		
Anion and Cation Sum	1	N/A	2021/07/21		
Anion and Cation Sum	2	N/A	2021/07/09		
Total Ammonia-N	1	N/A	2021/07/08	CAM SOP-00441	USGS I-2522-90 m
Total Ammonia-N	2	N/A	2021/07/09	CAM SOP-00441	USGS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (3)	3	N/A	2021/07/08	CAM SOP-00440	SM 23 4500-NO3I/NO2B
Animal and Vegetable Oil and Grease	1	N/A	2021/07/09	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/07/09	2021/07/09	CAM SOP-00326	EPA1664B m,SM5520B m
pH	3	2021/07/07	2021/07/08	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/07/07	CAM SOP-00444	OMOE E3179 m
Orthophosphate	2	N/A	2021/07/08	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	2	N/A	2021/07/09		Auto Calc
Sat. pH and Langelier Index (@ 4C)	2	N/A	2021/07/09		Auto Calc
Sulphate by Automated Colourimetry	3	N/A	2021/07/08	CAM SOP-00464	EPA 375.4 m
Tannins & Lignins	1	N/A	2021/07/07	CAM SOP-00410	SM 23 5550 B m
Total Dissolved Solids (TDS calc)	2	N/A	2021/07/09		Auto Calc

Your Project #: 20448776
Your C.O.C. #: 829401-04-01

Attention: Dawn Hoyle

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

Report Date: 2021/07/22
Report #: R6731448
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1I4834
Received: 2021/07/05, 16:30

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Total Dissolved Solids	1	2021/07/07	2021/07/08	CAM SOP-00428	SM 23 2540C m
Total Kjeldahl Nitrogen in Water	1	2021/07/07	2021/07/07	CAM SOP-00938	OMOE E3516 m
Total Phosphorus (Colourimetric)	1	2021/07/08	2021/07/09	CAM SOP-00407	SM 23 4500 P B H m
Mineral/Synthetic O & G (TPH Heavy Oil) (4)	1	2021/07/09	2021/07/09	CAM SOP-00326	EPA1664B m,SM5520F m
Total Suspended Solids	1	2021/07/07	2021/07/08	CAM SOP-00428	SM 23 2540D m
Turbidity	1	N/A	2021/07/07	CAM SOP-00417	SM 23 2130 B m

Remarks:

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

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

Your Project #: 20448776
Your C.O.C. #: 829401-04-01

Attention: Dawn Hoyle

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

Report Date: 2021/07/22
Report #: R6731448
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1I4834
Received: 2021/07/05, 16:30

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829
==========
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BV Labs Job #: C1I4834
Report Date: 2021/07/22

Golder Associates Ltd
Client Project #: 20448776
Sampler Initials: DS

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

BV Labs ID		PZX224		
Sampling Date		2021/06/29 01:40		
COC Number		829401-04-01		
	UNITS	POND	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	7445790
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	<0.50	0.50	7453173
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	7453174

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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RCAP - COMPREHENSIVE (WATER)

BV Labs ID		PZX223			PZX223		
Sampling Date		2021/06/29 12:30			2021/06/29 12:30		
COC Number		829401-04-01			829401-04-01		
	UNITS	6-2	RDL	QC Batch	6-2 Lab-Dup	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	66.0	N/A	7445811			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	150	1.0	7445807			
Calculated TDS	mg/L	3900	1.0	7445817			
Carb. Alkalinity (calc. as CaCO3)	mg/L	<1.0	1.0	7445807			
Cation Sum	me/L	65.2	N/A	7445811			
Hardness (CaCO3)	mg/L	1600	1.0	7445809			
Ion Balance (% Difference)	%	0.600	N/A	7445810			
Langelier Index (@ 20C)	N/A	0.418		7445815			
Langelier Index (@ 4C)	N/A	0.177		7445816			
Saturation pH (@ 20C)	N/A	7.07		7445815			
Saturation pH (@ 4C)	N/A	7.31		7445816			
Inorganics							
Total Ammonia-N	mg/L	0.88	0.050	7452084			
Conductivity	umho/cm	6500	1.0	7450312	6500	1.0	7450312
Dissolved Organic Carbon	mg/L	1.8	0.40	7448584			
Orthophosphate (P)	mg/L	<0.010	0.010	7450345			
pH	pH	7.48		7450314	7.57		7450314
Dissolved Sulphate (SO4)	mg/L	980	5.0	7450322			
Alkalinity (Total as CaCO3)	mg/L	150	1.0	7450310	160	1.0	7450310
Dissolved Chloride (Cl-)	mg/L	1500	20	7450319			
Nitrite (N)	mg/L	0.425	0.010	7449352			
Nitrate (N)	mg/L	0.44	0.10	7449352			
Nitrate + Nitrite (N)	mg/L	0.86	0.10	7449352			
Metals							
Dissolved Aluminum (Al)	ug/L	5.2	4.9	7446635			
Dissolved Antimony (Sb)	ug/L	<0.50	0.50	7446635			
Dissolved Arsenic (As)	ug/L	<1.0	1.0	7446635			
Dissolved Barium (Ba)	ug/L	93	2.0	7446635			
Dissolved Beryllium (Be)	ug/L	<0.40	0.40	7446635			
Dissolved Boron (B)	ug/L	3300	10	7446635			

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

RCAP - COMPREHENSIVE (WATER)

BV Labs ID		PZX223			PZX223		
Sampling Date		2021/06/29 12:30			2021/06/29 12:30		
COC Number		829401-04-01			829401-04-01		
	UNITS	6-2	RDL	QC Batch	6-2 Lab-Dup	RDL	QC Batch
Dissolved Cadmium (Cd)	ug/L	<0.090	0.090	7446635			
Dissolved Calcium (Ca)	ug/L	310000	1000	7446635			
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	7446635			
Dissolved Cobalt (Co)	ug/L	<0.50	0.50	7446635			
Dissolved Copper (Cu)	ug/L	26	0.90	7446635			
Dissolved Iron (Fe)	ug/L	<100	100	7446635			
Dissolved Lead (Pb)	ug/L	<0.50	0.50	7446635			
Dissolved Magnesium (Mg)	ug/L	190000	50	7446635			
Dissolved Manganese (Mn)	ug/L	1700	2.0	7446635			
Dissolved Molybdenum (Mo)	ug/L	1.2	0.50	7446635			
Dissolved Nickel (Ni)	ug/L	3.4	1.0	7446635			
Dissolved Phosphorus (P)	ug/L	<100	100	7446635			
Dissolved Potassium (K)	ug/L	79000	200	7446635			
Dissolved Selenium (Se)	ug/L	<2.0	2.0	7446635			
Dissolved Silicon (Si)	ug/L	3800	50	7446635			
Dissolved Silver (Ag)	ug/L	<0.090	0.090	7446635			
Dissolved Sodium (Na)	ug/L	740000	500	7446635			
Dissolved Strontium (Sr)	ug/L	16000	1.0	7446635			
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	7446635			
Dissolved Titanium (Ti)	ug/L	<5.0	5.0	7446635			
Dissolved Uranium (U)	ug/L	0.31	0.10	7446635			
Dissolved Vanadium (V)	ug/L	<0.50	0.50	7446635			
Dissolved Zinc (Zn)	ug/L	13	5.0	7446635			

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

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RCAP - COMPREHENSIVE (DRINKING WATER)

