

### **APPENDIX E.2**

**Incinerator Ash Testing Results** 



Table E.2: Annual Inventory and Status of 2019 Produced Incinerator Ash

Catagoni	Mine Site	Mine Site	Mine Site	Milne Port	Milne Port	Milne Port
Category	Bins	~Volume m³	Status	Bins	~Volume m³	Status
Landfill	13	43.98	Landfilled	13	41.81	Landfilled
Hazardous	0	N/A	N/A	0	N/A	N/A
Total	13	43.98	N/A	13	41.81	N/A

### Table E.2: Annual Exceedances of 2019 Produced Incinerator Ash

Sample ID	Sample Date	Analyte	Minimum Detection Limit	Guideline	Result	Status
N/A		N/A	N/A	N/A	N/A	N/A

Note: TCLP residual analysis tests were performed by ALS Laboratories and compared to Process Residuals Discharge Minimum (GN, 2011) to determine if ash was Landfill compliant. 2019 Incinerator ash volume: bin volumes converted to m<sup>3</sup> and 'Full Bin' = 3.62 m<sup>3</sup> \* 0.9.



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 28-JAN-19

Report Date: 29-JAN-19 15:11 (MT)

Version: FINAL REV. 2

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2225505
Project P.O. #: 4500040417
Job Reference: MS-ASH-169

C of C Numbers: Legal Site Desc:

Comments:

29-JAN-2019 Amendment including Se, Ag, U metals reporting.

Rick Hawthorne Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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L2225505 CONTD....

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Version: FINAL RE\

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2225505-1 MS-ASH-169 Sampled By: KB/NC on 22-JAN-19 @ 16:00 Matrix: SOIL							
Sample Preparation							
Initial pH	12.16		0.10	pH units		29-JAN-19	R4473650
Final pH	7.32		0.10	pH units		29-JAN-19	
Physical Tests				<b>,</b>			
% Moisture	2.58		0.10	%	28-JAN-19	29-JAN-19	R4473475
TCLP Metals							
Arsenic (As)	0.061		0.050	mg/L		29-JAN-19	R4474510
Barium (Ba)	<0.50		0.50	mg/L		29-JAN-19	R4474510
Cadmium (Cd)	<0.0050		0.0050	mg/L		29-JAN-19	R4474510
Chromium (Cr)	1.62		0.050	mg/L		29-JAN-19	R4474510
Lead (Pb)	<0.050		0.050	mg/L		29-JAN-19	R4474510
Mercury (Hg)	<0.00010		0.00010	mg/L		29-JAN-19	R4474315
Selenium (Se)	<0.025		0.025	mg/L		29-JAN-19	R4474510
Silver (Ag)	<0.0050		0.0050	mg/L		29-JAN-19	R4474510
Uranium (U)	<0.25		0.25	mg/L		29-JAN-19	R4474510
Zinc (Zn)-Total	<1.0		1.0	mg/L		29-JAN-19	R4474510

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2225505 CONTD....

**Reference Information** 

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#### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Chromium (Cr)	MS-B	L2225505-1

### Sample Parameter Qualifier key listed:

Qualifier Description

MS-B Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

#### **Test Method References:**

Tool mounda morerone	· · ·		
ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	SW846 7470A
			EPA 1311 amples in strict accordance with US EPA Method 1311, "Toxicity chate concentration units (normally mg/L).
MET-TCLP-EXTRA-WT	Waste	O. Reg 347 Extra Metals on TCLP Leachate	EPA 200.8
MET-TCLP-WT	Waste	O.Reg 347 TCLP Leachable Metals	EPA 200.8
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

<sup>\*\*</sup> ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

### **Chain of Custody Numbers:**

### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2225505 Report Date: 29-JAN-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R44734 WG2978177-3 DU % Moisture		<b>L2225294-18</b> 15.3	15.6		%	1.4	20	29-JAN-19
<b>WG2978177-2 LC</b> 9 % Moisture	6		100.2		%		90-110	29-JAN-19
<b>WG2978177-1 MB</b> % Moisture			<0.10		%		0.1	29-JAN-19
HG-TCLP-WT	Waste							
Batch R44743	15							
WG2978780-3 DU Mercury (Hg)	P	<b>L2225505-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	29-JAN-19
<b>WG2978780-2 LC3</b> Mercury (Hg)	5		101.0		%		70-130	29-JAN-19
WG2978780-1 MB Mercury (Hg)			<0.00010		mg/L		0.0001	29-JAN-19
<b>WG2978780-4 MS</b> Mercury (Hg)		L2225505-1	92.9		%		50-140	29-JAN-19
MET-TCLP-EXTRA-WT	Waste							
Batch R44745	10							
WG2978707-4 DU	P	<b>WG2978707-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	29-JAN-19
<b>WG2978707-2 LC</b> 3 Zinc (Zn)-Total	6		95.4		%		70-130	29-JAN-19
WG2978707-1 MB Zinc (Zn)-Total			<1.0		mg/L		1	29-JAN-19
WG2978707-5 MS Zinc (Zn)-Total		WG2978707-3	94.0		%		70-130	29-JAN-19
MET-TCLP-WT	Waste							
Batch R44745								
WG2978707-4 DU		WG2978707-3						
Silver (Ag)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	29-JAN-19
Arsenic (As)		0.061	0.062		mg/L	1.3	50	29-JAN-19
Barium (Ba)		<0.50	<0.50	RPD-NA	mg/L	N/A	50	29-JAN-19
Cadmium (Cd)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	29-JAN-19
Chromium (Cr)		1.62	1.64		mg/L	1.2	50	29-JAN-19
Lead (Pb)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	29-JAN-19
Selenium (Se)		<0.025	<0.025	RPD-NA	mg/L	N/A	50	29-JAN-19



Workorder: L2225505 Report Date: 29-JAN-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT	Waste							
Batch R44745 WG2978707-4 DU Uranium (U)		<b>WG2978707-3</b> <0.25	<0.25	RPD-NA	mg/L	N/A	50	29-JAN-19
<b>WG2978707-2 LC</b> Silver (Ag)	s		103.0		%		70-130	29-JAN-19
Arsenic (As)			97.9		%		70-130	29-JAN-19
Barium (Ba)			100.0		%		70-130	29-JAN-19
Cadmium (Cd)			98.7		%		70-130	29-JAN-19
Chromium (Cr)			98.1		%		70-130	29-JAN-19
Lead (Pb)			98.1		%		70-130	29-JAN-19
Selenium (Se)			97.4		%		70-130	29-JAN-19
Uranium (U)			102.9		%		70-130	29-JAN-19
<b>WG2978707-1 ME</b> Silver (Ag)	3		<0.0050		mg/L		0.005	29-JAN-19
Arsenic (As)			<0.050		mg/L		0.05	29-JAN-19
Barium (Ba)			<0.50		mg/L		0.5	29-JAN-19
Cadmium (Cd)			<0.0050		mg/L		0.005	29-JAN-19
Chromium (Cr)			<0.050		mg/L		0.05	29-JAN-19
Lead (Pb)			<0.050		mg/L		0.05	29-JAN-19
Selenium (Se)			<0.025		mg/L		0.025	29-JAN-19
Uranium (U)			<0.25		mg/L		0.25	29-JAN-19
<b>WG2978707-5 MS</b> Silver (Ag)	3	WG2978707-3	116.4		%		FO 140	29-JAN-19
Arsenic (As)			101.6		%		50-140 50-140	29-JAN-19 29-JAN-19
Barium (Ba)			95.5		%		50-140	29-JAN-19
Cadmium (Cd)			98.0		%		50-140	29-JAN-19
Chromium (Cr)			N/A	MS-B	%		-	29-JAN-19
Lead (Pb)			95.2	WO B	%		50-140	29-JAN-19
Selenium (Se)			99.4		%		50-140	29-JAN-19
Uranium (U)			99.9		%		50-140	29-JAN-19

Workorder: L2225505 Report Date: 29-JAN-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

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# ALS Environmental

### Chain of Custody (COC) / Analytical Request Form



L2225505-COFC

COC Number: 15 -

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Canada Toll Free: 1 800 668 9878 www.alsglobal.com Report Format / Distribution Report To Contact and company name below will appear on the final report E&P TATs with your AM - surcharges will apply [Series Service Co. . . . . . Baffinland Iron Mines Corp. Select Report Format: 🗹 PDF 🔯 EXCEL 🗹 EDD (DIGITAL) Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply Company: Contact: William Bowden and Connor Devereaux Quality Control (QC) Report with Report 🔃 YES 🔲 NO 4 day [P4] 1 Business day [E1] 647-253-0596 EXT 6016 3 day [P3] Phone: Compare Results to Criteria on Report - provide details below if box checked Same Day, Weekend or Statutory holiday [E0] Company address below will appear on the final report 2 day [P2] 2275 Upper Middle Rd. E., Suite #300 Email 1 or Fax bimcore@alsglobal.com Date and Time Required for all E&P TATs: Street: Oakville, ON Email 2 bimww@alsglobal.com For tests that can not be performed according to the service level selected, you will be contacted. City/Province: L6H 0C3 Analysis Request Postal Code Email 3 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice To ☑ YES ☐ NO Invoice Distribution Same as Report To ☐ YES ☑ NO Copy of Invoice with Report Select Invoice Distribution: 

EMAIL 

MAIL 

FAX Company: Ernail 1 or Fax ap@baffinland.com Contact: Email 2 commercial@baffinland.com **Number of Containers** Oil and Gas Required Fields (client use) Project Information Se,Zn) - Moisti ALS Account # / Quote #: 23642 /Q42455 AFE/Cost Center: PO# MS-ASH-169 Job #: Major/Minor Code: Routing Code: PO / AFE: 4500040417 Requisitioner: LSD: Location: łg,Ag,As,Ba,Cd,Cr, ALS Lab Work Order # (lab use only) ALS Contact: Sampler: KB/NC Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (lab use only) (dd-mmm-yy) (hh:mm) (This description will appear on the report) MS-ASH-169 22-Jan-19 16:00 н 2 SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples<sup>1</sup> (client use) (electronic COC only) SIF Observations Are samples taken from a Regulated DW System? Ice Packs / Ice Cubes 🔲 Custody seal intact Yes ☐ YES ☑ NO Cooling Initiated INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C Are samples for human drinking water use? ☐ YES ☑ NO FINAL SHIPMENT RECEPTION (lab use, only) SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) Date: 22-Jan-19 Released By : Kendra Button Time: Received by: Date: Time: Received by 17:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 08-FEB-19

Report Date: 11-FEB-19 12:17 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2230310
Project P.O. #: 4500040417
Job Reference: MP-ASH-218

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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L2230310 CONTD....

PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2230310-1 MP-ASH-218 Sampled By: DR/MA on 29-JAN-19 @ 17:30 Matrix: WATER							
Sample Preparation							
Initial pH	11.50		0.10	pH units		09-FEB-19	R4498988
Final pH	7.73		0.10	pH units			R4498988
Physical Tests				'			
% Moisture	<0.10		0.10	%	08-FEB-19	09-FEB-19	R4496709
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		11-FEB-19	R4499227
Barium (Ba)	0.66		0.50	mg/L		11-FEB-19	R4499227
Boron (B)	3.7		2.5	mg/L		11-FEB-19	R4499227
Cadmium (Cd)	<0.0050		0.0050	mg/L		11-FEB-19	R4499227
Chromium (Cr)	0.528		0.050	mg/L		11-FEB-19	R4499227
Lead (Pb)	<0.050		0.050	mg/L		11-FEB-19	R4499227
Mercury (Hg)	<0.00010		0.00010	mg/L		11-FEB-19	R4499710
Selenium (Se)	<0.025		0.025	mg/L		11-FEB-19	R4499227
Silver (Ag)	<0.0050		0.0050	mg/L		11-FEB-19	R4499227
Uranium (U)	<0.25		0.25	mg/L		11-FEB-19	R4499227
Zinc (Zn)-Total	<1.0		1.0	mg/L			R4499227

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2230310 CONTD.... PAGE 3 of 3

Version: FINAL

### **Reference Information**

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	SW846 7470A
			EPA 1311 amples in strict accordance with US EPA Method 1311, "Toxicity chate concentration units (normally mg/L).
MET-TCLP-EXTRA-WT	Waste	O. Reg 347 Extra Metals on TCLP Leachate	EPA 200.8
MET-TCLP-WT	Waste	O.Reg 347 TCLP Leachable Metals	EPA 200.8
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

<sup>\*\*</sup> ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2230310 Report Date: 11-FEB-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R4	496709								
<b>WG2985437-3</b> % Moisture	DUP		<b>L2230240-5</b> 5.94	6.54		%	9.6	20	09-FEB-19
<b>WG2985437-2</b> % Moisture	LCS			100.3		%		90-110	09-FEB-19
<b>WG2985437-1</b> % Moisture	МВ			<0.10		%		0.1	09-FEB-19
HG-TCLP-WT		Waste							
Batch R4	499710								
<b>WG2986466-3</b> Mercury (Hg)	DUP		<b>L2230244-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	11-FEB-19
<b>WG2986466-2</b> Mercury (Hg)	LCS			98.2		%		70-130	11-FEB-19
<b>WG2986466-1</b> Mercury (Hg)	MB			<0.00010		mg/L		0.0001	11-FEB-19
<b>WG2986466-4</b> Mercury (Hg)	MS		L2230244-1	95.7		%		50-140	11-FEB-19
MET-TCLP-EXTRA	-WT	Waste							
Batch R4	499227								
<b>WG2986334-4</b> Zinc (Zn)-Total	DUP		<b>WG2986334-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	11-FEB-19
<b>WG2986334-2</b> Zinc (Zn)-Total	LCS			115.6		%		70-130	11-FEB-19
<b>WG2986334-1</b> Zinc (Zn)-Total	МВ			<1.0		mg/L		1	11-FEB-19
<b>WG2986334-5</b> Zinc (Zn)-Total	MS		WG2986334-3	91.7		%		70-130	11-FEB-19
MET-TCLP-WT		Waste							
Batch R4	499227								
WG2986334-4	DUP		WG2986334-3						
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	11-FEB-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	11-FEB-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	11-FEB-19
Barium (Ba)			<0.50	<0.50	RPD-NA	mg/L	N/A	50	11-FEB-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	11-FEB-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	11-FEB-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	11-FEB-19



Workorder: L2230310 Report Date: 11-FEB-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	499227								
WG2986334-4	DUP		WG2986334-3			,,			
Selenium (Se)			<0.025	<0.025	RPD-NA	mg/L	N/A	50	11-FEB-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	11-FEB-19
<b>WG2986334-2</b> Silver (Ag)	LCS			102.3		%		70-130	11-FEB-19
Arsenic (As)				102.1		%		70-130	11-FEB-19
Boron (B)				96.1		%		70-130	11-FEB-19
Barium (Ba)				103.9		%		70-130	11-FEB-19
Cadmium (Cd)				98.9		%		70-130	11-FEB-19
Chromium (Cr)				102.8		%		70-130	11-FEB-19
Lead (Pb)				100.3		%		70-130	11-FEB-19
Selenium (Se)				100.6		%		70-130	11-FEB-19
Uranium (U)				99.2		%		70-130	11-FEB-19
<b>WG2986334-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	11-FEB-19
Arsenic (As)				<0.050		mg/L		0.05	11-FEB-19
Boron (B)				<2.5		mg/L		2.5	11-FEB-19
Barium (Ba)				<0.50		mg/L		0.5	11-FEB-19
Cadmium (Cd)				<0.0050		mg/L		0.005	11-FEB-19
Chromium (Cr)				<0.050		mg/L		0.05	11-FEB-19
Lead (Pb)				<0.050		mg/L		0.05	11-FEB-19
Selenium (Se)				<0.025		mg/L		0.025	11-FEB-19
Uranium (U)				<0.25		mg/L		0.25	11-FEB-19
<b>WG2986334-5</b> Silver (Ag)	MS		WG2986334-3	109.7		%		50-140	11-FEB-19
Arsenic (As)				97.2		%		50-140	11-FEB-19
Boron (B)				87.8		%		50-140	11-FEB-19
Barium (Ba)				98.4		%		50-140	11-FEB-19
Cadmium (Cd)				94.5		%		50-140	11-FEB-19
Chromium (Cr)				95.9		%		50-140	11-FEB-19
Lead (Pb)				92.5		%		50-140	11-FEB-19
Selenium (Se)				96.7		%		50-140	11-FEB-19
Uranium (U)				91.3		%		50-140	11-FEB-19
								-	-

Workorder: L2230310 Report Date: 11-FEB-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3



# Chain of Custody (COC) / Analytical Request Form

Canada Toli Free: 1 800 668 9878



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	www.alsglobal.com			1	[2250510 00.0																	
Report To	Contact and compa	ny name below will app	oear on the final repo	ort		Report Form						٨.	e confirm all E&P TATs with your AM - surcharges will apply									
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City/Province:	Oakville, ON				Email 2	bimww@alsgloba	al.com		For tes	ts that c	n not be	performe	ed accord	ling to th	e servic	e level :	selected	, you will	be conta	cted.		
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Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 14-MAR-19

Report Date: 19-MAR-19 16:48 (MT)

Version: FINAL REV. 2

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2244538
Project P.O. #: 4500057496
Job Reference: MS-ASH-170

C of C Numbers: Legal Site Desc:

Comments:

19-MAR-2019 Revised Job ID as per correspondence.