BV Labs ID		PZX225			PZX225		
Sampling Date		2021/06/29 02:30			2021/06/29 02:30		
COC Number		829401-04-01			829401-04-01		
	UNITS	DW3	RDL	QC Batch	DW3 Lab-Dup	RDL	QC Batch
Calculated Parameters							
Anion Sum	me/L	11.1	N/A	7445811			
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	320	1.0	7445807			
Calculated TDS	mg/L	620	1.0	7445817			
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.6	1.0	7445807			
Cation Sum	me/L	12.5	N/A	7445811			
Hardness (CaCO3)	mg/L	530	1.0	7445809			
Ion Balance (% Difference)	%	5.85	N/A	7445810			
Langelier Index (@ 20C)	N/A	0.955		7445815			
Langelier Index (@ 4C)	N/A	0.708		7445816			
Saturation pH (@ 20C)	N/A	6.77		7445815			
Saturation pH (@ 4C)	N/A	7.02		7445816			
Inorganics							
Total Ammonia-N	mg/L	<0.050	0.050	7452084	<0.050	0.050	7452084
Conductivity	umho/cm	1100	1.0	7450312			
Dissolved Organic Carbon	mg/L	1.5	0.40	7448584			
Orthophosphate (P)	mg/L	<0.010	0.010	7450345			
pH	pH	7.72		7450314			
Dissolved Sulphate (SO4)	mg/L	20	1.0	7450322			
Alkalinity (Total as CaCO3)	mg/L	320	1.0	7450310			
Dissolved Chloride (Cl-)	mg/L	150	2.0	7450319			
Nitrite (N)	mg/L	<0.010	0.010	7449352			
Nitrate (N)	mg/L	0.21	0.10	7449352			
Metals							
Aluminum (Al)	ug/L	9.0	4.9	7446641			
Antimony (Sb)	ug/L	<0.50	0.50	7446641			
Arsenic (As)	ug/L	<1.0	1.0	7446641			
Barium (Ba)	ug/L	160	2.0	7446641			
Beryllium (Be)	ug/L	<0.40	0.40	7446641			
Boron (B)	ug/L	24	10	7446641			
Cadmium (Cd)	ug/L	<0.090	0.090	7446641			

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

RCAP - COMPREHENSIVE (DRINKING WATER)

BV Labs ID		PZX225			PZX225		
Sampling Date		2021/06/29 02:30			2021/06/29 02:30		
COC Number		829401-04-01			829401-04-01		
	UNITS	DW3	RDL	QC Batch	DW3 Lab-Dup	RDL	QC Batch
Calcium (Ca)	ug/L	160000	200	7446641			
Chromium (Cr)	ug/L	<5.0	5.0	7446641			
Cobalt (Co)	ug/L	<0.50	0.50	7446641			
Copper (Cu)	ug/L	1.3	0.90	7446641			
Iron (Fe)	ug/L	<100	100	7446641			
Lead (Pb)	ug/L	<0.50	0.50	7446641			
Lithium (Li)	ug/L	9.5	5.0	7446641			
Magnesium (Mg)	ug/L	29000	50	7446641			
Manganese (Mn)	ug/L	19	2.0	7446641			
Molybdenum (Mo)	ug/L	<0.50	0.50	7446641			
Nickel (Ni)	ug/L	<1.0	1.0	7446641			
Phosphorus (P)	ug/L	<100	100	7446641			
Potassium (K)	ug/L	1900	200	7446641			
Selenium (Se)	ug/L	<2.0	2.0	7446641			
Silicon (Si)	ug/L	7300	50	7446641			
Silver (Ag)	ug/L	<0.090	0.090	7446641			
Sodium (Na)	ug/L	44000	100	7446641			
Strontium (Sr)	ug/L	610	1.0	7446641			
Thallium (Tl)	ug/L	<0.050	0.050	7446641			
Titanium (Ti)	ug/L	<5.0	5.0	7446641			
Uranium (U)	ug/L	1.2	0.10	7446641			
Vanadium (V)	ug/L	<0.50	0.50	7446641			
Zinc (Zn)	ug/L	<5.0	5.0	7446641			

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

BV Labs Job #: C1I4834
Report Date: 2021/07/22

Golder Associates Ltd
Client Project #: 20448776
Sampler Initials: DS

RESULTS OF ANALYSES OF WATER

BV Labs ID		PZX223			PZX223			PZX224		
Sampling Date		2021/06/29 12:30			2021/06/29 12:30			2021/06/29 01:40		
COC Number		829401-04-01			829401-04-01			829401-04-01		
	UNITS	6-2	RDL	QC Batch	6-2 Lab-Dup	RDL	QC Batch	POND	RDL	QC Batch
Calculated Parameters										
Anion Sum	me/L							12.1	N/A	7445811
Cation Sum	me/L							12.5	N/A	7445811
Hardness (CaCO3)	mg/L							370	1.0	7445809
Inorganics										
Total Ammonia-N	mg/L							<0.050	0.050	7448495
Colour	TCU	<2	2	7448619						
Conductivity	umho/cm							1200	1.0	7449863
Total Dissolved Solids	mg/L							770	10	7449279
Fluoride (F-)	mg/L	0.97	0.10	7450307	0.96	0.10	7450307	0.60	0.10	7449852
Total Kjeldahl Nitrogen (TKN)	mg/L							0.34	0.10	7448459
Dissolved Organic Carbon	mg/L							6.1	0.40	7448584
pH	pH							8.45		7449876
Phenols-4AAP	mg/L							<0.0010	0.0010	7448237
Total Phosphorus	mg/L							0.022	0.020	7451429
Total Suspended Solids	mg/L							<10	10	7448616
Dissolved Sulphate (SO4)	mg/L							320	1.0	7449327
Alkalinity (Total as CaCO3)	mg/L							45	1.0	7449862
Dissolved Chloride (Cl-)	mg/L							160	2.0	7449294
Nitrite (N)	mg/L							<0.010	0.010	7449352
Nitrate (N)	mg/L							<0.10	0.10	7449352
Nitrate + Nitrite (N)	mg/L							<0.10	0.10	7449352

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 #: C1I4834
Report Date: 2021/07/22

Golder Associates Ltd
Client Project #: 20448776
Sampler Initials: DS

RESULTS OF ANALYSES OF WATER

BV Labs ID		PZX224			PZX225			PZX225		
Sampling Date		2021/06/29 01:40			2021/06/29 02:30			2021/06/29 02:30		
COC Number		829401-04-01			829401-04-01			829401-04-01		
	UNITS	POND Lab-Dup	RDL	QC Batch	DW3	RDL	QC Batch	DW3 Lab-Dup	RDL	QC Batch
Inorganics										
Colour	TCU				2	2	7448619			
Conductivity	umho/cm	1200	1.0	7449863						
Fluoride (F-)	mg/L	0.57	0.10	7449852	0.16	0.10	7450307			
pH	pH	8.56		7449876						
Tannins & Lignins	mg/L				<0.2	0.2	7448005	<0.2	0.2	7448005
Turbidity	NTU				<0.1	0.1	7448506			
Alkalinity (Total as CaCO3)	mg/L	45	1.0	7449862						

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

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

BV Labs ID		PZX224		
Sampling Date		2021/06/29 01:40		
COC Number		829401-04-01		
	UNITS	POND	RDL	QC Batch
Metals				
Total Arsenic (As)	ug/L	<1.0	1.0	7450558
Total Cadmium (Cd)	ug/L	<0.090	0.090	7450558
Total Calcium (Ca)	ug/L	69000	200	7450558
Total Chromium (Cr)	ug/L	<5.0	5.0	7450558
Total Copper (Cu)	ug/L	<0.90	0.90	7450558
Total Iron (Fe)	ug/L	150	100	7450558
Total Lead (Pb)	ug/L	<0.50	0.50	7450558
Total Magnesium (Mg)	ug/L	42000	50	7450558
Total Manganese (Mn)	ug/L	48	2.0	7450558
Total Nickel (Ni)	ug/L	1.7	1.0	7450558
Total Potassium (K)	ug/L	13000	200	7450558
Total Sodium (Na)	ug/L	110000	100	7450558
Total Zinc (Zn)	ug/L	<5.0	5.0	7450558

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

TEST SUMMARY

BV Labs ID: PZX223
Sample ID: 6-2
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7450310	N/A	2021/07/08	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7445807	N/A	2021/07/09	Automated Statchk
Chloride by Automated Colourimetry	KONE	7450319	N/A	2021/07/08	Alina Dobreanu
Colour	SPEC	7448619	N/A	2021/07/07	Viorica Rotaru
Conductivity	AT	7450312	N/A	2021/07/08	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7448584	N/A	2021/07/07	Nimarta Singh
Fluoride	ISE	7450307	2021/07/07	2021/07/08	Surinder Rai
Hardness (calculated as CaCO3)		7445809	N/A	2021/07/07	Automated Statchk
Dissolved Metals by ICPMS	ICP/MS	7446635	N/A	2021/07/07	Arefa Dabhad
Ion Balance (% Difference)	CALC	7445810	N/A	2021/07/09	Automated Statchk
Anion and Cation Sum	CALC	7445811	N/A	2021/07/09	Automated Statchk
Total Ammonia-N	LACH/NH4	7452084	N/A	2021/07/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7449352	N/A	2021/07/08	Chandra Nandlal
pH	AT	7450314	2021/07/07	2021/07/08	Surinder Rai
Orthophosphate	KONE	7450345	N/A	2021/07/08	Avneet Kour Sudan
Sat. pH and Langelier Index (@ 20C)	CALC	7445815	N/A	2021/07/09	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7445816	N/A	2021/07/09	Automated Statchk
Sulphate by Automated Colourimetry	KONE	7450322	N/A	2021/07/08	Alina Dobreanu
Total Dissolved Solids (TDS calc)	CALC	7445817	N/A	2021/07/09	Automated Statchk

BV Labs ID: PZX223 Dup
Sample ID: 6-2
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7450310	N/A	2021/07/08	Surinder Rai
Conductivity	AT	7450312	N/A	2021/07/08	Surinder Rai
Fluoride	ISE	7450307	2021/07/07	2021/07/08	Surinder Rai
pH	AT	7450314	2021/07/07	2021/07/08	Surinder Rai

BV Labs ID: PZX224
Sample ID: POND
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7449862	N/A	2021/07/08	Surinder Rai
Chloride by Automated Colourimetry	KONE	7449294	N/A	2021/07/08	Alina Dobreanu
Conductivity	AT	7449863	N/A	2021/07/08	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7448584	N/A	2021/07/07	Nimarta Singh
Fluoride	ISE	7449852	2021/07/07	2021/07/08	Surinder Rai
Hardness (calculated as CaCO3)		7445809	N/A	2021/07/09	Ewa Pranjic
Total Metals Analysis by ICPMS	ICP/MS	7450558	N/A	2021/07/08	Prempal Bhatti
Anion and Cation Sum	CALC	7445811	N/A	2021/07/21	Automated Statchk
Total Ammonia-N	LACH/NH4	7448495	N/A	2021/07/08	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7449352	N/A	2021/07/08	Chandra Nandlal

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TEST SUMMARY

BV Labs ID: PZX224
Sample ID: POND
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Animal and Vegetable Oil and Grease	BAL	7445790	N/A	2021/07/09	Automated Statchk
Total Oil and Grease	BAL	7453173	2021/07/09	2021/07/09	Mitul Patel
pH	AT	7449876	2021/07/07	2021/07/08	Surinder Rai
Phenols (4AAP)	TECH/PHEN	7448237	N/A	2021/07/07	Deonarine Ramnarine
Sulphate by Automated Colourimetry	KONE	7449327	N/A	2021/07/08	Alina Dobreanu
Total Dissolved Solids	BAL	7449279	2021/07/07	2021/07/08	Shivani Desai
Total Kjeldahl Nitrogen in Water	SKAL	7448459	2021/07/07	2021/07/07	Massarat Jan
Total Phosphorus (Colourimetric)	LACH/P	7451429	2021/07/08	2021/07/09	Shivani Shivani
Mineral/Synthetic O & G (TPH Heavy Oil)	BAL	7453174	2021/07/09	2021/07/09	Mitul Patel
Total Suspended Solids	BAL	7448616	2021/07/07	2021/07/08	Shivani Desai

BV Labs ID: PZX224 Dup
Sample ID: POND
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7449862	N/A	2021/07/08	Surinder Rai
Conductivity	AT	7449863	N/A	2021/07/08	Surinder Rai
Fluoride	ISE	7449852	2021/07/07	2021/07/08	Surinder Rai
pH	AT	7449876	2021/07/07	2021/07/08	Surinder Rai

BV Labs ID: PZX225
Sample ID: DW3
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	7450310	N/A	2021/07/08	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	7445807	N/A	2021/07/09	Automated Statchk
Chloride by Automated Colourimetry	KONE	7450319	N/A	2021/07/08	Alina Dobreanu
Colour	SPEC	7448619	N/A	2021/07/07	Viorica Rotaru
Conductivity	AT	7450312	N/A	2021/07/08	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	7448584	N/A	2021/07/07	Nimarta Singh
Fluoride	ISE	7450307	2021/07/07	2021/07/08	Surinder Rai
Hardness (calculated as CaCO3)		7445809	N/A	2021/07/07	Automated Statchk
Metals Analysis by ICPMS (as received)	ICP/MS	7446641	N/A	2021/07/07	Arefa Dabhad
Ion Balance (% Difference)	CALC	7445810	N/A	2021/07/09	Automated Statchk
Anion and Cation Sum	CALC	7445811	N/A	2021/07/09	Automated Statchk
Total Ammonia-N	LACH/NH4	7452084	N/A	2021/07/09	Amanpreet Sappal
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	7449352	N/A	2021/07/08	Chandra Nandlal
pH	AT	7450314	2021/07/07	2021/07/08	Surinder Rai
Orthophosphate	KONE	7450345	N/A	2021/07/08	Avneet Kour Sudan
Sat. pH and Langelier Index (@ 20C)	CALC	7445815	N/A	2021/07/09	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	7445816	N/A	2021/07/09	Automated Statchk
Sulphate by Automated Colourimetry	KONE	7450322	N/A	2021/07/08	Alina Dobreanu
Tannins & Lignins	SPEC	7448005	N/A	2021/07/07	Viorica Rotaru

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TEST SUMMARY

BV Labs ID: PZX225
Sample ID: DW3
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (TDS calc)	CALC	7445817	N/A	2021/07/09	Automated Statchk
Turbidity	AT	7448506	N/A	2021/07/07	Surinder Rai

BV Labs ID: PZX225 Dup
Sample ID: DW3
Matrix: Water

Collected: 2021/06/29
Shipped:
Received: 2021/07/05

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Ammonia-N	LACH/NH4	7452084	N/A	2021/07/09	Amanpreet Sappal
Tannins & Lignins	SPEC	7448005	N/A	2021/07/07	Viorica Rotaru