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2244538 CONTD.... PAGE 2 of 3

Version: FINAL RE\

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2244538-1 MS-ASH-170 Sampled By: KB/NC on 12-MAR-19 @ 15:49 Matrix: SOIL							
Sample Preparation							
Initial pH	11.98		0.10	pH units		16-MAR-19	R4568131
Final pH	8.50		0.10	pH units		16-MAR-19	
Physical Tests				·			
% Moisture	0.47		0.10	%	18-MAR-19	19-MAR-19	R4569908
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		18-MAR-19	R4568535
Barium (Ba)	<0.50		0.50	mg/L		18-MAR-19	R4568535
Boron (B)	3.1		2.5	mg/L		18-MAR-19	R4568535
Cadmium (Cd)	< 0.0050		0.0050	mg/L		18-MAR-19	R4568535
Chromium (Cr)	2.06		0.050	mg/L		18-MAR-19	R4568535
Lead (Pb)	<0.050		0.050	mg/L		18-MAR-19	R4568535
Mercury (Hg)	<0.00010		0.00010	mg/L		18-MAR-19	R4568582
Selenium (Se)	<0.025		0.025	mg/L		18-MAR-19	R4568535
Silver (Ag)	<0.0050		0.0050	mg/L		18-MAR-19	R4568535
Uranium (U)	<0.25		0.25	mg/L		18-MAR-19	R4568535
Zinc (Zn)-Total	<1.0		1.0	mg/L		18-MAR-19	R4568535

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2244538 CONTD.... PAGE 3 of 3

Version: FINAL RE\

### **Reference Information**

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	SW846 7470A
			EPA 1311 amples in strict accordance with US EPA Method 1311, "Toxicity chate concentration units (normally mg/L).
MET-TCLP-EXTRA-WT	Waste	O. Reg 347 Extra Metals on TCLP Leachate	EPA 200.8
MET-TCLP-WT	Waste	O.Reg 347 TCLP Leachable Metals	EPA 200.8
MOISTURE-WT	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

<sup>\*\*</sup> ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2244538 Report Date: 19-MAR-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R45	569908								
<b>WG3008217-3</b> % Moisture	DUP		<b>L2244705-1</b> 7.66	9.10		%	17	20	19-MAR-19
<b>WG3008217-2</b> % Moisture	LCS			99.9		%		90-110	19-MAR-19
<b>WG3008217-1</b> % Moisture	MB			<0.10		%		0.1	19-MAR-19
HG-TCLP-WT		Waste							
Batch R45	568582								
<b>WG3008207-3</b> Mercury (Hg)	DUP		<b>L2244259-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	18-MAR-19
<b>WG3008207-2</b> Mercury (Hg)	LCS			97.2		%		70-130	18-MAR-19
<b>WG3008207-1</b> Mercury (Hg)	MB			<0.00010		mg/L		0.0001	18-MAR-19
<b>WG3008207-4</b> Mercury (Hg)	MS		L2244259-1	102.7		%		50-140	18-MAR-19
MET-TCLP-EXTRA-	-WT	Waste							
Batch R45	568535								
<b>WG3008128-4</b> Zinc (Zn)-Total	DUP		<b>WG3008128-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	18-MAR-19
<b>WG3008128-2</b> Zinc (Zn)-Total	LCS			94.5		%		70-130	18-MAR-19
<b>WG3008128-1</b> Zinc (Zn)-Total	MB			<1.0		mg/L		1	18-MAR-19
<b>WG3008128-5</b> Zinc (Zn)-Total	MS		WG3008128-3	95.0		%		70-130	18-MAR-19
MET-TCLP-WT		Waste							
Batch R45	568535								
WG3008128-4	DUP		WG3008128-3						
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	18-MAR-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	18-MAR-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	18-MAR-19
Barium (Ba)			0.52	0.51		mg/L	0.6	50	18-MAR-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	18-MAR-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	18-MAR-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	18-MAR-19



Workorder: L2244538 Report Date: 19-MAR-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	568535								
<b>WG3008128-4</b> Selenium (Se)	DUP		<b>WG3008128-3</b> < 0.025	<0.025	RPD-NA	mg/L	N/A	50	18-MAR-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	18-MAR-19
<b>WG3008128-2</b> Silver (Ag)	LCS			105.9		%		70-130	18-MAR-19
Arsenic (As)				99.4		%		70-130	18-MAR-19
Boron (B)				96.7		%		70-130	18-MAR-19
Barium (Ba)				103.4		%		70-130	18-MAR-19
Cadmium (Cd)				102.1		%		70-130	18-MAR-19
Chromium (Cr)				99.5		%		70-130	18-MAR-19
Lead (Pb)				105.8		%		70-130	18-MAR-19
Selenium (Se)				95.6		%		70-130	18-MAR-19
Uranium (U)				106.3		%		70-130	18-MAR-19
<b>WG3008128-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	18-MAR-19
Arsenic (As)				< 0.050		mg/L		0.05	18-MAR-19
Boron (B)				<2.5		mg/L		2.5	18-MAR-19
Barium (Ba)				<0.50		mg/L		0.5	18-MAR-19
Cadmium (Cd)				<0.0050		mg/L		0.005	18-MAR-19
Chromium (Cr)				< 0.050		mg/L		0.05	18-MAR-19
Lead (Pb)				<0.050		mg/L		0.05	18-MAR-19
Selenium (Se)				<0.025		mg/L		0.025	18-MAR-19
Uranium (U)				<0.25		mg/L		0.25	18-MAR-19
WG3008128-5	MS		WG3008128-3						
Silver (Ag)				120.9		%		50-140	18-MAR-19
Arsenic (As)				102.3		%		50-140	18-MAR-19
Boron (B)				90.1		%		50-140	18-MAR-19
Barium (Ba)				103.1		%		50-140	18-MAR-19
Cadmium (Cd)				100.2		%		50-140	18-MAR-19
Chromium (Cr)				100.3		%		50-140	18-MAR-19
Lead (Pb)				100.9		%		50-140	18-MAR-19
Selenium (Se)				98.2		%		50-140	18-MAR-19
Uranium (U)				101.6		%		50-140	18-MAR-19

Page 3 of 3

Workorder: L2244538 Report Date: 19-MAR-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

# Environmental

### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2244538-COFC

COC Number: 15 -

Page

	www.alsglobal.com														i.e.								
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Street:	2275 Upper Middle Rd	l. E., Suit	e #300			Email 1 or Fax bimcore@alsglobal.com					Date a	nd Time	Require	d for all	E&P TA	TATS: FOR THE PROPERTY.							
City/Province:	Oakville, ON					Email 2 birnww@alsglobal.com Fo					For tests that can not be performed according to the service level selected, you will be contacted.												
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Drinking Water (DW) Samples <sup>1</sup> (client use)  Special Instructions / Specify C								king on the drop-	down list below				_	LE CO					D (lab	_	nly)		
					(elec	tronic COC only)			Froze		_				F Ob:				_	_			
Are samples taken from a Regulated DW System?								<u> </u>															
YES V NO								Cooling Initiated															
Are samples for human drinking water use?				[					JNIITI	IAL COC	LER TEA	MPERAT	URES °C	;	1			OLER	TEMPER/	TURES °C			
☐ YES ☑ NO								<u> </u>								<i>8</i> 0		$\Psi$					
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				I=-:-					AL SHI	PMEN	IT RE	ECEF	тюй (	lab us	e only)	I			
Released By : Stephanie Sawchuk Date : 12-Mar-19 Time: 17:0					Time: 17:00					Time: Received by: S - Date: /Mar/8019							[ime: 17						



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 01-APR-19

Report Date: 04-APR-19 11:35 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2251554
Project P.O. #: 4500057496
Job Reference: MS-ASH-171

C of C Numbers: Legal Site Desc:

Rick Hawthorne

Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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L2251554 CONTD....

PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2251554-1 MS-ASH-171 Sampled By: CP on 25-MAR-19 @ 16:00 Matrix: SOIL							
Sample Preparation							
Initial pH	12.26		0.10	pH units		03-APR-19	R4589796
Final pH	5.97		0.10	pH units		03-APR-19	
Physical Tests				'			
% Moisture	10.2		0.10	%	02-APR-19	03-APR-19	R4589310
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		03-APR-19	R4590155
Barium (Ba)	<0.50		0.50	mg/L		03-APR-19	R4590155
Boron (B)	3.5		2.5	mg/L		03-APR-19	R4590155
Cadmium (Cd)	< 0.0050		0.0050	mg/L		03-APR-19	R4590155
Chromium (Cr)	< 0.050		0.050	mg/L		03-APR-19	R4590155
Lead (Pb)	< 0.050		0.050	mg/L		03-APR-19	R4590155
Mercury (Hg)	<0.00010		0.00010	mg/L		03-APR-19	R4589616
Selenium (Se)	<0.025		0.025	mg/L		03-APR-19	R4590155
Silver (Ag)	<0.0050		0.0050	mg/L		03-APR-19	R4590155
Uranium (U)	<0.25		0.25	mg/L		03-APR-19	R4590155
Zinc (Zn)-Total	<1.0		1.0	mg/L		03-APR-19	R4590155

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2251554 CONTD....

Reference Information

PAGE 3 of 3
Version: FINAL

### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	SW846 7470A
3	-		EPA 1311 amples in strict accordance with US EPA Method 1311, "Toxicity thate concentration units (normally mg/L).
MET-TCLP-EXTRA-WT	Waste	O. Reg 347 Extra Metals on TCLP Leachate	EPA 200.8
MET-TCLP-WT	Waste	O.Reg 347 TCLP Leachable Metals	EPA 200.8
	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)

<sup>\*\*</sup> ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2251554 Report Date: 04-APR-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
	589310								
WG3018903-3 % Moisture	DUP		<b>L2251529-20</b> 5.34	5.71		%	6.7	20	03-APR-19
<b>WG3018903-2</b> % Moisture	LCS			100.2		%		90-110	03-APR-19
<b>WG3018903-1</b> % Moisture	MB			<0.10		%		0.1	03-APR-19
HG-TCLP-WT		Waste							
Batch R4	589616								
<b>WG3019944-3</b> Mercury (Hg)	DUP		<b>L2251463-2</b> < 0.00010	<0.00010	RPD-NA	mg/L	N/A	50	03-APR-19
<b>WG3019944-2</b> Mercury (Hg)	LCS			99.8		%		70-130	03-APR-19
<b>WG3019944-1</b> Mercury (Hg)	МВ			<0.00010		mg/L		0.0001	03-APR-19
<b>WG3019944-4</b> Mercury (Hg)	MS		L2251463-2	94.2		%		50-140	03-APR-19
MET-TCLP-EXTRA	-WT	Waste							
Batch R4	590155								
<b>WG3020223-4</b> Zinc (Zn)-Total	DUP		<b>WG3020223-3</b> 1.9	1.9		mg/L	2.0	30	03-APR-19
<b>WG3020223-2</b> Zinc (Zn)-Total	LCS			97.1		%		70-130	03-APR-19
<b>WG3020223-1</b> Zinc (Zn)-Total	MB			<1.0		mg/L		1	03-APR-19
<b>WG3020223-5</b> Zinc (Zn)-Total	MS		WG3020223-3	105.8		%		70-130	03-APR-19
MET-TCLP-WT		Waste							-
	590155								
WG3020223-4	DUP		WG3020223-3						
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	03-APR-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	03-APR-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	03-APR-19
Barium (Ba)			0.85	0.85		mg/L	0.2	50	03-APR-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	03-APR-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	03-APR-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	03-APR-19



Workorder: L2251554 Report Date: 04-APR-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	590155								
WG3020223-4 Selenium (Se)	DUP		<b>WG3020223</b> -3	<b>3</b> <0.025	DDD NA	ma/l	N1/A	50	00 APP 40
					RPD-NA	mg/L	N/A	50	03-APR-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	03-APR-19
<b>WG3020223-2</b> Silver (Ag)	LCS			93.6		%		70-130	03-APR-19
Arsenic (As)				98.5		%		70-130	03-APR-19
Boron (B)				98.1		%		70-130	03-APR-19
Barium (Ba)				96.0		%		70-130	03-APR-19
Cadmium (Cd)				94.7		%		70-130	03-APR-19
Chromium (Cr)				97.3		%		70-130	03-APR-19
Lead (Pb)				102.6		%		70-130	03-APR-19
Selenium (Se)				101.0		%		70-130	03-APR-19
Uranium (U)				90.5		%		70-130	03-APR-19
<b>WG3020223-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	03-APR-19
Arsenic (As)				<0.050		mg/L		0.05	03-APR-19
Boron (B)				<2.5		mg/L		2.5	03-APR-19
Barium (Ba)				<0.50		mg/L		0.5	03-APR-19
Cadmium (Cd)				<0.0050		mg/L		0.005	03-APR-19
Chromium (Cr)				< 0.050		mg/L		0.05	03-APR-19
Lead (Pb)				<0.050		mg/L		0.05	03-APR-19
Selenium (Se)				<0.025		mg/L		0.025	03-APR-19
Uranium (U)				<0.25		mg/L		0.25	03-APR-19
<b>WG3020223-5</b> Silver (Ag)	MS		WG3020223-	<b>3</b> 113.1		%		50-140	03-APR-19
Arsenic (As)				111.9		%		50-140	03-AFR-19
Boron (B)				102.6		%		50-140	03-AFR-19
Barium (Ba)				100.8		%		50-140	03-AFR-19
Cadmium (Cd)				102.4		%		50-140	03-APR-19
Chromium (Cr)				107.1		%		50-140	03-APR-19
Lead (Pb)				105.7		%		50-140	03-APR-19
Selenium (Se)				111.1		%		50-140	03-APR-19
Uranium (U)				107.8		%		50-140	03-APR-19

Workorder: L2251554 Report Date: 04-APR-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3

# Environmental

### Chain of Custody (COC) / Analytical Request Form

L2251554-COFC

5 COC Number: 15 -

Canada Toll Free: 1 800 668 9878 www.alsglobal.com Contact and company name below will appear on the final report Report To Report Format / Distribution Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply Company: Baffinland Iron Mines Corp. Select Report Format: PDF EXCEL EDD (DIGITAL) Standard TAT if received by 3 pm - business days - no surcharges apply Regular [R] Contact: William Bowden and Connor Devereaux 4 day [P4] 1 Business day [E1] Phone: 647-253-0596 EXT 6016 Compare Results to Criteria on Report - provide details below if box checked 3 day [P3] П Same Day, Weekend or Company address below will appear on the final report ☑ EMAIL ☐ MAIL ☐ FAX 2 day [P2] Statutory holiday [E0] 2275 Upper Middle Rd. E., Suite #300 Email 1 or Fax bimcore@alsglobal.com Street: Date and Time Required for all E&P TATs: the course of Petrole City/Province: Oakville, ON bimww@alsglobal.com Email 2 For tests that can not be performed according to the service level selected, you will be contacted. L6H 0C3 Postal Code: Email 3 **Analysis Request** Invoice To Same as Report To ✓ YES □ NO Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Copy of Invoice with Report ☐ YES ☑ NO Select Invoice Distribution: 

EMAIL 

MAIL 

FAX Company: Email 1 or Fax ap@baffinland.com Contact: Email 2 commercial@baffinland.com **Number of Containers Project Information** Oil and Gas Required Fields (client use) Se,Zn) ALS Account # / Quote #: 23642 /Q42455 AFE/Cost Center: Cd,Cr,Pb Job #: MS-ASH-171 Mainr/Minor Code Routing Code: PO / AFE: 4500057496 Requisitioner: LSD: Location: ALS Lab Work Order # (lab use only) ALS Contact: CP Sampler: ALS Sample # Sample Identification and/or Coordinates Date Time Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) MS-ASH-171 25-Mar-19 16:00 В Soil SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples1 (client use) (electronic COC only) П SIF Observations П Frozen Are samples taken from a Regulated DW System? П Ice Packs Ice Cubes Custody seal intact Yes YES I NO Cooling Initiated Are samples for human drinking water use? ▼ INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C ☐ YES ☑ NO SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) Released By: Kendra Button Date: 26-Mar-19 Time: Received by: Date: Time: Received by:

17:00



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 07-MAY-19

Report Date: 09-MAY-19 13:24 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2268369
Project P.O. #: 4500057496
Job Reference: MP-ASH-219

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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L2268369 CONTD....

PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

L2268389-1 MP-ASH-219   Sampled By: BC/SS on 03-MAY-19 @ 13:15	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Sample Preparation         11.62         0.10         pH units         09-MAY-19         R46           Final pH         11.31         0.10         pH units         09-MAY-19         R46           Physical Tests         08-MAY-19         09-MAY-19         R46           W Moisture         0.10         0.10         %         08-MAY-19         09-MAY-19         R46           TCLP Metals         0.050         0.050         mg/L         09-MAY-19         R46           Barium (Ba)         <0.050	Sampled By: BC/SS on 03-MAY-19 @ 13:15							
Initial pH								
Final pH       11.31       0.10       pH units       09-MAY-19       R46         Physical Tests       <0.10		11.62		0.10	pH units		09-MAY-19	R4629280
Physical Tests         0.10       %       08-MAY-19       09-MAY-19       R46         TCLP Metals         0.050       mg/L       09-MAY-19       R46         Barium (Ba)       <0.50       0.50       mg/L       09-MAY-19       R46         Boron (B)       <2.5       2.5       mg/L       09-MAY-19       R46         Cadmium (Cd)       <0.0050       0.050       mg/L       09-MAY-19       R46         Chromium (Cr)       5.70       0.050       mg/L       09-MAY-19       R46         Lead (Pb)       <0.050       0.050       mg/L       09-MAY-19       R46         Mercury (Hg)       <0.00010       0.00010       mg/L       09-MAY-19       R46         Selenium (Se)       <0.025       0.025       mg/L       09-MAY-19       R46         Silver (Ag)       <0.0050       0.0050       mg/L       09-MAY-19       R46         Uranium (U)       <0.025       0.25       mg/L       09-MAY-19       R46								
TCLP Metals <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
Arsenic (As)       <0.050		<0.10		0.10	%	08-MAY-19	09-MAY-19	R4628885
Barium (Ba)       <0.50	TCLP Metals							
Boron (B)       <2.5	Arsenic (As)	<0.050		0.050	mg/L		09-MAY-19	R4629322
Cadmium (Cd)       <0.0050	Barium (Ba)	<0.50		0.50	mg/L		09-MAY-19	R4629322
Chromium (Cr)         5.70         0.050         mg/L         09-MAY-19         R46           Lead (Pb)         <0.050	Boron (B)	<2.5		2.5	mg/L		09-MAY-19	R4629322
Lead (Pb)       <0.050	Cadmium (Cd)	<0.0050		0.0050	mg/L		09-MAY-19	R4629322
Mercury (Hg)         <0.00010	Chromium (Cr)	5.70		0.050	mg/L		09-MAY-19	R4629322
Selenium (Se)       <0.025	Lead (Pb)	<0.050		0.050	mg/L		09-MAY-19	R4629322
Silver (Ag)       <0.0050	Mercury (Hg)	<0.00010		0.00010	mg/L		09-MAY-19	R4629112
Uranium (U)         <0.25	Selenium (Se)	<0.025		0.025	mg/L		09-MAY-19	R4629322
	Silver (Ag)	<0.0050		0.0050	mg/L		09-MAY-19	R4629322
Zinc (Zn)-Total < 1.0 1.0 mg/L 09-MAY-19 R46	Uranium (U)	<0.25		0.25	mg/L		09-MAY-19	R4629322
	Zinc (Zn)-Total	<1.0		1.0	mg/L		09-MAY-19	R4629322

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2268369 CONTD.... PAGE 3 of 3

Version: FINAL

### **Reference Information**

**Test Method References:** 

**ALS Test Code** Matrix Method Reference\*\* **Test Description** Mercury (CVAA) for O.Reg 347 **HG-TCLP-WT** Waste SW846 7470A

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 **EPA 1311** 

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP **EPA 200.8** 

Leachate

MET-TCLP-WT O.Reg 347 TCLP Leachable Metals Waste FPA 200.8

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2268369 Report Date: 09-MAY-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R46	§28885								
<b>WG3044067-3</b> % Moisture	DUP		<b>L2268474-1</b> 15.8	18.2		%	14	20	09-MAY-19
<b>WG3044067-2</b> % Moisture	LCS			99.5		%		90-110	09-MAY-19
<b>WG3044067-1</b> % Moisture	MB			<0.10		%		0.1	09-MAY-19
HG-TCLP-WT		Waste							
Batch R46	329112								
<b>WG3045236-3</b> Mercury (Hg)	DUP		<b>L2268368-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	09-MAY-19
<b>WG3045236-2</b> Mercury (Hg)	LCS			108.0		%		70-130	09-MAY-19
<b>WG3045236-1</b> Mercury (Hg)	MB			<0.00010		mg/L		0.0001	09-MAY-19
<b>WG3045236-4</b> Mercury (Hg)	MS		L2268368-1	112.7		%		50-140	09-MAY-19
MET-TCLP-EXTRA-	WT	Waste							
Batch R46	529322								
<b>WG3045142-4</b> Zinc (Zn)-Total	DUP		<b>WG3045142-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	09-MAY-19
<b>WG3045142-2</b> Zinc (Zn)-Total	LCS			100.0		%		70-130	09-MAY-19
<b>WG3045142-1</b> Zinc (Zn)-Total	MB			<1.0		mg/L		1	09-MAY-19
WG3045142-5	MS		WG3045142-3						
Zinc (Zn)-Total				101.9		%		70-130	09-MAY-19
MET-TCLP-WT		Waste							
	329322								
<b>WG3045142-4</b> Silver (Ag)	DUP		<b>WG3045142-3</b> < 0.0050	<0.0050	RPD-NA	mg/L	N/A	50	09-MAY-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	09-MAY-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	09-MAY-19
Barium (Ba)			<0.50	<0.50	RPD-NA	mg/L	N/A	50	09-MAY-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	09-MAY-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	09-MAY-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	09-MAY-19



Workorder: L2268369 Report Date: 09-MAY-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	629322								
WG3045142-4	DUP		WG3045142-3		000 114	~~ ~ /l	<b>N</b> 1/A	<b>5</b> 0	
Selenium (Se)			<0.025	<0.025	RPD-NA	mg/L	N/A	50	09-MAY-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	09-MAY-19
<b>WG3045142-2</b> Silver (Ag)	LCS			101.8		%		70-130	09-MAY-19
Arsenic (As)				99.9		%		70-130	09-MAY-19
Boron (B)				103.7		%		70-130	09-MAY-19
Barium (Ba)				94.6		%		70-130	09-MAY-19
Cadmium (Cd)				95.1		%		70-130	09-MAY-19
Chromium (Cr)				103.0		%		70-130	09-MAY-19
Lead (Pb)				95.7		%		70-130	09-MAY-19
Selenium (Se)				97.7		%		70-130	09-MAY-19
Uranium (U)				96.2		%		70-130	09-MAY-19
<b>WG3045142-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	09-MAY-19
Arsenic (As)				<0.050		mg/L		0.05	09-MAY-19
Boron (B)				<2.5		mg/L		2.5	09-MAY-19
Barium (Ba)				<0.50		mg/L		0.5	09-MAY-19
Cadmium (Cd)				<0.0050		mg/L		0.005	09-MAY-19
Chromium (Cr)				< 0.050		mg/L		0.05	09-MAY-19
Lead (Pb)				< 0.050		mg/L		0.05	09-MAY-19
Selenium (Se)				<0.025		mg/L		0.025	09-MAY-19
Uranium (U)				<0.25		mg/L		0.25	09-MAY-19
<b>WG3045142-5</b> Silver (Ag)	MS		WG3045142-3	129.9		%		50-140	09-MAY-19
Arsenic (As)				109.0		%		50-140	09-MAY-19
Boron (B)				108.7		%		50-140	09-MAY-19
Barium (Ba)				107.3		%		50-140	09-MAY-19
Cadmium (Cd)				105.3		%		50-140	09-MAY-19
Chromium (Cr)				112.1		%		50-140	09-MAY-19
Lead (Pb)				101.1		%		50-140	09-MAY-19
Selenium (Se)				106.6		%		50-140	09-MAY-19
Uranium (U)				105.5		%		50-140	09-MAY-19
								-	-

Page 3 of 3

Workorder: L2268369 Report Date: 09-MAY-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

# Environmental

# Chain of Custody (COC) / Analytical **Request Form**

Canada Toll Free: 1 800 668 9878

L2268369-COFC

COC Number: 15 -

	www.alsglobal.com	1											Ė,	jā.								
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Street:	2275 Upper Middle Ro	1. E., Suite #300			Email 1 or Fax	bimcore@alsgloba	il.com		Г	Date a	nd Time	Require	ed for all E	E&P TAT	s:	$\top$	~	* (4)	car 1-94		if:	1
City/Province:	Oakville, ON				Email 2	bimww@alsglobal.	com		For tes	sis that c	an not be	e perform	ed accordi	ng to the	service	level sel	lected, y	ou will b	e contact	led.		1
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re samples taken from a Regulated DW System?					(élec	ronic COC only)			Froze	en			_	SIF	Obse	ervatio	ns	Yes		No		1
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Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 23-MAY-19

Report Date: 27-MAY-19 11:01 (MT)

Version: FINAL

Client Phone: 647-253-0596

# **Certificate of Analysis**

 Lab Work Order #:
 L2277728

 Project P.O. #:
 4500057496

 Job Reference:
 MS-ASH-173

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2277728 CONTD....

PAGE 2 of 3 Version: FINAL

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2277728-1 MS-ASH-17 Sampled By: KB/NC on 16-MAY-19 @ 13:00 Matrix: SOIL							
Sample Preparation							
Initial pH	11.47		0.10	pH units		24-MAY-19	R4644493
Final pH	5.66		0.10	pH units		24-MAY-19	
Physical Tests				·			
% Moisture	<0.10		0.10	%	23-MAY-19	24-MAY-19	R4641761
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		24-MAY-19	R4642756
Barium (Ba)	<0.50		0.50	mg/L		24-MAY-19	R4642756
Boron (B)	<2.5		2.5	mg/L		24-MAY-19	R4642756
Cadmium (Cd)	0.0144		0.0050	mg/L		24-MAY-19	R4642756
Chromium (Cr)	<0.050		0.050	mg/L		24-MAY-19	R4642756
Lead (Pb)	<0.050		0.050	mg/L		24-MAY-19	R4642756
Mercury (Hg)	<0.00010		0.00010	mg/L		24-MAY-19	R4642507
Selenium (Se)	<0.025		0.025	mg/L		24-MAY-19	R4642756
Silver (Ag)	<0.0050		0.0050	mg/L		24-MAY-19	R4642756
Uranium (U)	<0.25		0.25	mg/L		24-MAY-19	R4642756
Zinc (Zn)-Total	27.2		1.0	mg/L		24-MAY-19	R4642756
		1			l		

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2277728 CONTD....

PAGE 3 of 3 Version: FINAL

## **Reference Information**

### **Test Method References:**

MET-TCLP-EXTRA-WT

ALS Test Code Matrix Test Description Method Reference\*\*

HG-TCLP-WT Waste Mercury (CVAA) for O.Reg 347 EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

Characteristic Leadning Flocedure (TCLF). Test results are reported in leadnate concentration units (normally

O. Reg 347 Extra Metals on TCLP

I eachate

Waste

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

**EPA 200.8** 

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2277728 Report Date: 27-MAY-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
	641761								
<b>WG3057186-3</b> % Moisture	DUP		<b>L2278051-1</b> 13.3	13.1		%	1.5	20	24-MAY-19
<b>WG3057186-2</b> % Moisture	LCS			99.8		%		90-110	24-MAY-19
<b>WG3057186-1</b> % Moisture	МВ			<0.10		%		0.1	24-MAY-19
HG-TCLP-WT		Waste							
Batch R4	642507								
<b>WG3057525-7</b> Mercury (Hg)	DUP		<b>WG3057525-9</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	24-MAY-19
<b>WG3057525-6</b> Mercury (Hg)	LCS			100.0		%		70-130	24-MAY-19
<b>WG3057525-5</b> Mercury (Hg)	МВ			<0.00010		mg/L		0.0001	24-MAY-19
<b>WG3057525-8</b> Mercury (Hg)	MS		WG3057525-9	96.1		%		50-140	24-MAY-19
MET-TCLP-EXTRA	-WT	Waste						000	
	642756	ridoto							
WG3057403-4 Zinc (Zn)-Total	DUP		<b>WG3057403-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	24-MAY-19
<b>WG3057403-2</b> Zinc (Zn)-Total	LCS			107.0		%		70-130	24-MAY-19
WG3057403-1 Zinc (Zn)-Total	МВ			<1.0				1	
WG3057403-5	MS		WG3057403-3	<1.0		mg/L		1	24-MAY-19
Zinc (Zn)-Total	IVIO		VV G 3U 3 / 4U 3-3	101.6		%		70-130	24-MAY-19
MET-TCLP-WT		Waste							
Batch R4	642756								
<b>WG3057403-4</b> Silver (Ag)	DUP		<b>WG3057403-3</b> < 0.0050	<0.0050	DDD NA	mg/L	N/A	50	24-MAV 10
Arsenic (As)			<0.050	<0.050	RPD-NA RPD-NA	mg/L	N/A N/A	50 50	24-MAY-19 24-MAY-19
Boron (B)			<2.5	<2.5	RPD-NA RPD-NA	mg/L	N/A N/A	50	24-MAY-19 24-MAY-19
Barium (Ba)			<0.50	<0.50	RPD-NA RPD-NA	mg/L	N/A N/A	50	24-MAY-19 24-MAY-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	24-MAY-19 24-MAY-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	24-MAY-19 24-MAY-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	24-MAY-19 24-MAY-19
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Workorder: L2277728 Report Date: 27-MAY-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	642756								
<b>WG3057403-4</b> Selenium (Se)	DUP		<b>WG3057403-3</b> <0.025	<0.025	RPD-NA	mg/L	N/A	50	24-MAY-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	24-MAY-19
<b>WG3057403-2</b> Silver (Ag)	LCS			97.8		%		70-130	24-MAY-19
Arsenic (As)				104.0		%		70-130	24-MAY-19
Boron (B)				88.2		%		70-130	24-MAY-19
Barium (Ba)				99.4		%		70-130	24-MAY-19
Cadmium (Cd)				100.9		%		70-130	24-MAY-19
Chromium (Cr)				99.6		%		70-130	24-MAY-19
Lead (Pb)				98.5		%		70-130	24-MAY-19
Selenium (Se)				110.0		%		70-130	24-MAY-19
Uranium (U)				97.7		%		70-130	24-MAY-19
<b>WG3057403-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	24-MAY-19
Arsenic (As)				<0.050		mg/L		0.05	24-MAY-19
Boron (B)				<2.5		mg/L		2.5	24-MAY-19
Barium (Ba)				<0.50		mg/L		0.5	24-MAY-19
Cadmium (Cd)				<0.0050		mg/L		0.005	24-MAY-19
Chromium (Cr)				<0.050		mg/L		0.05	24-MAY-19
Lead (Pb)				<0.050		mg/L		0.05	24-MAY-19
Selenium (Se)				<0.025		mg/L		0.025	24-MAY-19
Uranium (U)				<0.25		mg/L		0.25	24-MAY-19
<b>WG3057403-5</b> Silver (Ag)	MS		WG3057403-3	114.7		%		50-140	24-MAY-19
Arsenic (As)				104.0		%		50-140	
Boron (B)				88.4		%		50-140	24-MAY-19 24-MAY-19
Barium (Ba)				99.1		%		50-140	24-MAY-19 24-MAY-19
Cadmium (Cd)				98.5		%		50-140	24-MAY-19
Chromium (Cr)				97.9		%		50-140	24-MAY-19
Lead (Pb)				95.9		%		50-140	24-MAY-19
Selenium (Se)				108.1		%		50-140	24-MAY-19
Uranium (U)				94.8		%		50-140	24-MAY-19
` ,									= · ···· · · · · · · · · · · · · · · ·