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GENERAL COMMENTS

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

Package 1	8.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7446635	ADA	Matrix Spike	Dissolved Aluminum (Al)	2021/07/07		100	%	80 - 120
			Dissolved Antimony (Sb)	2021/07/07		107	%	80 - 120
			Dissolved Arsenic (As)	2021/07/07		102	%	80 - 120
			Dissolved Barium (Ba)	2021/07/07		102	%	80 - 120
			Dissolved Beryllium (Be)	2021/07/07		95	%	80 - 120
			Dissolved Boron (B)	2021/07/07		93	%	80 - 120
			Dissolved Cadmium (Cd)	2021/07/07		106	%	80 - 120
			Dissolved Calcium (Ca)	2021/07/07		NC	%	80 - 120
			Dissolved Chromium (Cr)	2021/07/07		98	%	80 - 120
			Dissolved Cobalt (Co)	2021/07/07		100	%	80 - 120
			Dissolved Copper (Cu)	2021/07/07		97	%	80 - 120
			Dissolved Iron (Fe)	2021/07/07		99	%	80 - 120
			Dissolved Lead (Pb)	2021/07/07		100	%	80 - 120
			Dissolved Magnesium (Mg)	2021/07/07		NC	%	80 - 120
			Dissolved Manganese (Mn)	2021/07/07		101	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/07/07		101	%	80 - 120
			Dissolved Nickel (Ni)	2021/07/07		96	%	80 - 120
			Dissolved Phosphorus (P)	2021/07/07		105	%	80 - 120
			Dissolved Potassium (K)	2021/07/07		103	%	80 - 120
			Dissolved Selenium (Se)	2021/07/07		102	%	80 - 120
			Dissolved Silicon (Si)	2021/07/07		101	%	80 - 120
			Dissolved Silver (Ag)	2021/07/07		99	%	80 - 120
			Dissolved Sodium (Na)	2021/07/07		100	%	80 - 120
			Dissolved Strontium (Sr)	2021/07/07		101	%	80 - 120
			Dissolved Thallium (Tl)	2021/07/07		105	%	80 - 120
			Dissolved Titanium (Ti)	2021/07/07		101	%	80 - 120
			Dissolved Uranium (U)	2021/07/07		103	%	80 - 120
			Dissolved Vanadium (V)	2021/07/07		101	%	80 - 120
			Dissolved Zinc (Zn)	2021/07/07		102	%	80 - 120
7446635	ADA	Spiked Blank	Dissolved Aluminum (Al)	2021/07/07		99	%	80 - 120
			Dissolved Antimony (Sb)	2021/07/07		100	%	80 - 120
			Dissolved Arsenic (As)	2021/07/07		97	%	80 - 120
			Dissolved Barium (Ba)	2021/07/07		98	%	80 - 120
			Dissolved Beryllium (Be)	2021/07/07		90	%	80 - 120
			Dissolved Boron (B)	2021/07/07		89	%	80 - 120
			Dissolved Cadmium (Cd)	2021/07/07		100	%	80 - 120
			Dissolved Calcium (Ca)	2021/07/07		98	%	80 - 120
			Dissolved Chromium (Cr)	2021/07/07		93	%	80 - 120
			Dissolved Cobalt (Co)	2021/07/07		97	%	80 - 120
			Dissolved Copper (Cu)	2021/07/07		94	%	80 - 120
			Dissolved Iron (Fe)	2021/07/07		95	%	80 - 120
			Dissolved Lead (Pb)	2021/07/07		96	%	80 - 120
			Dissolved Magnesium (Mg)	2021/07/07		98	%	80 - 120
			Dissolved Manganese (Mn)	2021/07/07		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2021/07/07		94	%	80 - 120
			Dissolved Nickel (Ni)	2021/07/07		95	%	80 - 120
			Dissolved Phosphorus (P)	2021/07/07		105	%	80 - 120
			Dissolved Potassium (K)	2021/07/07		98	%	80 - 120
			Dissolved Selenium (Se)	2021/07/07		100	%	80 - 120
			Dissolved Silicon (Si)	2021/07/07		101	%	80 - 120
			Dissolved Silver (Ag)	2021/07/07		95	%	80 - 120
			Dissolved Sodium (Na)	2021/07/07		96	%	80 - 120

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Strontium (Sr)	2021/07/07		98	%	80 - 120
			Dissolved Thallium (Tl)	2021/07/07		97	%	80 - 120
			Dissolved Titanium (Ti)	2021/07/07		96	%	80 - 120
			Dissolved Uranium (U)	2021/07/07		97	%	80 - 120
			Dissolved Vanadium (V)	2021/07/07		96	%	80 - 120
			Dissolved Zinc (Zn)	2021/07/07		98	%	80 - 120
7446635	ADA	Method Blank	Dissolved Aluminum (Al)	2021/07/07	<4.9		ug/L	
			Dissolved Antimony (Sb)	2021/07/07	<0.50		ug/L	
			Dissolved Arsenic (As)	2021/07/07	<1.0		ug/L	
			Dissolved Barium (Ba)	2021/07/07	<2.0		ug/L	
			Dissolved Beryllium (Be)	2021/07/07	<0.40		ug/L	
			Dissolved Boron (B)	2021/07/07	<10		ug/L	
			Dissolved Cadmium (Cd)	2021/07/07	<0.090		ug/L	
			Dissolved Calcium (Ca)	2021/07/07	<200		ug/L	
			Dissolved Chromium (Cr)	2021/07/07	<5.0		ug/L	
			Dissolved Cobalt (Co)	2021/07/07	<0.50		ug/L	
			Dissolved Copper (Cu)	2021/07/07	<0.90		ug/L	
			Dissolved Iron (Fe)	2021/07/07	<100		ug/L	
			Dissolved Lead (Pb)	2021/07/07	<0.50		ug/L	
			Dissolved Magnesium (Mg)	2021/07/07	<50		ug/L	
			Dissolved Manganese (Mn)	2021/07/07	<2.0		ug/L	
			Dissolved Molybdenum (Mo)	2021/07/07	<0.50		ug/L	
			Dissolved Nickel (Ni)	2021/07/07	<1.0		ug/L	
			Dissolved Phosphorus (P)	2021/07/07	<100		ug/L	
			Dissolved Potassium (K)	2021/07/07	<200		ug/L	
			Dissolved Selenium (Se)	2021/07/07	<2.0		ug/L	
			Dissolved Silicon (Si)	2021/07/07	<50		ug/L	
			Dissolved Silver (Ag)	2021/07/07	<0.090		ug/L	
			Dissolved Sodium (Na)	2021/07/07	<100		ug/L	
			Dissolved Strontium (Sr)	2021/07/07	<1.0		ug/L	
			Dissolved Thallium (Tl)	2021/07/07	<0.050		ug/L	
			Dissolved Titanium (Ti)	2021/07/07	<5.0		ug/L	
			Dissolved Uranium (U)	2021/07/07	<0.10		ug/L	
			Dissolved Vanadium (V)	2021/07/07	<0.50		ug/L	
			Dissolved Zinc (Zn)	2021/07/07	<5.0		ug/L	
7446635	ADA	RPD	Dissolved Antimony (Sb)	2021/07/07	NC		%	20
			Dissolved Arsenic (As)	2021/07/07	NC		%	20
			Dissolved Barium (Ba)	2021/07/07	4.8		%	20
			Dissolved Beryllium (Be)	2021/07/07	NC		%	20
			Dissolved Boron (B)	2021/07/07	2.6		%	20
			Dissolved Cadmium (Cd)	2021/07/07	NC		%	20
			Dissolved Chromium (Cr)	2021/07/07	NC		%	20
			Dissolved Cobalt (Co)	2021/07/07	NC		%	20
			Dissolved Copper (Cu)	2021/07/07	NC		%	20
			Dissolved Lead (Pb)	2021/07/07	NC		%	20
			Dissolved Molybdenum (Mo)	2021/07/07	3.5		%	20
			Dissolved Nickel (Ni)	2021/07/07	NC		%	20
			Dissolved Selenium (Se)	2021/07/07	NC		%	20
			Dissolved Silver (Ag)	2021/07/07	NC		%	20
			Dissolved Sodium (Na)	2021/07/07	0.13		%	20
			Dissolved Thallium (Tl)	2021/07/07	NC		%	20
			Dissolved Uranium (U)	2021/07/07	0.84		%	20