Page 3 of 3

Workorder: L2277728 Report Date: 27-MAY-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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



# Chain of Custody (COC) / Analytical **Request Form**

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

1 of Page

www.alsglobal.com  Report To Contact and company name below will appear on the final report Report Format / Distribution Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply																					
Report To	Contact and compar	ny name below will app	pear on the final repo	ort		Report Format	/ Distribution		Select	Service L	evel Bel	w - Please	confirn	n all E&P	TATs	with you	r AM -	surcharg	es will	apply	
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Phone:	647-253-0596 EXT 60	16			Compare Result	s to Criteria on Report -	provide details belo	w if box checked	IORIT Pess [	3	day [P	3] [			EMERGENC	Sar	ne D	ay, We	eker	nd or	
	Company address below	will appear on the fina	report		Select Distributi	ion: 🔽 EMAIL	MAIL	FAX	PRIORITY (Business Days)	2	day [P	2] [	]		EME	St	atuto	ory hol	iday	[E0]	
Street:	2275 Upper Middle Rd	I. E., Suite #300			Email 1 or Fax	bimcore@alsgloba	al.com			Date a	nd Time	Required 1	or all	E&P TA	Ts:			dd	-mm	m-yy hh	mm
City/Province:	Oakville, ON				Email 2	bimww@alsgloba	l.com		For tes	ts that ca	an not be	performed a	accord	ing to the	servi	ce level s	electe	ed, you wi	l be co	ntacted.	
Postal Code:	L6H 0C3				Email 3									An	alysi	is Req	uest	t			
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	Copy of Invoice with Re	eport 🗌 YES	√ NO		Select Invoice [	Distribution: 🔽 EMA	AIL MAIL	FAX													]
Company:					Email 1 or Fax	ap@baffinland.co	m														1
Contact:					Email 2	commercial@baff	inland.com														গ্
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ALS Account #	Account # / Quote #: 23642 /Q42455					AFE/Cost Center: PO#															onta
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☐ YES ☑ NO																					
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)								FINA	AL SHI	PME	NT RE	CEF	PTION (	lab ι	ise only)		
Released By : C	Connor Paquette	Date: 16-May-1	9	Time:	Time: Received by: Date: Tir			Time	:	Rece	ved by:				D	ate:				Time:	
				15:00					1												1



### Chain of Custody (COC) / Analytical **Request Form**

L2277728-COFC

COC Number: 15 -

Canada Toll Free: 1 800 668 9878

	www.alsglobal.com						_															
Report To	Contact and compa	iny name below will app	pear on the final repor	rt		Report Format	/ Distribution							ill E	&P TATs	with you	ur AM -	surcha	rges wi	ill apply		
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Contact:	Wiliam Bowden and Co	onnor Devereaux			Quality Control	(QC) Report with R	eport 🗹 YES	□ NO	TY Days	4 0	iay [P	4]			ıcv	1 B	usin	ess d	ay [E	1]		
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	Company address below	will appear on the final	report		Select Distributi	ion: 🗹 EMAIL	MAIL [	FAX	R (Bush	2 (	iay [P	2]			EW EW	Si	tatute	ory h	oliday	y [E0]		
Street:	2275 Upper Middle Ro	d. E., Suite #300			Email 1 or Fax	bimcore@alsgloba	al.com		Date and Time Required for all E&P TATs:  For tests that can not be performed according to the service level selected, you will be contacted.													
City/Province:	Oakville, ON				Email 2	bimww@alsglobal	.com		For test	ts that ca	n not be	perform	ed acco	rding to	the servi	e level	selecte	ed, you	will be	contacted	l.	
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Company:					Email 1 or Fax	ap@baffinland.cor	m															
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Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 24-MAY-19

Report Date: 28-MAY-19 11:48 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2278522
Project P.O. #: 4500057496
Job Reference: MP-ASH-220

C of C Numbers: Legal Site Desc:

Rick Hawthorne

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2278522 CONTD....

PAGE 2 of 3 Version: FINAL

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2278522-1 MP-ASH-220 Sampled By: BC/SS on 18-MAY-19 @ 12:25 Matrix: SOIL							
Sample Preparation							
Initial pH	12.30		0.10	pH units		25-MAY-19	R4645509
Final pH	11.12		0.10	pH units		25-MAY-19	
Physical Tests				·			
% Moisture	0.17		0.10	%	28-MAY-19	28-MAY-19	R4645521
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		27-MAY-19	R4644747
Barium (Ba)	0.52		0.50	mg/L		27-MAY-19	R4644747
Boron (B)	<2.5		2.5	mg/L		27-MAY-19	R4644747
Cadmium (Cd)	< 0.0050		0.0050	mg/L		27-MAY-19	R4644747
Chromium (Cr)	0.817		0.050	mg/L		27-MAY-19	R4644747
Lead (Pb)	<0.050		0.050	mg/L		27-MAY-19	R4644747
Mercury (Hg)	<0.00010		0.00010	mg/L		27-MAY-19	R4644698
Selenium (Se)	< 0.025		0.025	mg/L		27-MAY-19	R4644747
Silver (Ag)	<0.0050		0.0050	mg/L		27-MAY-19	R4644747
Uranium (U)	<0.25		0.25	mg/L		27-MAY-19	R4644747
Zinc (Zn)-Total	<1.0		1.0	mg/L		27-MAY-19	R4644747

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2278522 CONTD....

PAGE 3 of 3 Version: FINAL

### **Reference Information**

#### **Test Method References:**

MET-TCLP-EXTRA-WT

ALS Test Code Matrix Test Description Method Reference\*\*

HG-TCLP-WT Waste Mercury (CVAA) for O.Reg 347 EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

Characteristic Leadning Flocedure (TCLF). Test results are reported in leadnate concentration units (normally

O. Reg 347 Extra Metals on TCLP

I eachate

Waste

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

**EPA 200.8** 

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

# GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2278522 Report Date: 28-MAY-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R46	645521								
<b>WG3060003-3</b> % Moisture	DUP		<b>L2279060-2</b> 4.65	4.43		%	4.8	20	28-MAY-19
<b>WG3060003-2</b> % Moisture	LCS			99.5		%		90-110	28-MAY-19
<b>WG3060003-1</b> % Moisture	MB			<0.10		%		0.1	28-MAY-19
HG-TCLP-WT		Waste							
Batch R46	644698								
<b>WG3059018-3</b> Mercury (Hg)	DUP		<b>L2276718-2</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	27-MAY-19
<b>WG3059018-2</b> Mercury (Hg)	LCS			102.0		%		70-130	27-MAY-19
<b>WG3059018-1</b> Mercury (Hg)	MB			<0.00010		mg/L		0.0001	27-MAY-19
<b>WG3059018-4</b> Mercury (Hg)	MS		L2276718-2	82.6		%		50-140	27-MAY-19
MET-TCLP-EXTRA-	·WT	Waste							
Batch R46	644747								
<b>WG3058981-4</b> Zinc (Zn)-Total	DUP		<b>WG3058981-3</b> 2.9	3.0		mg/L	2.8	30	27-MAY-19
<b>WG3058981-2</b> Zinc (Zn)-Total	LCS			93.4		%		70-130	27-MAY-19
<b>WG3058981-1</b> Zinc (Zn)-Total	MB			<1.0		mg/L		1	27-MAY-19
<b>WG3058981-5</b> Zinc (Zn)-Total	MS		WG3058981-3	90.6		%		70-130	27-MAY-19
MET-TCLP-WT		Waste							
Batch R46	644747								
WG3058981-4	DUP		WG3058981-3						
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	27-MAY-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	27-MAY-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	27-MAY-19
Barium (Ba)			0.63	0.64		mg/L	1.8	50	27-MAY-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	27-MAY-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	27-MAY-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	27-MAY-19



Contact:

# **Quality Control Report**

Workorder: L2278522 Report Date: 28-MAY-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	644747								
<b>WG3058981-4</b> Selenium (Se)	DUP		<b>WG3058981-3</b> <0.025	<0.025	RPD-NA	mg/L	N/A	50	27-MAY-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	27-MAY-19
<b>WG3058981-2</b> Silver (Ag)	LCS			94.6		%		70-130	27-MAY-19
Arsenic (As)				95.1		%		70-130	27-MAY-19
Boron (B)				95.3		%		70-130	27-MAY-19
Barium (Ba)				91.5		%		70-130	27-MAY-19
Cadmium (Cd)				94.6		%		70-130	27-MAY-19
Chromium (Cr)				94.9		%		70-130	27-MAY-19
Lead (Pb)				97.1		%		70-130	27-MAY-19
Selenium (Se)				91.2		%		70-130	27-MAY-19
Uranium (U)				94.4		%		70-130	27-MAY-19
<b>WG3058981-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	27-MAY-19
Arsenic (As)				<0.050		mg/L		0.05	27-MAY-19
Boron (B)				<2.5		mg/L		2.5	27-MAY-19
Barium (Ba)				<0.50		mg/L		0.5	27-MAY-19
Cadmium (Cd)				<0.0050		mg/L		0.005	27-MAY-19
Chromium (Cr)				< 0.050		mg/L		0.05	27-MAY-19
Lead (Pb)				<0.050		mg/L		0.05	27-MAY-19
Selenium (Se)				<0.025		mg/L		0.025	27-MAY-19
Uranium (U)				<0.25		mg/L		0.25	27-MAY-19
WG3058981-5	MS		WG3058981-3						
Silver (Ag)				108.3		%		50-140	27-MAY-19
Arsenic (As)				97.4		%		50-140	27-MAY-19
Boron (B)				94.0		%		50-140	27-MAY-19
Barium (Ba)				92.1		%		50-140	27-MAY-19
Cadmium (Cd)				90.4		%		50-140	27-MAY-19
Chromium (Cr)				93.4		%		50-140	27-MAY-19
Lead (Pb)				94.5		%		50-140	27-MAY-19
Selenium (Se)				94.4		%		50-140	27-MAY-19
Uranium (U)				97.9		%		50-140	27-MAY-19

Workorder: L2278522 Report Date: 28-MAY-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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Page 3 of 3



# Chain of Custody (COC) / Analytical Request Form

Canada Tol! Free: 1 800 668 9878

L2278522-COFC

COC Number: 15 -

Page

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1 of

www.alsglobal.com Contact and company name below will appear on the final report Report To Report Format / Distribution unfirm all E&P TATs with your AM - surcharges will apply Company Baffinland Iron Mines Corp. Select Report Format: 🗹 PDF 🗹 EXCEL 🗹 EDD (DIGITAL) Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply Wiliam Bowden and Connor Devereaux Contact: Quality Control (QC) Report with Report 

YES 

NO 4 day [P4] 1 Business day [E1] 647-253-0596 EXT 6016 Phone: ☐ Compare Results to Criteria on Report - provide details below if box checked 3 day [P3] Same Day, Weekend or Company address below will appear on the final report Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX Statutory holiday [E0] 2 day [P2] Street: 2275 Upper Middle Rd. E., Suite #300 Email 1 or Fax bimcore@alsglobal.com Date and Time Required for all E&P TATs: City/Province: Oakville, ON Email 2 bimww@alsglobal.com For tests that can not be performed according to the service level selected, you will be contacted. L6H 0C3 Postal Code: Email 3 **Analysis Request** Invoice To Same as Report To ☑ YES □ NO Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Copy of Invoice with Report ☐ YES ☑ NO Select Invoice Distribution: 🗵 EMAIL 🗀 MAIL 🗀 FAX Company: Email 1 or Fax ap@baffinland.com Contact Email 2 commercial@baffinland.com Number of Containers Se,Zn) **Project Information** Oil and Gas Required Fields (client use) ALS Account # / Quote #: 23642 /Q42455 AFE/Cost Center PO# MP-ASH-220 Job #: Major/Minor Code Routing Code: ç, 4500057496 PO / AFE: Requisitioner: SD: Ba Location: ALS Lab Work Order # (lab use only) ALS Contact: Sampler: BC/SS SIM-TC Sample Identification and/or Coordinates ALS Sample # Date Time Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) MP-ASH-220 18-May-19 12:25 Soil R 2 Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below SAMPLE CONDITION AS RECEIVED (lab use only) Drinking Water (DW) Samples<sup>1</sup> (client use) (electronic COC only) Frozen П SIF Observations П Ш Are samples taken from a Regulated DW System? Ice Packs п Ice Cubes Custody seal intact Yes ☐ YES ☐ NO Cooling Initiated Are samples for human drinking water use? INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES ℃ ☐ YES ☐ NO SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) Released by: Dominic Ritgen Date: 2019 05 22 Time: Received by: Date: Time: Received by: 15:00



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux 2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 24-MAY-19

Report Date: 28-MAY-19 13:27 (MT)

Version: FINAL

Client Phone: 647-253-0596

# **Certificate of Analysis**

 Lab Work Order #:
 L2278592

 Project P.O. #:
 4500057496

 Job Reference:
 MS-ASH-174

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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L2278592 CONTD....

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2278592-1 MS-ASH-174 Sampled By: BR/BC on 22-MAY-19 @ 12:20 Matrix: SOIL							
Sample Preparation							
Initial pH	12.26		0.10	pH units		28-MAY-19	R4645519
Final pH	11.29		0.10	pH units		28-MAY-19	
Physical Tests				'			
% Moisture	2.87		0.10	%	24-MAY-19	24-MAY-19	R4643028
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		28-MAY-19	R4645690
Barium (Ba)	0.90		0.50	mg/L		28-MAY-19	R4645690
Boron (B)	<2.5		2.5	mg/L		28-MAY-19	R4645690
Cadmium (Cd)	< 0.0050		0.0050	mg/L		28-MAY-19	R4645690
Chromium (Cr)	2.09		0.050	mg/L		28-MAY-19	R4645690
Lead (Pb)	< 0.050		0.050	mg/L		28-MAY-19	R4645690
Mercury (Hg)	<0.00010		0.00010	mg/L		28-MAY-19	R4645686
Selenium (Se)	< 0.025		0.025	mg/L		28-MAY-19	R4645690
Silver (Ag)	< 0.0050		0.0050	mg/L		28-MAY-19	R4645690
Uranium (U)	<0.25		0.25	mg/L		28-MAY-19	R4645690
Zinc (Zn)-Total	<1.0		1.0	mg/L		28-MAY-19	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

Matrix Spike

L2278592 CONTD....

Reference Information

PAGE 3 of 3
Version: FINAL

L2278592-1

QC Samples with Qualifiers & Comments:

QC Type Description Parameter Qualifier Applies to Sample Number(s)

Chromium (Cr)

Sample Parameter Qualifier key listed:

Qualifier Description

MS-B Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

**Test Method References:** 

ALS Test Code Matrix Test Description Method Reference\*\*

HG-TCLP-WT Waste Mercury (CVAA) for O.Reg 347 EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

\_EACH-TCLP-WT

Waste

Leachate Procedure for Reg 347

FPA 1311

MS-B

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT

Waste

Waste

O. Reg 347 Extra Metals on TCLP

EPA 200.8

MET-TCLP-WT

Leachate

O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT

Soil

% Moisture

CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2278592 Report Date: 28-MAY-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R46	43028								
<b>WG3057700-3</b> % Moisture	DUP		<b>L2278143-1</b> 17.3	18.1		%	4.4	20	24-MAY-19
<b>WG3057700-2</b> % Moisture	LCS			100.1		%		90-110	24-MAY-19
<b>WG3057700-1</b> % Moisture	МВ			<0.10		%		0.1	24-MAY-19
HG-TCLP-WT		Waste							
Batch R46	45686								
<b>WG3060205-3</b> Mercury (Hg)	DUP		<b>L2278592-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	28-MAY-19
<b>WG3060205-2</b> Mercury (Hg)	LCS			95.1		%		70-130	28-MAY-19
<b>WG3060205-1</b> Mercury (Hg)	МВ			<0.00010		mg/L		0.0001	28-MAY-19
<b>WG3060205-4</b> Mercury (Hg)	MS		L2278592-1	89.3		%		50-140	28-MAY-19
MET-TCLP-EXTRA-	WT	Waste							
Batch R46	45690								
<b>WG3060181-4</b> Zinc (Zn)-Total	DUP		<b>WG3060181-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	28-MAY-19
<b>WG3060181-2</b> Zinc (Zn)-Total	LCS			98.8		%		70-130	28-MAY-19
<b>WG3060181-1</b> Zinc (Zn)-Total	МВ			<1.0		mg/L		1	28-MAY-19
<b>WG3060181-5</b> Zinc (Zn)-Total	MS		WG3060181-3	97.7		%		70-130	28-MAY-19
MET-TCLP-WT		Waste							
	45690								
	DUP		WG3060181-3						
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	28-MAY-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	28-MAY-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	28-MAY-19
Barium (Ba)			0.90	0.95		mg/L	5.3	50	28-MAY-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	28-MAY-19
Chromium (Cr)			2.09	2.16		mg/L	3.3	50	28-MAY-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	28-MAY-19



Contact:

# **Quality Control Report**

Workorder: L2278592 Report Date: 28-MAY-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	645690								
WG3060181-4	DUP		WG3060181-3						
Selenium (Se)			<0.025	<0.025	RPD-NA	mg/L	N/A	50	28-MAY-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	28-MAY-19
<b>WG3060181-2</b> Silver (Ag)	LCS			95.4		%		70-130	28-MAY-19
Arsenic (As)				100.9		%		70-130	28-MAY-19
Boron (B)				90.6		%		70-130	28-MAY-19
Barium (Ba)				102.2		%		70-130	28-MAY-19
Cadmium (Cd)				97.9		%		70-130	28-MAY-19
Chromium (Cr)				99.5		%		70-130	28-MAY-19
Lead (Pb)				100.4		%		70-130	28-MAY-19
Selenium (Se)				97.4		%		70-130	28-MAY-19
Uranium (U)				96.2		%		70-130	28-MAY-19
<b>WG3060181-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	28-MAY-19
Arsenic (As)				<0.050		mg/L		0.05	28-MAY-19
Boron (B)				<2.5		mg/L		2.5	28-MAY-19
Barium (Ba)				<0.50		mg/L		0.5	28-MAY-19
Cadmium (Cd)				<0.0050		mg/L		0.005	28-MAY-19
Chromium (Cr)				<0.050		mg/L		0.05	28-MAY-19
Lead (Pb)				<0.050		mg/L		0.05	28-MAY-19
Selenium (Se)				<0.025		mg/L		0.025	28-MAY-19
Uranium (U)				<0.25		mg/L		0.25	28-MAY-19
<b>WG3060181-5</b> Silver (Ag)	MS		WG3060181-3	112.6		%		50-140	28-MAY-19
Arsenic (As)				105.7		%		50-140	28-MAY-19
Boron (B)				95.3		%		50-140	28-MAY-19
Barium (Ba)				104.6		%		50-140	28-MAY-19
Cadmium (Cd)				97.5		%		50-140	28-MAY-19
Chromium (Cr)				N/A	MS-B	%		50-140	28-MAY-19
Lead (Pb)				99.5	INIO.D	%		- 50-140	28-MAY-19
Selenium (Se)				100.4		%		50-140	28-MAY-19
Uranium (U)				101.5		%		50-140	
Cramam (C)				101.0		,,		30-140	28-MAY-19

Workorder: L2278592 Report Date: 28-MAY-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3

# Environmental

### Chain of Custody (COC) / Analytical **Request Form**

COC Number: 15 -

#### Canada Toll Free: 1 800 668 9878 www.alsglobal.com Report Format / Distribution m all E&P TATs with your AM - surcharges will apply Contact and company name below will appear on the final report Report To .dard TAT if received by 3 pm - business days - no surcharges apply Select Report Format: 7 PDF FEXCEL EDD (DIGITAL) Regular Liss Baffinland Iron Mines Corp. Company 4 day [P4] 1 Business day [E1] Wiliam Bowden and Connor Devereaux Contact: 3 day [P3] Compare Results to Criteria on Report - provide details below if box checked 647-253-0596 FXT 6016 Same Day, Weekend or Phone: Select Distribution: EMAIL MAIL FAX $\Box$ Statutory holiday [E0] 2 day [P2] Company address below will appear on the final report Date and Time Required for all E&P TATs: Email 1 or Fax bimcore@alsglobal.com Street 2275 Upper Middle Rd. E., Suite #300 For tests that can not be performed according to the service level selected, you will be contacted. bimww@alsglobal.com Oakville, ON Email 2 City/Province: **Analysis Request** Postal Code: L6H 0C3 Email 3 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice Distribution ☑ YES ☐ NO Invoice To Same as Report To YES NO ☐ FAX Copy of Invoice with Report Email 1 or Fax ap@baffinland.com Company: commercial@baffinland.com Email 2 Contact: Number of Containers Se,Zn) Oil and Gas Required Fields (client use) **Project Information** PO# 23642 /Q42455 AFE/Cost Center: ALS Account # / Quote #: Cr.Pb. Routing Code: Major/Minor Code MS-ASH-174 .lob # PO / AFE: 4500057496 Requisitioner: Location: LSD: BR/BC ALS Contact: Sampler: ALS Lab Work Order # (lab use only) Date Time Sample Identification and/or Coordinates ALS Sample # Sample Type (lab use only) (dd-mmm-yy) (hh:mm) (This description will appear on the report) 2 12:20 Soil E1 MS-ASH-174 22-May-19 SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples<sup>1</sup> (client use) SIF Observations (electronic COC only) Frozen П Ice Cubes Custody seal intact Yes Ice Packs Are samples taken from a Regulated DW System? Cooling Initiated YES INO FINAL COOLER TEMPERATURES °C INIITIAL COOLER TEMPERATURES °C Are samples for human drinking water use? ☐ YES ☑ NO FINAL SHIPMENT RECEPTION (lab use only) INITIAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) Time: Received by: Date: Date :19 05 22 Received by: Released By: Connor Paquette Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

YELLOW - CLIENT COPY

15:30



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 04-JUN-19

Report Date: 10-JUN-19 09:29 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2284702 Project P.O. #: 4500057496 Job Reference: MS-ASH-172

C of C Numbers: Legal Site Desc:

Rick Hawthorne

Rick Hawthorne Account Manager

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L2284702 CONTD....

PAGE 2 of 3 Version: FINAL

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2284702-1 MS-ASH-172 Sampled By: LC/SJS on 04-MAY-19 @ 09:45 Matrix: SOIL							
Sample Preparation							
Initial pH	12.61		0.10	pH units		06-JUN-19	R4661319
Final pH	9.45		0.10	pH units		06-JUN-19	
Physical Tests				·			
% Moisture	<0.10		0.10	%	05-JUN-19	06-JUN-19	R4659710
TCLP Metals							
Arsenic (As)	< 0.050		0.050	mg/L		06-JUN-19	R4660237
Barium (Ba)	<0.50		0.50	mg/L		06-JUN-19	R4660237
Boron (B)	3.4		2.5	mg/L		06-JUN-19	R4660237
Cadmium (Cd)	<0.0050		0.0050	mg/L		06-JUN-19	R4660237
Chromium (Cr)	2.50		0.050	mg/L		06-JUN-19	R4660237
Lead (Pb)	<0.050		0.050	mg/L		06-JUN-19	R4660237
Mercury (Hg)	<0.00010	PEHR	0.00010	mg/L		06-JUN-19	
Selenium (Se)	<0.025		0.025	mg/L		06-JUN-19	
Silver (Ag)	<0.0050		0.0050	mg/L		06-JUN-19	R4660237
Uranium (U)	<0.25		0.25	mg/L			
Zinc (Zn)-Total	<1.0		1.0	mg/L			R4660237

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2284702 CONTD....

**Reference Information** 

PAGE 3 of 3 Version: FINAL

Sample Parameter Qualifier key listed:

Qualifier Description

PEHR Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

**Test Method References:** 

ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP EPA 200.8

Leachate

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

### **Chain of Custody Numbers:**

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2284702 Report Date: 10-JUN-19 Page 1 of 4

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R4659	9710								
<b>WG3067846-3</b> D % Moisture	DUP		<b>L2284971-6</b> 14.2	15.1		%	5.8	20	06-JUN-19
<b>WG3067846-2</b> L % Moisture	.cs			99.9		%		90-110	06-JUN-19
<b>WG3067846-1 N</b> % Moisture	ИΒ			<0.10		%		0.1	06-JUN-19
HG-TCLP-WT		Waste							
Batch R466	0199								
<b>WG3069263-3</b> D Mercury (Hg)	OUP		<b>L2280119-6</b> < 0.00010	<0.00010	RPD-NA	mg/L	N/A	50	06-JUN-19
WG3069263-2 L Mercury (Hg)	.CS			95.6		%		70-130	06-JUN-19
WG3069263-1 N Mercury (Hg)	ИΒ			<0.00010		mg/L		0.0001	06-JUN-19
WG3069263-4 N Mercury (Hg)	//S		L2280119-6	87.8		%		50-140	06-JUN-19
MET-TCLP-EXTRA-W	т	Waste							
Batch R466	0237								
WG3069236-4 D Zinc (Zn)-Total	DUP		<b>WG3069236-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	06-JUN-19
WG3069236-2 L Zinc (Zn)-Total	.cs			94.0		%		70-130	06-JUN-19
<b>WG3069236-1 N</b> Zinc (Zn)-Total	ИΒ			<1.0		mg/L		1	06-JUN-19
<b>WG3069236-5 N</b> Zinc (Zn)-Total	/IS		WG3069236-3	96.2		%		70-130	06-JUN-19
MET-TCLP-WT		Waste							-
Batch R466									
	OUP		WG3069236-3						
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	06-JUN-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	06-JUN-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	06-JUN-19
Barium (Ba)			0.62	0.62		mg/L	0.4	50	06-JUN-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	06-JUN-19
Chromium (Cr)			0.477	0.476		mg/L	0.2	50	06-JUN-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	06-JUN-19



Workorder: L2284702 Report Date: 10-JUN-19 Page 2 of 4

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	660237								
<b>WG3069236-4</b> Selenium (Se)	DUP		<b>WG3069236-3</b> <0.025	<0.025	RPD-NA	mg/L	N/A	50	06-JUN-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	06-JUN-19
<b>WG3069236-2</b> Silver (Ag)	LCS			95.0		%		70-130	06-JUN-19
Arsenic (As)				97.1		%		70-130	06-JUN-19
Boron (B)				96.5		%		70-130	06-JUN-19
Barium (Ba)				101.3		%		70-130	06-JUN-19
Cadmium (Cd)				95.7		%		70-130	06-JUN-19
Chromium (Cr)				100.1		%		70-130	06-JUN-19
Lead (Pb)				101.1		%		70-130	06-JUN-19
Selenium (Se)				93.1		%		70-130	06-JUN-19
Uranium (U)				102.6		%		70-130	06-JUN-19
<b>WG3069236-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	06-JUN-19
Arsenic (As)				<0.050		mg/L		0.05	06-JUN-19
Boron (B)				<2.5		mg/L		2.5	06-JUN-19
Barium (Ba)				<0.50		mg/L		0.5	06-JUN-19
Cadmium (Cd)				<0.0050		mg/L		0.005	06-JUN-19
Chromium (Cr)				<0.050		mg/L		0.05	06-JUN-19
Lead (Pb)				<0.050		mg/L		0.05	06-JUN-19
Selenium (Se)				<0.025		mg/L		0.025	06-JUN-19
Uranium (U)				<0.25		mg/L		0.25	06-JUN-19
WG3069236-5	MS		WG3069236-3						
Silver (Ag)				109.3		%		50-140	06-JUN-19
Arsenic (As)				103.9		%		50-140	06-JUN-19
Boron (B)				94.1		%		50-140	06-JUN-19
Barium (Ba)				105.2		%		50-140	06-JUN-19
Cadmium (Cd)				98.1		%		50-140	06-JUN-19
Chromium (Cr)				100.4		%		50-140	06-JUN-19
Lead (Pb)				102.8		%		50-140	06-JUN-19
Selenium (Se)				106.0		%		50-140	06-JUN-19
Uranium (U)				102.1		%		50-140	06-JUN-19

Workorder: L2284702 Report Date: 10-JUN-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
 CRM Certified Reference Material
 CCV Continuing Calibration Verification
 CVS Calibration Verification Standard
 LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Page 3 of 4

Workorder: L2284702 Report Date: 10-JUN-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Page 4 of 4

#### **Hold Time Exceedances:**

	Sample						
ALS Product Description	ID <sup>.</sup>	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
% Moisture							
	1	04-MAY-19 09:45	06-JUN-19 10:29	14	33	days	EHTR
TCLP Metals							
Mercury (CVAA) for O.Reg 34	17						
	1	04-MAY-19 09:45	06-JUN-19 00:00	28	33	days	EHTR

#### Legend & Qualifier Definitions:

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

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

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

#### Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2284702 were received on 04-JUN-19 11:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

# S) Environmental

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 15 -

	www.alsglobal.com											[ 2	4 1971							
Report To Contact and company name below will appear on the final report					Report Format,						Infirm all E&P TATs with your AM - surcharges will apply  andard TAT if received by 3 pm - business days - no surcharges apply									
Company:	Baffinland Iron Mines (	Corp.		Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)					<u></u>	1108			dard TA	AT if rec				_	_	
Contact:	Wiliam Bowden and Co	onnor Devereaux		Quality Control (QC) Report with Report ☑ YES ☐ NO					_ E (S)		ay [P4]			, Š			ess da		-	
Phone:	Phone: 647-253-0596 EXT 6016					to Criteria on Report -			RIORITY Inness Da		ay [P3]			EMERGENC			ay, We			
	Company address below	will appear on the final	report		Select Distribution		MAIL F	AX	g (Bu		ay [P2]			لــَــا	S	tatuto	ory ho	iday	[EV]	
Street:	2275 Upper Middle Rd	. E., Suite #300			Email 1 or Fax bimcore@alsglobal.com				79	(a)	SHIND - 112-129-12	quired for a					. #	. #f ;	2.77	P.L. s
City/Province:	Oakville, ON				Email 2	bimww@alsglobal	.com		For test	For tests that can not be performed according to the service level selected, you will be contacted.										
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Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 18-JUN-19

Report Date: 24-JUN-19 15:07 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2293532 Project P.O. #: 4500057496 Job Reference: MP-ASH-221

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2293532 CONTD....