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Vanadium (V)	2021/07/07	NC		%	20
			Dissolved Zinc (Zn)	2021/07/07	NC		%	20
7446641	ADA	Matrix Spike	Aluminum (Al)	2021/07/07		101	%	80 - 120
			Antimony (Sb)	2021/07/07		105	%	80 - 120
			Arsenic (As)	2021/07/07		100	%	80 - 120
			Barium (Ba)	2021/07/07		103	%	80 - 120
			Beryllium (Be)	2021/07/07		94	%	80 - 120
			Boron (B)	2021/07/07		91	%	80 - 120
			Cadmium (Cd)	2021/07/07		103	%	80 - 120
			Calcium (Ca)	2021/07/07		NC	%	80 - 120
			Chromium (Cr)	2021/07/07		95	%	80 - 120
			Cobalt (Co)	2021/07/07		101	%	80 - 120
			Copper (Cu)	2021/07/07		95	%	80 - 120
			Iron (Fe)	2021/07/07		98	%	80 - 120
			Lead (Pb)	2021/07/07		98	%	80 - 120
			Lithium (Li)	2021/07/07		101	%	80 - 120
			Magnesium (Mg)	2021/07/07		NC	%	80 - 120
			Manganese (Mn)	2021/07/07		100	%	80 - 120
			Molybdenum (Mo)	2021/07/07		98	%	80 - 120
			Nickel (Ni)	2021/07/07		96	%	80 - 120
			Phosphorus (P)	2021/07/07		103	%	80 - 120
			Potassium (K)	2021/07/07		99	%	80 - 120
			Selenium (Se)	2021/07/07		104	%	80 - 120
			Silicon (Si)	2021/07/07		104	%	80 - 120
			Silver (Ag)	2021/07/07		97	%	80 - 120
			Sodium (Na)	2021/07/07		96	%	80 - 120
			Strontium (Sr)	2021/07/07		102	%	80 - 120
			Thallium (Tl)	2021/07/07		99	%	80 - 120
			Titanium (Ti)	2021/07/07		101	%	80 - 120
			Uranium (U)	2021/07/07		98	%	80 - 120
			Vanadium (V)	2021/07/07		98	%	80 - 120
			Zinc (Zn)	2021/07/07		99	%	80 - 120
7446641	ADA	Spiked Blank	Aluminum (Al)	2021/07/07		98	%	80 - 120
			Antimony (Sb)	2021/07/07		100	%	80 - 120
			Arsenic (As)	2021/07/07		97	%	80 - 120
			Barium (Ba)	2021/07/07		97	%	80 - 120
			Beryllium (Be)	2021/07/07		90	%	80 - 120
			Boron (B)	2021/07/07		89	%	80 - 120
			Cadmium (Cd)	2021/07/07		100	%	80 - 120
			Calcium (Ca)	2021/07/07		98	%	80 - 120
			Chromium (Cr)	2021/07/07		93	%	80 - 120
			Cobalt (Co)	2021/07/07		98	%	80 - 120
			Copper (Cu)	2021/07/07		92	%	80 - 120
			Iron (Fe)	2021/07/07		95	%	80 - 120
			Lead (Pb)	2021/07/07		95	%	80 - 120
			Lithium (Li)	2021/07/07		102	%	80 - 120
			Magnesium (Mg)	2021/07/07		98	%	80 - 120
			Manganese (Mn)	2021/07/07		96	%	80 - 120
			Molybdenum (Mo)	2021/07/07		94	%	80 - 120
			Nickel (Ni)	2021/07/07		94	%	80 - 120
			Phosphorus (P)	2021/07/07		106	%	80 - 120
			Potassium (K)	2021/07/07		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Selenium (Se)	2021/07/07		99	%	80 - 120
			Silicon (Si)	2021/07/07		100	%	80 - 120
			Silver (Ag)	2021/07/07		93	%	80 - 120
			Sodium (Na)	2021/07/07		95	%	80 - 120
			Strontium (Sr)	2021/07/07		98	%	80 - 120
			Thallium (Tl)	2021/07/07		99	%	80 - 120
			Titanium (Ti)	2021/07/07		97	%	80 - 120
			Uranium (U)	2021/07/07		95	%	80 - 120
			Vanadium (V)	2021/07/07		95	%	80 - 120
			Zinc (Zn)	2021/07/07		96	%	80 - 120
7446641	ADA	Method Blank	Aluminum (Al)	2021/07/07	<4.9		ug/L	
			Antimony (Sb)	2021/07/07	<0.50		ug/L	
			Arsenic (As)	2021/07/07	<1.0		ug/L	
			Barium (Ba)	2021/07/07	<2.0		ug/L	
			Beryllium (Be)	2021/07/07	<0.40		ug/L	
			Boron (B)	2021/07/07	<10		ug/L	
			Cadmium (Cd)	2021/07/07	<0.090		ug/L	
			Calcium (Ca)	2021/07/07	<200		ug/L	
			Chromium (Cr)	2021/07/07	<5.0		ug/L	
			Cobalt (Co)	2021/07/07	<0.50		ug/L	
			Copper (Cu)	2021/07/07	<0.90		ug/L	
			Iron (Fe)	2021/07/07	<100		ug/L	
			Lead (Pb)	2021/07/07	<0.50		ug/L	
			Lithium (Li)	2021/07/07	<5.0		ug/L	
			Magnesium (Mg)	2021/07/07	<50		ug/L	
			Manganese (Mn)	2021/07/07	<2.0		ug/L	
			Molybdenum (Mo)	2021/07/07	<0.50		ug/L	
			Nickel (Ni)	2021/07/07	<1.0		ug/L	
			Phosphorus (P)	2021/07/07	<100		ug/L	
			Potassium (K)	2021/07/07	<200		ug/L	
			Selenium (Se)	2021/07/07	<2.0		ug/L	
			Silicon (Si)	2021/07/07	<50		ug/L	
			Silver (Ag)	2021/07/07	<0.090		ug/L	
			Sodium (Na)	2021/07/07	<100		ug/L	
			Strontium (Sr)	2021/07/07	<1.0		ug/L	
			Thallium (Tl)	2021/07/07	<0.050		ug/L	
			Titanium (Ti)	2021/07/07	<5.0		ug/L	
			Uranium (U)	2021/07/07	<0.10		ug/L	
			Vanadium (V)	2021/07/07	<0.50		ug/L	
			Zinc (Zn)	2021/07/07	<5.0		ug/L	
7446641	ADA	RPD	Aluminum (Al)	2021/07/07	NC		%	20
			Antimony (Sb)	2021/07/07	NC		%	20
			Arsenic (As)	2021/07/07	0.73		%	20
			Barium (Ba)	2021/07/07	1.4		%	20
			Beryllium (Be)	2021/07/07	NC		%	20
			Boron (B)	2021/07/07	4.4		%	20
			Cadmium (Cd)	2021/07/07	NC		%	20
			Calcium (Ca)	2021/07/07	1.1		%	20
			Chromium (Cr)	2021/07/07	NC		%	20
			Cobalt (Co)	2021/07/07	NC		%	20
			Copper (Cu)	2021/07/07	5.8		%	20
			Iron (Fe)	2021/07/07	0.073		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Lead (Pb)	2021/07/07	0.10		%	20
			Lithium (Li)	2021/07/07	NC		%	20
			Magnesium (Mg)	2021/07/07	2.7		%	20
			Manganese (Mn)	2021/07/07	0.80		%	20
			Molybdenum (Mo)	2021/07/07	1.3		%	20
			Nickel (Ni)	2021/07/07	NC		%	20
			Phosphorus (P)	2021/07/07	NC		%	20
			Potassium (K)	2021/07/07	0.15		%	20
			Selenium (Se)	2021/07/07	NC		%	20
			Silicon (Si)	2021/07/07	0.53		%	20