PAGE 2 of 3 Version: FINAL

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2293532-1 MP-ASH-221 Sampled By: DR/AM on 15-JUN-19 @ 13:15 Matrix: SOIL							
Sample Preparation							
Initial pH	11.92		0.10	pH units		20-JUN-19	R4678008
Final pH	11.30		0.10	pH units			R4678008
Physical Tests				'			
% Moisture	0.31		0.10	%	18-JUN-19	19-JUN-19	R4673139
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		20-JUN-19	R4681625
Barium (Ba)	0.63		0.50	mg/L		20-JUN-19	R4681625
Boron (B)	4.6		2.5	mg/L		20-JUN-19	R4681625
Cadmium (Cd)	<0.0050		0.0050	mg/L		20-JUN-19	R4681625
Chromium (Cr)	3.29		0.050	mg/L		20-JUN-19	R4681625
Lead (Pb)	<0.050		0.050	mg/L		20-JUN-19	R4681625
Mercury (Hg)	<0.00010		0.00010	mg/L			R4677786
Selenium (Se)	<0.025		0.025	mg/L		20-JUN-19	R4681625
Silver (Ag)	<0.0050		0.0050	mg/L			R4681625
Uranium (U)	<0.25		0.25	mg/L			R4681625
Zinc (Zn)-Total	<1.0		1.0	mg/L			R4681625
<u> </u>							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2293532 CONTD....

Reference Information

PAGE 3 of 3 Version: FINAL

#### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)			
Matrix Spike	Chromium (Cr)	MS-B	L2293532-1			

#### Sample Parameter Qualifier key listed:

Qualifier Description

MS-B Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

#### **Test Method References:**

ALS Test Code	LS Test Code Matrix Test		Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT W

Waste

Leachate Procedure for Reg 347

EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT

Waste

Waste

O. Reg 347 Extra Metals on TCLP

EPA 200.8

MET-TCLP-WT

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT

Soil

% Moisture

Leachate

CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2293532 Report Date: 24-JUN-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R4673139								
<b>WG3080622-6 DUP</b> % Moisture		<b>L2292621-1</b> 40.9	41.0		%	0.3	20	19-JUN-19
WG3080622-5 LCS % Moisture			99.8		%		90-110	19-JUN-19
<b>WG3080622-4 MB</b> % Moisture			<0.10		%		0.1	19-JUN-19
HG-TCLP-WT	Waste							
Batch R4677786								
WG3082838-3 DUP Mercury (Hg)		<b>L2293532-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	20-JUN-19
WG3082838-2 LCS Mercury (Hg)			97.9		%		70-130	20-JUN-19
WG3082838-1 MB Mercury (Hg)			<0.00010		mg/L		0.0001	20-JUN-19
WG3082838-4 MS Mercury (Hg)		L2293532-1	88.0		%		50-140	20-JUN-19
MET-TCLP-EXTRA-WT	Waste							
Batch R4681625								
WG3082631-4 DUP Zinc (Zn)-Total		<b>WG3082631-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	20-JUN-19
WG3082631-2 LCS Zinc (Zn)-Total			97.6		%		70-130	20-JUN-19
WG3082631-1 MB Zinc (Zn)-Total			<1.0		mg/L		1	20-JUN-19
WG3082631-5 MS		WG3082631-3						
Zinc (Zn)-Total			95.0		%		70-130	20-JUN-19
MET-TCLP-WT	Waste							
Batch R4681625		W00000004 0						
<b>WG3082631-4 DUP</b> Silver (Ag)		<b>WG3082631-3</b> < 0.0050	<0.0050	RPD-NA	mg/L	N/A	50	20-JUN-19
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	20-JUN-19
Boron (B)		4.6	4.5	=	mg/L	0.9	50	20-JUN-19
Barium (Ba)		0.63	0.63		mg/L	0.3	50	20-JUN-19
Cadmium (Cd)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	20-JUN-19
Chromium (Cr)		3.29	3.29		mg/L	0.2	50	20-JUN-19
Lead (Pb)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	20-JUN-19



Contact:

# **Quality Control Report**

Workorder: L2293532 Report Date: 24-JUN-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	681625								
WG3082631-4	DUP		WG3082631-3			11			
Selenium (Se)			<0.025	<0.025	RPD-NA	mg/L	N/A	50	20-JUN-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	20-JUN-19
<b>WG3082631-2</b> Silver (Ag)	LCS			100.3		%		70-130	20-JUN-19
Arsenic (As)				102.9		%		70-130	20-JUN-19
Boron (B)				94.8		%		70-130	20-JUN-19
Barium (Ba)				101.0		%		70-130	20-JUN-19
Cadmium (Cd)				104.2		%		70-130	20-JUN-19
Chromium (Cr)				99.9		%		70-130	20-JUN-19
Lead (Pb)				99.6		%		70-130	20-JUN-19
Selenium (Se)				104.3		%		70-130	20-JUN-19
Uranium (U)				97.6		%		70-130	20-JUN-19
<b>WG3082631-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	20-JUN-19
Arsenic (As)				<0.050		mg/L		0.05	20-JUN-19
Boron (B)				<2.5		mg/L		2.5	20-JUN-19
Barium (Ba)				<0.50		mg/L		0.5	20-JUN-19
Cadmium (Cd)				<0.0050		mg/L		0.005	20-JUN-19
Chromium (Cr)				<0.050		mg/L		0.05	20-JUN-19
Lead (Pb)				<0.050		mg/L		0.05	20-JUN-19
Selenium (Se)				<0.025		mg/L		0.025	20-JUN-19
Uranium (U)				<0.25		mg/L		0.25	20-JUN-19
<b>WG3082631-5</b> Silver (Ag)	MS		WG3082631-3	110.0		%		50-140	20-JUN-19
Arsenic (As)				105.6		%		50-140	20-JUN-19
Boron (B)				88.4		%		50-140	20-JUN-19
Barium (Ba)				104.3		%		50-140	20-JUN-19
Cadmium (Cd)				97.3		%		50-140	20-JUN-19
Chromium (Cr)				N/A	MS-B	%		-	20-JUN-19
Lead (Pb)				97.1		%		50-140	20-JUN-19
Selenium (Se)				103.9		%		50-140	20-JUN-19
Uranium (U)				98.2		%		50-140	20-JUN-19
• •									

Workorder: L2293532 Report Date: 24-JUN-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3



### Chain of Custody (COC) / Analytical **Request Form**

COC Number: 15 -

Canada Toll Free: 1 800 668 9878

Daniel Te	www.aisglobal.com						_													
Report To	Contact and compan		pear on the final repo	rt 		Report Format			Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply											
Company:	Baffinland Iron Mines Co	<u>-</u>				ormat: 🔽 PDF			<u> </u>	Re	gular [l	1] 🕡 9	Standard	TAT if	eceived	d by 3 p	m - busi	ness da	ays - no sur	harges apply
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Street:	2275 Upper Middle Rd.	., Suite #300			Email 1 or Fax	bimcore@alsgloba	al.com		Date and Time Required for all E&P TATs:							-				
City/Province:	Oakville, ON				Email 2 bimww@alsglobal.com F					For tests that can not be performed according to the service level selected, you will be contacted.										
Postal Code:	L6H 0C3				Email 3					Analysis Request							•			
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Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 24-JUL-19

Report Date: 30-JUL-19 13:43 (MT)

Version: FINAL

Client Phone: 647-253-0596

## Certificate of Analysis

Lab Work Order #: L2315686
Project P.O. #: 4500057496
Job Reference: MP-ASH-222

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2315686 CONTD.... PAGE 2 of 3

Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2315686-1 MP-ASH-222							
Sampled By: EA on 22-JUL-19 @ 09:45 Matrix: SOIL							
Sample Preparation							
Initial pH	12.05		0.10	pH units		27-JUL-19	R4729573
Final pH	12.20		0.10	pH units		27-JUL-19	R4729573
Physical Tests							
% Moisture	0.22		0.10	%	25-JUL-19	26-JUL-19	R4727278
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		29-JUL-19	R4729011
Barium (Ba)	1.01		0.50	mg/L		29-JUL-19	R4729011
Boron (B)	<2.5		2.5	mg/L		29-JUL-19	R4729011
Cadmium (Cd)	<0.0050		0.0050	mg/L		29-JUL-19	R4729011
Chromium (Cr)	0.100		0.050	mg/L		29-JUL-19	R4729011
Lead (Pb)	<0.050		0.050	mg/L		29-JUL-19	R4729011
Mercury (Hg)	<0.00010		0.00010	mg/L		29-JUL-19	R4729442
Selenium (Se)	<0.025		0.025	mg/L			R4729011
Silver (Ag)	<0.0050		0.0050	mg/L		29-JUL-19	R4729011
Uranium (U)	<0.25		0.25	mg/L		29-JUL-19	R4729011
Zinc (Zn)-Total	<1.0		1.0	mg/L		29-JUL-19	R4729011

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2315686 CONTD....

PAGE 3 of 3 Version: FINAL

### **Reference Information**

### **Test Method References:**

ALS Test Code Matrix Test Description Method Reference\*\*

HG-TCLP-WT Waste Mercury (CVAA) for O.Reg 347 EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP EPA 200.8

I eachate

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2315686 Report Date: 30-JUL-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R4	727278								
WG3115361-3 % Moisture	DUP		<b>L2316710-15</b> 21.1	20.9		%	1.1	20	26-JUL-19
<b>WG3115361-2</b> % Moisture	LCS			100.7		%		90-110	26-JUL-19
<b>WG3115361-1</b> % Moisture	МВ			<0.10		%		0.1	26-JUL-19
HG-TCLP-WT		Waste							
Batch R4	729442								
<b>WG3117853-3</b> Mercury (Hg)	DUP		<b>L2315477-5</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	29-JUL-19
<b>WG3117853-2</b> Mercury (Hg)	LCS			100.0		%		70-130	29-JUL-19
<b>WG3117853-1</b> Mercury (Hg)	МВ			<0.00010		mg/L		0.0001	29-JUL-19
<b>WG3117853-4</b> Mercury (Hg)	MS		L2315477-5	98.0		%		50-140	29-JUL-19
MET-TCLP-EXTRA	-WT	Waste							
Batch R4	729011								
<b>WG3117691-4</b> Zinc (Zn)-Total	DUP		<b>WG3117691-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	29-JUL-19
<b>WG3117691-2</b> Zinc (Zn)-Total	LCS			95.3		%		70-130	29-JUL-19
<b>WG3117691-1</b> Zinc (Zn)-Total	MB			<1.0		mg/L		1	29-JUL-19
<b>WG3117691-5</b> Zinc (Zn)-Total	MS		WG3117691-3	91.6		%		70-130	29-JUL-19
MET-TCLP-WT		Waste							
Batch R4	729011								
WG3117691-4	DUP		WG3117691-3			··· ·· /I			
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	29-JUL-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	29-JUL-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	29-JUL-19
Barium (Ba)			<0.50	<0.50	RPD-NA	mg/L	N/A	50	29-JUL-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	29-JUL-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	29-JUL-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	29-JUL-19



Workorder: L2315686 Report Date: 30-JUL-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste		_					
	729011								
WG3117691-4 Selenium (Se)	DUP		<b>WG3117691-</b> 3 < 0.025	<b>3</b> <0.025	RPD-NA	mg/L	NI/A	FO	20 1111 40
Uranium (U)			<0.025	<0.025	RPD-NA RPD-NA	mg/L	N/A	50	29-JUL-19
	1.00		<0.23	<0.25	RPD-NA	mg/L	N/A	50	29-JUL-19
<b>WG3117691-2</b> Silver (Ag)	LCS			101.8		%		70-130	29-JUL-19
Arsenic (As)				96.4		%		70-130	29-JUL-19
Boron (B)				96.9		%		70-130	29-JUL-19
Barium (Ba)				101.4		%		70-130	29-JUL-19
Cadmium (Cd)				98.0		%		70-130	29-JUL-19
Chromium (Cr)				98.3		%		70-130	29-JUL-19
Lead (Pb)				99.3		%		70-130	29-JUL-19
Selenium (Se)				97.1		%		70-130	29-JUL-19
Uranium (U)				97.3		%		70-130	29-JUL-19
<b>WG3117691-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	29-JUL-19
Arsenic (As)				<0.050		mg/L		0.05	29-JUL-19
Boron (B)				<2.5		mg/L		2.5	29-JUL-19
Barium (Ba)				<0.50		mg/L		0.5	29-JUL-19
Cadmium (Cd)				< 0.0050		mg/L		0.005	29-JUL-19
Chromium (Cr)				< 0.050		mg/L		0.05	29-JUL-19
Lead (Pb)				< 0.050		mg/L		0.05	29-JUL-19
Selenium (Se)				<0.025		mg/L		0.025	29-JUL-19
Uranium (U)				<0.25		mg/L		0.25	29-JUL-19
<b>WG3117691-5</b> Silver (Ag)	MS		WG3117691-	<b>3</b> 118.0		%		50-140	29-JUL-19
Arsenic (As)				93.6		%		50-140	29-JUL-19
Boron (B)				100.7		%		50-140	29-JUL-19
Barium (Ba)				92.0		%		50-140	29-JUL-19
Cadmium (Cd)				92.4		%		50-140	29-JUL-19
Chromium (Cr)				95.5		%		50-140	29-JUL-19
Lead (Pb)				100.2		%		50-140	29-JUL-19
Selenium (Se)				93.4		%		50-140	29-JUL-19
Uranium (U)				97.8		%		50-140	29-JUL-19

Workorder: L2315686 Report Date: 30-JUL-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3

# S) Environmental

### Chain of Custody (COC) / Analytical **Request Form**

Canada Toll Free: 1 800 668 9878

L2315686-COFC

COC Number: 15 -

	www.alsglobal.com																				
Report To	Contact and company	name below will appe	ear on the final report			Report Forma			Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply												
Company:	Baffinland Iron Mines Co	orp.				ormat: 🖸 PDF 🛚					ular [	· -		d TAT if		_	_			surcharg	
Contact:	Wiliam Bowden and Cor	nor Devereaux				QC) Report with R			PRIORITY Business Days)		ay [P	_		Ž		1 Busi	ness	day (E	<b>:</b> 1]		_
Phone:	647-253-0596 EXT 601	6			Compare Results	to Criteria on Report -			RIOR		ay [P:			1 2			•	Week			_ i
	Company address below w	rill appear on the final i	report		Select Distribution	··· —	MAIL F	AX			ay [P				<u> </u>	Stati	itory	holida			
Street:	2275 Upper Middle Rd.	E., Suite #300			Email 1 or Fax	bimcore@alsgloba	il.com			2,000 0	C duty.	Required f	y cap siles			₫.K			110 6		
City/Province:	Oakville, ON				Email 2 bimww@alsglobal.com Fo					For tests that can not be performed according to the service level selected, you will be contacted.											
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Invoice To	Same as Report To	✓ YES	□ NO		Invoice Distribution					Indicate Fittered (F), Preserved (P) or Fittered and Preserved (F/P) below											
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Drinking Water (DW) Samples <sup>1</sup> (client use)			tions / Sp		idd on report by cli tronic COC only)	cking on the drop	-down list below	Froz					s	IF O	servati	ons	Yes		No		
	en from a Regulated DW S	System?								acks		ice Cut	es		usto	dy seal	intact	Yes	Ш	No	
DY	☐ YES ☐ NO							Cool	ing Init			DE5					AL COS	V CC TC	MDEO	TI IDEC OC	
Are samples for human drinking water use?						INITIAL COOLER TEM			EMPERATURES °C						LEK IE	MPEKA	TURES °C				
☐ YES ☐ NO						FINAL SHIPMENT RECEPTION															
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Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 08-AUG-19