			Silver (Ag)	2021/07/07	NC		%	20
			Sodium (Na)	2021/07/07	1.8		%	20
			Strontium (Sr)	2021/07/07	0.59		%	20
			Thallium (Tl)	2021/07/07	NC		%	20
			Titanium (Ti)	2021/07/07	NC		%	20
			Uranium (U)	2021/07/07	NC		%	20
			Vanadium (V)	2021/07/07	NC		%	20
			Zinc (Zn)	2021/07/07	1.3		%	20
7448005	VRO	Matrix Spike [PZX225-02]	Tannins & Lignins	2021/07/07		99	%	80 - 120
7448005	VRO	Spiked Blank	Tannins & Lignins	2021/07/07		102	%	80 - 120
7448005	VRO	Method Blank	Tannins & Lignins	2021/07/07	<0.2		mg/L	
7448005	VRO	RPD [PZX225-02]	Tannins & Lignins	2021/07/07	NC		%	20
7448237	DRM	Matrix Spike	Phenols-4AAP	2021/07/07		90	%	80 - 120
7448237	DRM	Spiked Blank	Phenols-4AAP	2021/07/07		101	%	80 - 120
7448237	DRM	Method Blank	Phenols-4AAP	2021/07/07	<0.0010		mg/L	
7448237	DRM	RPD	Phenols-4AAP	2021/07/07	NC		%	20
7448459	MJ1	Matrix Spike	Total Kjeldahl Nitrogen (TKN)	2021/07/07		NC	%	80 - 120
7448459	MJ1	QC Standard	Total Kjeldahl Nitrogen (TKN)	2021/07/07		89	%	80 - 120
7448459	MJ1	Spiked Blank	Total Kjeldahl Nitrogen (TKN)	2021/07/07		92	%	80 - 120
7448459	MJ1	Method Blank	Total Kjeldahl Nitrogen (TKN)	2021/07/07	<0.10		mg/L	
7448459	MJ1	RPD	Total Kjeldahl Nitrogen (TKN)	2021/07/07	NC		%	20
7448495	ASP	Matrix Spike	Total Ammonia-N	2021/07/08		103	%	75 - 125
7448495	ASP	Spiked Blank	Total Ammonia-N	2021/07/08		101	%	80 - 120
7448495	ASP	Method Blank	Total Ammonia-N	2021/07/08	<0.050		mg/L	
7448495	ASP	RPD	Total Ammonia-N	2021/07/08	2.3		%	20
7448506	SAU	Spiked Blank	Turbidity	2021/07/07		94	%	85 - 115
7448506	SAU	Method Blank	Turbidity	2021/07/07	<0.1		NTU	
7448506	SAU	RPD	Turbidity	2021/07/07	3.8		%	20
7448584	NS3	Matrix Spike	Dissolved Organic Carbon	2021/07/07		NC	%	80 - 120
7448584	NS3	Spiked Blank	Dissolved Organic Carbon	2021/07/07		97	%	80 - 120
7448584	NS3	Method Blank	Dissolved Organic Carbon	2021/07/07	<0.40		mg/L	
7448584	NS3	RPD	Dissolved Organic Carbon	2021/07/07	0.88		%	20
7448616	SDE	QC Standard	Total Suspended Solids	2021/07/08		95	%	85 - 115
7448616	SDE	Method Blank	Total Suspended Solids	2021/07/08	<10		mg/L	
7448616	SDE	RPD	Total Suspended Solids	2021/07/08	6.1		%	25
7448619	VRO	Spiked Blank	Colour	2021/07/07		100	%	80 - 120
7448619	VRO	Method Blank	Colour	2021/07/07	<2		TCU	
7448619	VRO	RPD	Colour	2021/07/07	NC		%	25
7449279	SDE	QC Standard	Total Dissolved Solids	2021/07/08		100	%	90 - 110
7449279	SDE	Method Blank	Total Dissolved Solids	2021/07/08	<10		mg/L	
7449279	SDE	RPD	Total Dissolved Solids	2021/07/08	4.7		%	25
7449294	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2021/07/08		NC	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7449294	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2021/07/08		99	%	80 - 120
7449294	ADB	Method Blank	Dissolved Chloride (Cl-)	2021/07/08	<1.0		mg/L	
7449294	ADB	RPD	Dissolved Chloride (Cl-)	2021/07/08	7.3		%	20
7449327	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2021/07/08		NC	%	75 - 125
7449327	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2021/07/08		100	%	80 - 120
7449327	ADB	Method Blank	Dissolved Sulphate (SO4)	2021/07/08	<1.0		mg/L	
7449327	ADB	RPD	Dissolved Sulphate (SO4)	2021/07/08	3.0		%	20
7449352	C_N	Matrix Spike	Nitrite (N)	2021/07/08		102	%	80 - 120
			Nitrate (N)	2021/07/08		97	%	80 - 120
7449352	C_N	Spiked Blank	Nitrite (N)	2021/07/08		103	%	80 - 120
			Nitrate (N)	2021/07/08		98	%	80 - 120
7449352	C_N	Method Blank	Nitrite (N)	2021/07/08	<0.010		mg/L	
			Nitrate (N)	2021/07/08	<0.10		mg/L	
7449352	C_N	RPD	Nitrite (N)	2021/07/08	2.0		%	20
			Nitrate (N)	2021/07/08	8.1		%	20
7449852	SAU	Matrix Spike [PZX224-04]	Fluoride (F-)	2021/07/08		105	%	80 - 120
7449852	SAU	Spiked Blank	Fluoride (F-)	2021/07/08		101	%	80 - 120
7449852	SAU	Method Blank	Fluoride (F-)	2021/07/08	<0.10		mg/L	
7449852	SAU	RPD [PZX224-04]	Fluoride (F-)	2021/07/08	4.7		%	20
7449862	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2021/07/08		96	%	85 - 115
7449862	SAU	Method Blank	Alkalinity (Total as CaCO3)	2021/07/08	<1.0		mg/L	
7449862	SAU	RPD [PZX224-04]	Alkalinity (Total as CaCO3)	2021/07/08	0.12		%	20
7449863	SAU	Spiked Blank	Conductivity	2021/07/08		100	%	85 - 115
7449863	SAU	Method Blank	Conductivity	2021/07/08	<1.0		umho/cm	
7449863	SAU	RPD [PZX224-04]	Conductivity	2021/07/08	0.25		%	25
7449876	SAU	Spiked Blank	pH	2021/07/08		102	%	98 - 103
7449876	SAU	RPD [PZX224-04]	pH	2021/07/08	1.3		%	N/A
7450307	SAU	Matrix Spike [PZX223-01]	Fluoride (F-)	2021/07/08		97	%	80 - 120
7450307	SAU	Spiked Blank	Fluoride (F-)	2021/07/08		93	%	80 - 120
7450307	SAU	Method Blank	Fluoride (F-)	2021/07/08	<0.10		mg/L	
7450307	SAU	RPD [PZX223-01]	Fluoride (F-)	2021/07/08	1.4		%	20
7450310	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2021/07/08		96	%	85 - 115
7450310	SAU	Method Blank	Alkalinity (Total as CaCO3)	2021/07/08	<1.0		mg/L	
7450310	SAU	RPD [PZX223-01]	Alkalinity (Total as CaCO3)	2021/07/08	1.6		%	20
7450312	SAU	Spiked Blank	Conductivity	2021/07/08		102	%	85 - 115
7450312	SAU	Method Blank	Conductivity	2021/07/08	<1.0		umho/cm	
7450312	SAU	RPD [PZX223-01]	Conductivity	2021/07/08	0.16		%	25
7450314	SAU	Spiked Blank	pH	2021/07/08		102	%	98 - 103
7450314	SAU	RPD [PZX223-01]	pH	2021/07/08	1.2		%	N/A
7450319	ADB	Matrix Spike	Dissolved Chloride (Cl-)	2021/07/08		NC	%	80 - 120
7450319	ADB	Spiked Blank	Dissolved Chloride (Cl-)	2021/07/08		104	%	80 - 120
7450319	ADB	Method Blank	Dissolved Chloride (Cl-)	2021/07/08	<1.0		mg/L	
7450319	ADB	RPD	Dissolved Chloride (Cl-)	2021/07/08	0.77		%	20
7450322	ADB	Matrix Spike	Dissolved Sulphate (SO4)	2021/07/08		NC	%	75 - 125
7450322	ADB	Spiked Blank	Dissolved Sulphate (SO4)	2021/07/08		100	%	80 - 120
7450322	ADB	Method Blank	Dissolved Sulphate (SO4)	2021/07/08	<1.0		mg/L	
7450322	ADB	RPD	Dissolved Sulphate (SO4)	2021/07/08	1.5		%	20
7450345	AKD	Matrix Spike	Orthophosphate (P)	2021/07/08		110	%	75 - 125
7450345	AKD	Spiked Blank	Orthophosphate (P)	2021/07/08		99	%	80 - 120
7450345	AKD	Method Blank	Orthophosphate (P)	2021/07/08	<0.010		mg/L	
7450345	AKD	RPD	Orthophosphate (P)	2021/07/08	8.1		%	25
7450558	PBA	Matrix Spike	Total Arsenic (As)	2021/07/08		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cadmium (Cd)	2021/07/08		97	%	80 - 120
			Total Calcium (Ca)	2021/07/08		NC	%	80 - 120
			Total Chromium (Cr)	2021/07/08		91	%	80 - 120
			Total Copper (Cu)	2021/07/08		95	%	80 - 120
			Total Iron (Fe)	2021/07/08		93	%	80 - 120
			Total Lead (Pb)	2021/07/08		95	%	80 - 120
			Total Magnesium (Mg)	2021/07/08		91	%	80 - 120
			Total Manganese (Mn)	2021/07/08		93	%	80 - 120
			Total Nickel (Ni)	2021/07/08		92	%	80 - 120
			Total Potassium (K)	2021/07/08		96	%	80 - 120
			Total Sodium (Na)	2021/07/08		94	%	80 - 120
			Total Zinc (Zn)	2021/07/08		98	%	80 - 120
7450558	PBA	Spiked Blank	Total Arsenic (As)	2021/07/08		96	%	80 - 120
			Total Cadmium (Cd)	2021/07/08		98	%	80 - 120
			Total Calcium (Ca)	2021/07/08		96	%	80 - 120
			Total Chromium (Cr)	2021/07/08		92	%	80 - 120
			Total Copper (Cu)	2021/07/08		96	%	80 - 120
			Total Iron (Fe)	2021/07/08		94	%	80 - 120
			Total Lead (Pb)	2021/07/08		94	%	80 - 120
			Total Magnesium (Mg)	2021/07/08		97	%	80 - 120
			Total Manganese (Mn)	2021/07/08		94	%	80 - 120
			Total Nickel (Ni)	2021/07/08		94	%	80 - 120
			Total Potassium (K)	2021/07/08		97	%	80 - 120
			Total Sodium (Na)	2021/07/08		96	%	80 - 120
			Total Zinc (Zn)	2021/07/08		99	%	80 - 120
7450558	PBA	Method Blank	Total Arsenic (As)	2021/07/08	<1.0		ug/L	
			Total Cadmium (Cd)	2021/07/08	<0.090		ug/L	
			Total Calcium (Ca)	2021/07/08	<200		ug/L	
			Total Chromium (Cr)	2021/07/08	<5.0		ug/L	
			Total Copper (Cu)	2021/07/08	<0.90		ug/L	
			Total Iron (Fe)	2021/07/08	<100		ug/L	
			Total Lead (Pb)	2021/07/08	<0.50		ug/L	
			Total Magnesium (Mg)	2021/07/08	<50		ug/L	
			Total Manganese (Mn)	2021/07/08	<2.0		ug/L	
			Total Nickel (Ni)	2021/07/08	<1.0		ug/L	
			Total Potassium (K)	2021/07/08	<200		ug/L	
			Total Sodium (Na)	2021/07/08	<100		ug/L	
			Total Zinc (Zn)	2021/07/08	<5.0		ug/L	
7450558	PBA	RPD	Total Arsenic (As)	2021/07/08	NC		%	20
			Total Cadmium (Cd)	2021/07/08	NC		%	20
			Total Calcium (Ca)	2021/07/08	1.9		%	20
			Total Chromium (Cr)	2021/07/08	NC		%	20
			Total Copper (Cu)	2021/07/08	8.2		%	20
			Total Iron (Fe)	2021/07/08	NC		%	20
			Total Lead (Pb)	2021/07/08	NC		%	20
			Total Magnesium (Mg)	2021/07/08	0.053		%	20
			Total Manganese (Mn)	2021/07/08	19		%	20
			Total Nickel (Ni)	2021/07/08	0.57		%	20
			Total Potassium (K)	2021/07/08	1.1		%	20
			Total Sodium (Na)	2021/07/08	0.37		%	20
			Total Zinc (Zn)	2021/07/08	NC		%	20
7451429	SSV	Matrix Spike	Total Phosphorus	2021/07/09		98	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7451429	SSV	QC Standard	Total Phosphorus	2021/07/09		99	%	80 - 120
7451429	SSV	Spiked Blank	Total Phosphorus	2021/07/09		95	%	80 - 120
7451429	SSV	Method Blank	Total Phosphorus	2021/07/09	<0.020		mg/L	
7451429	SSV	RPD	Total Phosphorus	2021/07/09	2.3		%	20
7452084	ASP	Matrix Spike [PZX225-05]	Total Ammonia-N	2021/07/09		103	%	75 - 125
7452084	ASP	Spiked Blank	Total Ammonia-N	2021/07/09		100	%	80 - 120
7452084	ASP	Method Blank	Total Ammonia-N	2021/07/09	<0.050		mg/L	
7452084	ASP	RPD [PZX225-05]	Total Ammonia-N	2021/07/09	NC		%	20
7453173	MPZ	Spiked Blank	Total Oil & Grease	2021/07/09		98	%	85 - 115
7453173	MPZ	RPD	Total Oil & Grease	2021/07/09	0.25		%	25
7453173	MPZ	Method Blank	Total Oil & Grease	2021/07/09	<0.50		mg/L	
7453174	MPZ	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/07/09		95	%	85 - 115
7453174	MPZ	RPD	Total Oil & Grease Mineral/Synthetic	2021/07/09	0.52		%	25
7453174	MPZ	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/07/09	<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.

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

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

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VALIDATION SIGNATURE PAGE

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

Anastassia Hamanov, Scientific Specialist

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

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
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Your Project #: 20448776
Site Location: McCarthy
Your C.O.C. #: 825330-01-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/07/23
Report #: R6733010
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1J8665
Received: 2021/07/16, 10:05

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	2021/07/23	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/07/22	2021/07/23	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2021/07/19	2021/07/20	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/07/20	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2021/07/22	2021/07/23	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2021/07/19	2021/07/20	CAM SOP-00428	SM 23 2540D m

Remarks:

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

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

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

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

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Your Project #: 20448776
Site Location: McCarthy
Your C.O.C. #: 825330-01-01

Attention: Dawn Hoyle/Jamie Bonany

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CANADA L4N 8X1

Report Date: 2021/07/23
Report #: R6733010
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1J8665
Received: 2021/07/16, 10:05

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829
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BV Labs Job #: C1J8665
Report Date: 2021/07/23

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: SJ

RESULTS OF ANALYSES OF WATER

BV Labs ID		QCT244		
Sampling Date		2021/07/15 13:00		
COC Number		825330-01-01		
	UNITS	POND	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	7468896
Inorganics				
pH	pH	8.05	N/A	7471285
Phenols-4AAP	mg/L	<0.0010	0.0010	7471924
Total Suspended Solids	mg/L	5	1	7470073
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	<0.50	0.50	7478905
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	7478907

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

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BV Labs Job #: C1J8665
Report Date: 2021/07/23

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: SJ

GENERAL COMMENTS

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

Package 1	22.3°C

Results relate only to the items tested.

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BV Labs Job #: C1J8665
Report Date: 2021/07/23

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: SJ

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7470073	SEK	QC Standard	Total Suspended Solids	2021/07/20		101	%	85 - 115
7470073	SEK	Method Blank	Total Suspended Solids	2021/07/20	<1		mg/L	
7470073	SEK	RPD	Total Suspended Solids	2021/07/20	0		%	25
7471285	SAU	Spiked Blank	pH	2021/07/20		101	%	98 - 103
7471285	SAU	RPD	pH	2021/07/20	0.055		%	N/A
7471924	DRM	Matrix Spike	Phenols-4AAP	2021/07/20		97	%	80 - 120
7471924	DRM	Spiked Blank	Phenols-4AAP	2021/07/20		102	%	80 - 120
7471924	DRM	Method Blank	Phenols-4AAP	2021/07/20	<0.0010		mg/L	
7471924	DRM	RPD	Phenols-4AAP	2021/07/20	NC		%	20
7478905	SA5	Spiked Blank	Total Oil & Grease	2021/07/23		98	%	85 - 115
7478905	SA5	RPD	Total Oil & Grease	2021/07/23	1.0		%	25
7478905	SA5	Method Blank	Total Oil & Grease	2021/07/23	<0.50		mg/L	
7478907	SA5	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/07/23		96	%	85 - 115
7478907	SA5	RPD	Total Oil & Grease Mineral/Synthetic	2021/07/23	2.7		%	25
7478907	SA5	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/07/23	<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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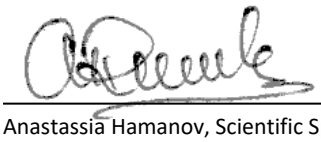
BV Labs Job #: C1J8665
Report Date: 2021/07/23

Golder Associates Ltd
Client Project #: 20448776
Site Location: McCarthy
Sampler Initials: SJ

VALIDATION SIGNATURE PAGE

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



Anastassia Hamanov, Scientific Specialist

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Your Project #: 20448776
Site Location: MCCARTHY
Your C.O.C. #: 837180-03-01

Attention: Dawn Hoyle/Jamie Bonany

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

Report Date: 2021/08/05
Report #: R6751878
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1L4469
Received: 2021/07/30, 09:26

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	2021/08/05	CAM SOP-00326	EPA1664B m,SM5520B m
Total Oil and Grease	1	2021/08/05	2021/08/05	CAM SOP-00326	EPA1664B m,SM5520B m
pH	1	2021/07/31	2021/08/03	CAM SOP-00413	SM 4500H+ B m
Phenols (4AAP)	1	N/A	2021/08/03	CAM SOP-00444	OMOE E3179 m
Mineral/Synthetic O & G (TPH Heavy Oil) (1)	1	2021/08/05	2021/08/05	CAM SOP-00326	EPA1664B m,SM5520F m
Low Level Total Suspended Solids	1	2021/08/04	2021/08/05	CAM SOP-00428	SM 23 2540D m

Remarks:

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

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

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

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

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Your Project #: 20448776
Site Location: MCCARTHY
Your C.O.C. #: 837180-03-01

Attention: Dawn Hoyle/Jamie Bonany

Golder Associates Ltd
121 Commerce Park Drive
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CANADA L4N 8X1

Report Date: 2021/08/05
Report #: R6751878
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C1L4469
Received: 2021/07/30, 09:26

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ema Gitej, Senior Project Manager
Email: emese.gitej@bureauveritas.com
Phone# (905)817-5829
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BV Labs Job #: C1L4469
Report Date: 2021/08/05

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

RESULTS OF ANALYSES OF WATER

BV Labs ID		QGB885		
Sampling Date		2021/07/29 11:00		
COC Number		837180-03-01		
	UNITS	POND	RDL	QC Batch
Calculated Parameters				
Total Animal/Vegetable Oil and Grease	mg/L	<0.50	0.50	7493616
Inorganics				
pH	pH	7.55	N/A	7495690
Phenols-4AAP	mg/L	<0.0010	0.0010	7496914
Total Suspended Solids	mg/L	3	1	7495857
Petroleum Hydrocarbons				
Total Oil & Grease	mg/L	<0.50	0.50	7501578
Total Oil & Grease Mineral/Synthetic	mg/L	<0.50	0.50	7501583

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

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BV Labs Job #: C1L4469
Report Date: 2021/08/05

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

GENERAL COMMENTS

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

Package 1	21.0°C

Results relate only to the items tested.

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BV Labs Job #: C1L4469
Report Date: 2021/08/05

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

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
7495690	SAU	Spiked Blank	pH	2021/08/03		102	%	98 - 103
7495690	SAU	RPD	pH	2021/08/03	0.66		%	N/A
7495857	SHD	QC Standard	Total Suspended Solids	2021/08/05		96	%	85 - 115
7495857	SHD	Method Blank	Total Suspended Solids	2021/08/05	<1		mg/L	
7495857	SHD	RPD	Total Suspended Solids	2021/08/05	15		%	25
7496914	DRM	Matrix Spike	Phenols-4AAP	2021/08/03		95	%	80 - 120
7496914	DRM	Spiked Blank	Phenols-4AAP	2021/08/03		102	%	80 - 120
7496914	DRM	Method Blank	Phenols-4AAP	2021/08/03	<0.0010		mg/L	
7496914	DRM	RPD	Phenols-4AAP	2021/08/03	0		%	20
7501578	MPZ	Spiked Blank	Total Oil & Grease	2021/08/05		98	%	85 - 115
7501578	MPZ	RPD	Total Oil & Grease	2021/08/05	1.0		%	25
7501578	MPZ	Method Blank	Total Oil & Grease	2021/08/05	<0.50		mg/L	
7501583	MPZ	Spiked Blank	Total Oil & Grease Mineral/Synthetic	2021/08/05		96	%	85 - 115
7501583	MPZ	RPD	Total Oil & Grease Mineral/Synthetic	2021/08/05	1.6		%	25
7501583	MPZ	Method Blank	Total Oil & Grease Mineral/Synthetic	2021/08/05	<0.50		mg/L	

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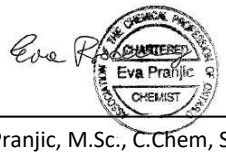
BV Labs Job #: C1L4469
Report Date: 2021/08/05

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

VALIDATION SIGNATURE PAGE

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



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

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