Report Date: 13-AUG-19 10:03 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2324663 Project P.O. #: 4500057496 Job Reference: MS-ASH-175

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Sample Preparation         11.73         0.10         pH units         09-AUG-19         R4747211           Final pH         5.70         0.10         pH units         09-AUG-19         R4747211           Physical Tests         4.15         0.10         % 09-AUG-19         09-AUG-19         R4745841           TCLP Metals         4.15         0.10         % 09-AUG-19         09-AUG-19         R4745841           Arsenic (As)         <0.050	Sampled By: CP/BC on 06-AUG-19 @ 10:35							
Initial pH								
Final pH         5.70         0.10         pH units         09-AUG-19         R4747217           Physical Tests         4.15         0.10         %         09-AUG-19         09-AUG-19         R4745847           TCLP Metals           Arsenic (As)         <0.050         mg/L         12-AUG-19         R4746602           Barium (Ba)         <0.50         0.50         mg/L         12-AUG-19         R4746602           Boron (B)         <2.5         2.5         mg/L         12-AUG-19         R4746602           Cadmium (Cd)         <0.0050         0.0050         mg/L         12-AUG-19         R4746602           Chromium (Cr)         <0.050         0.050         mg/L         12-AUG-19         R4746602           Lead (Pb)         <0.050         0.050         mg/L         12-AUG-19         R4746602           Mercury (Hg)         <0.0050         0.0050         mg/L         12-AUG-19         R4746602           Selenium (Se)         <0.025         0.025         mg/L         12-AUG-19         R4746602           Silver (Ag)         <0.0050         0.0050         mg/L         12-AUG-19         R4746602           Uranium (U)         <0.025         0.25         mg/L		11.73		0.10	pH units		09-AUG-19	R4747211
Physical Tests       4.15       0.10       %       09-AUG-19       09-AUG-19       R474584*         TCLP Metals       Arsenic (As)       <0.050       0.050       mg/L       12-AUG-19       R4746602         Barium (Ba)       <0.50       0.50       mg/L       12-AUG-19       R4746602         Boron (B)       <2.5       2.5       mg/L       12-AUG-19       R4746602         Cadmium (Cd)       <0.0050       0.0050       mg/L       12-AUG-19       R4746602         Chromium (Cr)       <0.050       0.050       mg/L       12-AUG-19       R4746602         Lead (Pb)       <0.050       0.050       mg/L       12-AUG-19       R4746602         Mercury (Hg)       <0.00010       0.00010       mg/L       12-AUG-19       R4746602         Selenium (Se)       <0.025       0.025       mg/L       12-AUG-19       R4746602         Silver (Ag)       <0.0050       0.0050       mg/L       12-AUG-19       R4746602         Uranium (U)       <0.025       0.25       mg/L       12-AUG-19       R4746602					· ·			
TCLP Metals <td></td> <td></td> <td></td> <td></td> <td>'</td> <td></td> <td></td> <td></td>					'			
Arsenic (As)       <0.050	% Moisture	4.15		0.10	%	09-AUG-19	09-AUG-19	R4745841
Barium (Ba)         <0.50	TCLP Metals							
Boron (B)       <2.5	Arsenic (As)	<0.050		0.050	mg/L		12-AUG-19	R4746602
Cadmium (Cd)       <0.0050	Barium (Ba)	<0.50		0.50	mg/L		12-AUG-19	R4746602
Chromium (Cr)         <0.050         0.050         mg/L         12-AUG-19         R4746602           Lead (Pb)         <0.050	Boron (B)	<2.5		2.5	mg/L		12-AUG-19	R4746602
Lead (Pb)       <0.050	Cadmium (Cd)	<0.0050		0.0050	mg/L		12-AUG-19	R4746602
Mercury (Hg)       <0.00010	Chromium (Cr)	< 0.050		0.050	mg/L		12-AUG-19	R4746602
Selenium (Se)       <0.025	Lead (Pb)	< 0.050		0.050	mg/L		12-AUG-19	R4746602
Silver (Ag)       <0.0050	Mercury (Hg)	<0.00010		0.00010	mg/L		12-AUG-19	R4746761
Uranium (U) <0.25 0.25 mg/L 12-AUG-19 R4746602	Selenium (Se)	<0.025		0.025	mg/L		12-AUG-19	R4746602
	Silver (Ag)	<0.0050		0.0050	mg/L		12-AUG-19	R4746602
Zinc (Zn)-Total 18.6 1.0 mg/L 12-AUG-19 R4746602	Uranium (U)	<0.25		0.25	mg/L		12-AUG-19	R4746602
	Zinc (Zn)-Total	18.6		1.0	mg/L		12-AUG-19	R4746602

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2324663 CONTD....

PAGE 3 of 3 Version: FINAL

### **Reference Information**

#### **Test Method References:**

ALS Test Code Matrix Test Description Method Reference\*\*

HG-TCLP-WT Waste Mercury (CVAA) for O.Reg 347 EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP EPA 200.8

Leachate

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2324663 Report Date: 13-AUG-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R474584	1							
<b>WG3128023-6 DUP</b> % Moisture		<b>L2324759-5</b> 4.11	3.85		%	6.5	20	09-AUG-19
<b>WG3128023-5 LCS</b> % Moisture			100.2		%		90-110	09-AUG-19
<b>WG3128023-4 MB</b> % Moisture			<0.10		%		0.1	09-AUG-19
HG-TCLP-WT	Waste							
Batch R474676	1							
WG3129816-3 DUP Mercury (Hg)		<b>L2324845-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	12-AUG-19
WG3129816-2 LCS Mercury (Hg)			93.7		%		70-130	12-AUG-19
WG3129816-1 MB Mercury (Hg)			<0.00010		mg/L		0.0001	12-AUG-19
WG3129816-4 MS Mercury (Hg)		L2324845-1	96.2		%		50-140	12-AUG-19
MET-TCLP-EXTRA-WT	Waste							
Batch R474660	2							
WG3129668-4 DUP Zinc (Zn)-Total		<b>WG3129668-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	12-AUG-19
WG3129668-2 LCS Zinc (Zn)-Total			93.2		%		70-130	12-AUG-19
WG3129668-1 MB Zinc (Zn)-Total			<1.0		mg/L		1	12-AUG-19
WG3129668-5 MS Zinc (Zn)-Total		WG3129668-3	89.4		%		70-130	12-AUG-19
MET-TCLP-WT	Waste							-
Batch R474660								
WG3129668-4 DUP		WG3129668-3						
Silver (Ag)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	12-AUG-19
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	12-AUG-19
Boron (B)		<2.5	<2.5	RPD-NA	mg/L	N/A	50	12-AUG-19
Barium (Ba)		<0.50	<0.50	RPD-NA	mg/L	N/A	50	12-AUG-19
Cadmium (Cd)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	12-AUG-19
Chromium (Cr)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	12-AUG-19
Lead (Pb)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	12-AUG-19



Workorder: L2324663 Report Date: 13-AUG-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R47	746602								
<b>WG3129668-4</b> Selenium (Se)	DUP		<b>WG3129668-3</b> < 0.025	<0.025	RPD-NA	mg/L	N/A	50	12-AUG-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	12-AUG-19
<b>WG3129668-2</b> Silver (Ag)	LCS			96.0		%		70-130	12-AUG-19
Arsenic (As)				93.1		%		70-130	12-AUG-19
Boron (B)				82.1		%		70-130	12-AUG-19
Barium (Ba)				95.4		%		70-130	12-AUG-19
Cadmium (Cd)				94.9		%		70-130	12-AUG-19
Chromium (Cr)				94.2		%		70-130	12-AUG-19
Lead (Pb)				96.9		%		70-130	12-AUG-19
Selenium (Se)				94.2		%		70-130	12-AUG-19
Uranium (U)				98.6		%		70-130	12-AUG-19
<b>WG3129668-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	12-AUG-19
Arsenic (As)				<0.050		mg/L		0.05	12-AUG-19
Boron (B)				<2.5		mg/L		2.5	12-AUG-19
Barium (Ba)				<0.50		mg/L		0.5	12-AUG-19
Cadmium (Cd)				<0.0050		mg/L		0.005	12-AUG-19
Chromium (Cr)				<0.050		mg/L		0.05	12-AUG-19
Lead (Pb)				<0.050		mg/L		0.05	12-AUG-19
Selenium (Se)				<0.025		mg/L		0.025	12-AUG-19
Uranium (U)				<0.25		mg/L		0.25	12-AUG-19
WG3129668-5	MS		WG3129668-3						
Silver (Ag)				102.4		%		50-140	12-AUG-19
Arsenic (As)				92.4		%		50-140	12-AUG-19
Boron (B)				80.0		%		50-140	12-AUG-19
Barium (Ba)				91.9		%		50-140	12-AUG-19
Cadmium (Cd)				91.2		%		50-140	12-AUG-19
Chromium (Cr)				94.2		%		50-140	12-AUG-19
Lead (Pb)				94.1		%		50-140	12-AUG-19
Selenium (Se)				93.5		%		50-140	12-AUG-19
Uranium (U)				94.0		%		50-140	12-AUG-19

Workorder: L2324663 Report Date: 13-AUG-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3

# ALS Environmental

## Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2324663-COFC

COC Number: 15 -

age 1 of

	www.alsglobal.com												1 (2004) 1 (2014)							
Report To		y name below will	appear on the final rep	ort	Ï	Report Format	/ Distribution					JOD.	firm all E	&P TAT	s with yo	our AM -	surcharge	es will appl	ly	
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Phone:	647-253-0596 EXT 601	6			☐Compare Result	s to Criteria on Report -	provide details belo	ow if box checked	DRE D	3 (	iay [P3]		EMERGENCY		Si	ame D	av. We	ekend o	or	_
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City/Province:	Oakville, ON				Email 2	bimww@alsgloba	l.com		For tes	ts that ca	n not be pe	formed acc	ording to	the serv	rice leve	l selecte	d, you wil	l be contac	:ted.	
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•	en from a Regulated DW S	ystem?			(0)00	acino oco omy,			Ice P	en Packs ing Initi		그 ce Cubes 기							No	6
Are samples for human drinking water use?										R TEMPE	RATURE	s °C	7 7 7 7		FINAL CO	OLER T	EMPERA"	TURES °C		
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Released By : K	endra Button	ate : 6-Aug-19	9	Time:	Received by:		Date:		Time	):	Receiv	ed by:	>	<del>1</del>		Date:	A	11-1	9	Time: 240



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 14-AUG-19

Report Date: 19-AUG-19 11:47 (MT)

Version: FINAL

Client Phone: 647-253-0596

# Certificate of Analysis

Lab Work Order #: L2328345
Project P.O. #: 4500057496
Job Reference: MP-ASH-223

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2328345-1 MP-ASH-223 Sampled By: LC/SJP/AK on 12-AUG-19 @ 08:25 Matrix: SOIL							
Sample Preparation							
Initial pH	12.01		0.10	pH units		16-AUG-19	R4757170
Final pH	6.12		0.10	pH units		16-AUG-19	
Physical Tests	0.12		0.10	p ao			
% Moisture	1.52		0.10	%	16-AUG-19	17-AUG-19	R4758559
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		16-AUG-19	R4758536
Barium (Ba)	<0.50		0.50	mg/L		16-AUG-19	R4758536
Boron (B)	<2.5		2.5	mg/L		16-AUG-19	R4758536
Cadmium (Cd)	0.230		0.0050	mg/L		16-AUG-19	R4758536
Chromium (Cr)	<0.050		0.050	mg/L		16-AUG-19	
Lead (Pb)	<0.050		0.050	mg/L		16-AUG-19	
Mercury (Hg)	<0.00010		0.00010	mg/L		16-AUG-19	
Selenium (Se)	<0.025		0.025	mg/L		16-AUG-19	
Silver (Ag)	<0.0050		0.0050	mg/L		16-AUG-19	
Uranium (U)	<0.25		0.25	mg/L		16-AUG-19	
Zinc (Zn)-Total	1.8		1.0	mg/L		16-AUG-19	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2328345 CONTD....

PAGE 3 of 3 Version: FINAL **Reference Information** 

### **Test Method References:**

MET-TCLP-EXTRA-WT

**ALS Test Code** Matrix Method Reference\*\* **Test Description** Mercury (CVAA) for O.Reg 347 **HG-TCLP-WT** Waste **EPA 1631E** 

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 **EPA 1311** 

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

O. Reg 347 Extra Metals on TCLP Leachate

Waste

MET-TCLP-WT O.Reg 347 TCLP Leachable Metals Waste **EPA 6020B** 

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

**EPA 200.8** 

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

**Laboratory Definition Code Laboratory Location** WT ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SÁMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2328345 Report Date: 19-AUG-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R4758	559							
<b>WG3134609-3 DL</b> % Moisture	JP	<b>L2328812-5</b> 6.51	6.86		%	5.2	20	17-AUG-19
<b>WG3134609-2 LC</b> % Moisture	S		101.7		%		90-110	17-AUG-19
<b>WG3134609-1 ME</b> % Moisture	3		<0.10		%		0.1	17-AUG-19
HG-TCLP-WT	Waste							
Batch R47575	538							
WG3134842-3 DU Mercury (Hg)	JP	<b>L2328345-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	16-AUG-19
<b>WG3134842-2 LC</b> Mercury (Hg)	S		93.9		%		70-130	16-AUG-19
WG3134842-1 ME Mercury (Hg)	3		<0.00010		mg/L		0.0001	16-AUG-19
WG3134842-4 MS Mercury (Hg)	3	L2328345-1	95.6		%		50-140	16-AUG-19
MET-TCLP-EXTRA-WT	Waste							
Batch R4758	536							
WG3134746-4 DU Zinc (Zn)-Total	JP	<b>WG3134746-3</b> 1.8	1.8		mg/L	0.8	30	16-AUG-19
WG3134746-2 LC Zinc (Zn)-Total	S		93.1		%		70-130	16-AUG-19
WG3134746-1 ME Zinc (Zn)-Total	3		<1.0		mg/L		1	16-AUG-19
<b>WG3134746-5 MS</b> Zinc (Zn)-Total	5	WG3134746-3	94.9		%		70-130	16-AUG-19
MET-TCLP-WT	Waste							
Batch R4758								
WG3134746-4 DL		WG3134746-3						
Silver (Ag)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	16-AUG-19
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	16-AUG-19
Boron (B)		<2.5	<2.5	RPD-NA	mg/L	N/A	50	16-AUG-19
Barium (Ba)		<0.50	<0.50	RPD-NA	mg/L	N/A	50	16-AUG-19
Cadmium (Cd)		0.230	0.223		mg/L	3.3	50	16-AUG-19
Chromium (Cr)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	16-AUG-19
Lead (Pb)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	16-AUG-19



Workorder: L2328345 Report Date: 19-AUG-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	758536								
WG3134746-4	DUP		WG3134746-3			_			
Selenium (Se)			<0.025	<0.025	RPD-NA	mg/L	N/A	50	16-AUG-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	16-AUG-19
<b>WG3134746-2</b> Silver (Ag)	LCS			96.9		%		70-130	16-AUG-19
Arsenic (As)				93.7		%		70-130	16-AUG-19
Boron (B)				88.4		%		70-130	16-AUG-19
Barium (Ba)				95.1		%		70-130	16-AUG-19
Cadmium (Cd)				96.3		%		70-130	16-AUG-19
Chromium (Cr)				97.7		%		70-130	16-AUG-19
Lead (Pb)				97.8		%		70-130	16-AUG-19
Selenium (Se)				97.1		%		70-130	16-AUG-19
Uranium (U)				101.4		%		70-130	16-AUG-19
<b>WG3134746-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	16-AUG-19
Arsenic (As)				<0.050		mg/L		0.05	16-AUG-19
Boron (B)				<2.5		mg/L		2.5	16-AUG-19
Barium (Ba)				<0.50		mg/L		0.5	16-AUG-19
Cadmium (Cd)				<0.0050		mg/L		0.005	16-AUG-19
Chromium (Cr)				<0.050		mg/L		0.05	16-AUG-19
Lead (Pb)				<0.050		mg/L		0.05	16-AUG-19
Selenium (Se)				<0.025		mg/L		0.025	16-AUG-19
Uranium (U)				<0.25		mg/L		0.25	16-AUG-19
<b>WG3134746-5</b> Silver (Ag)	MS		WG3134746-3	93.2		%		50-140	16-AUG-19
Arsenic (As)				99.0		%		50-140	16-AUG-19
Boron (B)				95.9		%		50-140	16-AUG-19
Barium (Ba)				104.6		%		50-140	16-AUG-19
Cadmium (Cd)				92.5		%		50-140	16-AUG-19
Chromium (Cr)				101.5		%		50-140	16-AUG-19
Lead (Pb)				99.9		%		50-140	16-AUG-19
Selenium (Se)				101.7		%		50-140	16-AUG-19
Uranium (U)				100.7		%		50-140	16-AUG-19

Page 3 of 3

Workorder: L2328345 Report Date: 19-AUG-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

### Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

# ) Environmental

### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2328345-COFC

COC Number: 15 -

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City/Province:	Oakville, ON				Email 2	bimww@alsgloba	l.com		For tests that can not be performed according to the service level selected, you will be contacted.												
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Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 23-AUG-19

Report Date: 29-AUG-19 15:15 (MT)

Version: FINAL

Client Phone: 647-253-0596

## Certificate of Analysis

Lab Work Order #: L2334527 Project P.O. #: 4500057496 Job Reference: MP-ASH-224

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2334527 CONTD....

PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2334527-1 MP-ASH-224 Sampled By: EA/MA on 20-AUG-19 @ 16:45 Matrix: SOIL							
Sample Preparation							
Initial pH	12.04		0.10	pH units		29-AUG-19	R4777546
Final pH	8.27		0.10	pH units		29-AUG-19	
Physical Tests				'			
% Moisture	0.43		0.10	%	26-AUG-19	26-AUG-19	R4768382
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		29-AUG-19	R4776936
Barium (Ba)	<0.50		0.50	mg/L		29-AUG-19	R4776936
Boron (B)	<2.5		2.5	mg/L		29-AUG-19	R4776936
Cadmium (Cd)	<0.0050		0.0050	mg/L		29-AUG-19	R4776936
Chromium (Cr)	1.23		0.050	mg/L		29-AUG-19	R4776936
Lead (Pb)	<0.050		0.050	mg/L		29-AUG-19	
Mercury (Hg)	<0.00010		0.00010	mg/L		29-AUG-19	
Selenium (Se)	<0.025		0.025	mg/L		29-AUG-19	
Silver (Ag)	<0.0050		0.0050	mg/L		29-AUG-19	
Uranium (U)	<0.25		0.25	mg/L		29-AUG-19	
Zinc (Zn)-Total	<1.0		1.0	mg/L		29-AUG-19	

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2334527 CONTD....

PAGE 3 of 3

Wersion: FINAL

### **Reference Information**

#### **Test Method References:**

ALS Test Code Matrix Test Description Method Reference\*\*

HG-TCLP-WT Waste Mercury (CVAA) for O.Reg 347 EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP EPA 200.8

I eachate

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2334527 Report Date: 29-AUG-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R47	768382								
<b>WG3143027-3</b> % Moisture	DUP		<b>L2334805-2</b> 5.35	5.38		%	0.5	20	26-AUG-19
<b>WG3143027-2</b> % Moisture	LCS			100.5		%		90-110	26-AUG-19
<b>WG3143027-1</b> % Moisture	МВ			<0.10		%		0.1	26-AUG-19
HG-TCLP-WT		Waste							
Batch R47	777109								
<b>WG3147234-3</b> Mercury (Hg)	DUP		<b>L2334527-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	29-AUG-19
<b>WG3147234-2</b> Mercury (Hg)	LCS			93.3		%		70-130	29-AUG-19
<b>WG3147234-1</b> Mercury (Hg)	MB			<0.00010		mg/L		0.0001	29-AUG-19
<b>WG3147234-4</b> Mercury (Hg)	MS		L2334527-1	91.3		%		50-140	29-AUG-19
MET-TCLP-EXTRA-	WT	Waste							
Batch R47	76936								
<b>WG3147005-4</b> Zinc (Zn)-Total	DUP		<b>WG3147005-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	29-AUG-19
<b>WG3147005-2</b> Zinc (Zn)-Total	LCS			96.9		%		70-130	29-AUG-19
<b>WG3147005-1</b> Zinc (Zn)-Total	MB			<1.0		mg/L		1	29-AUG-19
<b>WG3147005-5</b> Zinc (Zn)-Total	MS		WG3147005-3	98.3		%		70-130	29-AUG-19
MET-TCLP-WT		Waste							
Batch R47	76936								
WG3147005-4	DUP		WG3147005-3			_			
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	29-AUG-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	29-AUG-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	29-AUG-19
Barium (Ba)			<0.50	<0.50	RPD-NA	mg/L	N/A	50	29-AUG-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	29-AUG-19
Chromium (Cr)			1.23	1.24		mg/L	0.8	50	29-AUG-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	29-AUG-19



Workorder: L2334527 Report Date: 29-AUG-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	776936								
<b>WG3147005-4</b> Selenium (Se)	DUP		<b>WG3147005-3</b> <0.025	<0.025	RPD-NA	mg/L	N/A	50	29-AUG-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	29-AUG-19
<b>WG3147005-2</b> Silver (Ag)	LCS			101.3		%		70-130	29-AUG-19
Arsenic (As)				98.2		%		70-130	29-AUG-19
Boron (B)				95.9		%		70-130	29-AUG-19
Barium (Ba)				97.1		%		70-130	29-AUG-19
Cadmium (Cd)				95.2		%		70-130	29-AUG-19
Chromium (Cr)				100.3		%		70-130	29-AUG-19
Lead (Pb)				101.4		%		70-130	29-AUG-19
Selenium (Se)				96.9		%		70-130	29-AUG-19
Uranium (U)				98.2		%		70-130	29-AUG-19
<b>WG3147005-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	29-AUG-19
Arsenic (As)				<0.050		mg/L		0.05	29-AUG-19
Boron (B)				<2.5		mg/L		2.5	29-AUG-19
Barium (Ba)				<0.50		mg/L		0.5	29-AUG-19
Cadmium (Cd)				<0.0050		mg/L		0.005	29-AUG-19
Chromium (Cr)				<0.050		mg/L		0.05	29-AUG-19
Lead (Pb)				<0.050		mg/L		0.05	29-AUG-19
Selenium (Se)				<0.025		mg/L		0.025	29-AUG-19
Uranium (U)				<0.25		mg/L		0.25	29-AUG-19
WG3147005-5	MS		WG3147005-3						
Silver (Ag)				124.5		%		50-140	29-AUG-19
Arsenic (As)				103.9		%		50-140	29-AUG-19
Boron (B)				99.9		%		50-140	29-AUG-19
Barium (Ba)				108.7		%		50-140	29-AUG-19
Cadmium (Cd)				101.3		%		50-140	29-AUG-19
Chromium (Cr)				108.0		%		50-140	29-AUG-19
Lead (Pb)				103.4		%		50-140	29-AUG-19
Selenium (Se)				102.8		%		50-140	29-AUG-19
Uranium (U)				102.5		%		50-140	29-AUG-19

Page 3 of 3

Workorder: L2334527 Report Date: 29-AUG-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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



Chain of Custody (COC) / Analytica Request Form

COC Number: 15 -

Canada Toll Free: 1 800 668 9878

Project Information		www.alsglobal.com	<u>m</u>																					
Select Report Format:   Descriptions   Descriptio						T	Report Format / Distribution						Select Service Level Below - rivase confirm all E&P TATs with your AM - surcharges will apply											
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Street   275 Upper Middle Rd. E. Suite #300   Email 1 or Fax plane(#361981action   Protect Color   Cell FOC3   Email 2   Disrovage(#361981action   Protect Color   Cell FOC3   Email 2   Disrovage(#361981action   Protect Color   Cell FOC3   Email 3   Email 2   Disrovage(#361981action   Protect Color   Cell FOC3   Email 3   Email 3   Email 3   Email 4   Email 5   Email 3   Email 5   Email 5   Email 5   Email 5   Email 5   Email 5   Email 5   Email 5   Email 6   Email 6   Email 6   Email 7   E	Phone:										ORITY OR	3		_			GENC					-		
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Baffinland Iron Mine's Corporation (Oakville)

ATTN: Connor Devereaux 2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 09-OCT-19

Report Date: 11-OCT-19 17:08 (MT)

Version: FINAL

Client Phone: 647-253-0596

# **Certificate of Analysis**

**Lab Work Order #: L2362326**Project P.O. #: 4500057496

Job Reference: MS-ASH-177

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

ALS CANADA LTD Part of the ALS Group An ALS Limited Company



L2362326 CONTD.... PAGE 2 of 3

Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2362326-1 MS-ASH-177							
Sampled By: BM/BC on 06-OCT-19 @ 17:15 Matrix: SOIL							
Sample Preparation							
Initial pH	12.10		0.10	pH units		11-OCT-19	R4867373
Final pH	5.27		0.10	pH units		11-OCT-19	R4867373
Physical Tests							
% Moisture TCLP Metals	4.11		0.25	%	09-OCT-19	09-OCT-19	R4863231
Arsenic (As)	<0.050		0.050	mg/L		11-OCT-19	R4867665
Barium (Ba)	<0.50		0.50	mg/L		11-OCT-19	
Boron (B)	<2.5		2.5	mg/L		11-OCT-19	
Cadmium (Cd)	0.0107		0.0050	mg/L		11-OCT-19	R4867665
Chromium (Cr)	<0.050		0.050	mg/L		11-OCT-19	R4867665
Lead (Pb)	<0.050		0.050	mg/L		11-OCT-19	
Mercury (Hg)	<0.00010		0.00010	mg/L		11-OCT-19	
Selenium (Se)	<0.025		0.025	mg/L		11-OCT-19	
Silver (Ag)	<0.0050		0.0050	mg/L		11-OCT-19	
Uranium (U)	<0.25		0.25	mg/L		11-OCT-19	
Zinc (Zn)-Total	5.0		1.0	mg/L		11-OCT-19	R4867665
* Poter to Poteropaed Information for Qualifiers (if any) appe							

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2362326 CONTD....

PAGE 3 of 3 Version: FINAL

### Reference Information

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 **EPA 1311** 

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP **EPA 200.8** 

Leachate

MET-TCLP-WT O.Reg 347 TCLP Leachable Metals Waste EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<b>Laboratory Definition Code</b>	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

#### **Chain of Custody Numbers:**

### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2362326 Report Date: 11-OCT-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil							
Batch R48	363231								
<b>WG3186252-3</b> % Moisture	DUP		<b>L2362248-1</b> 7.32	7.78		%	6.0	20	09-OCT-19
<b>WG3186252-2</b> % Moisture	LCS			100.3		%		90-110	09-OCT-19
<b>WG3186252-1</b> % Moisture	MB			<0.25		%		0.25	09-OCT-19
HG-TCLP-WT		Waste							
Batch R48	367369								
<b>WG3188992-3</b> Mercury (Hg)	DUP		<b>L2359664-2</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	11-OCT-19
<b>WG3188992-2</b> Mercury (Hg)	LCS			89.4		%		70-130	11-OCT-19
<b>WG3188992-1</b> Mercury (Hg)	МВ			<0.00010		mg/L		0.0001	11-OCT-19
<b>WG3188992-4</b> Mercury (Hg)	MS		L2359664-2	85.6		%		50-140	11-OCT-19
MET-TCLP-EXTRA-	wT	Waste							
Batch R48	367665								
<b>WG3189126-4</b> Zinc (Zn)-Total	DUP		<b>WG3189126-3</b> <1.0	1.1	RPD-NA	mg/L	N/A	30	11-OCT-19
<b>WG3189126-2</b> Zinc (Zn)-Total	LCS			96.1		%		70-130	11-OCT-19
<b>WG3189126-1</b> Zinc (Zn)-Total	MB			<1.0		mg/L		1	11-OCT-19
<b>WG3189126-5</b> Zinc (Zn)-Total	MS		WG3189126-3	95.1		%		70-130	11-OCT-19
MET-TCLP-WT		Waste							
	367665								
WG3189126-4	DUP		WG3189126-3						
Silver (Ag)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	11-OCT-19
Arsenic (As)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	11-OCT-19
Boron (B)			<2.5	<2.5	RPD-NA	mg/L	N/A	50	11-OCT-19
Barium (Ba)			0.63	0.67		mg/L	5.6	50	11-OCT-19
Cadmium (Cd)			<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	11-OCT-19
Chromium (Cr)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	11-OCT-19
Lead (Pb)			<0.050	<0.050	RPD-NA	mg/L	N/A	50	11-OCT-19



Workorder: L2362326 Report Date: 11-OCT-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	867665								
WG3189126-4	DUP		WG3189126-3						
Selenium (Se)			<0.025	<0.025	RPD-NA	mg/L	N/A	50	11-OCT-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	11-OCT-19
<b>WG3189126-2</b> Silver (Ag)	LCS			97.9		%		70-130	11-OCT-19
Arsenic (As)				97.3		%		70-130	11-OCT-19
Boron (B)				96.1		%		70-130	11-OCT-19
Barium (Ba)				101.7		%		70-130	11-OCT-19
Cadmium (Cd)				103.1		%		70-130	11-OCT-19
Chromium (Cr)				103.0		%		70-130	11-OCT-19
Lead (Pb)				97.7		%		70-130	11-OCT-19
Selenium (Se)				101.4		%		70-130	11-OCT-19
Uranium (U)				100.8		%		70-130	11-OCT-19
<b>WG3189126-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	11-OCT-19
Arsenic (As)				<0.050		mg/L		0.05	11-OCT-19
Boron (B)				<2.5		mg/L		2.5	11-OCT-19
Barium (Ba)				<0.50		mg/L		0.5	11-OCT-19
Cadmium (Cd)				<0.0050		mg/L		0.005	11-OCT-19
Chromium (Cr)				<0.050		mg/L		0.05	11-OCT-19
Lead (Pb)				< 0.050		mg/L		0.05	11-OCT-19
Selenium (Se)				<0.025		mg/L		0.025	11-OCT-19
Uranium (U)				<0.25		mg/L		0.25	11-OCT-19
<b>WG3189126-5</b> Silver (Ag)	MS		WG3189126-3	109.4		%		50-140	11-OCT-19
Arsenic (As)				97.9		%		50-140	11-OCT-19
Boron (B)				96.7		%		50-140	11-OCT-19
Barium (Ba)				102.6		%		50-140	11-OCT-19
Cadmium (Cd)				101.6		%		50-140	11-OCT-19
Chromium (Cr)				104.1		%		50-140	11-OCT-19
Lead (Pb)				96.6		%		50-140	11-OCT-19
Selenium (Se)				102.5		%		50-140	11-OCT-19
Uranium (U)				97.8		%		50-140	11-OCT-19

Workorder: L2362326 Report Date: 11-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

### Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3

# ALS) Environmental

### Chain of Custody (COC) / Analyti Request Form

Canada Toll Free: 1 800 668 9878

L2362326-COFC

COC Number: 15 -

Page 1 of

OCTOBER 2015 FRONT

	www.alsglobal.com																			
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WHITE - LABORATORY COPY YELLOW - CLIENT COPY

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION



Baffinland Iron Mine's Corporation (Oakville)

ATTN: Connor Devereaux 2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 16-OCT-19

Report Date: 17-OCT-19 15:03 (MT)

Version: FINAL

Client Phone: 647-253-0596

## **Certificate of Analysis**

 Lab Work Order #:
 L2365589

 Project P.O. #:
 4500057496

 Job Reference:
 MS-ASH-178

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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L2365589 CONTD....

PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

L2365880   MS_ASH-178   Sampled By: BCR3US on 12 OCT-19 @ 11:00   Sample Preparation   Initial pH   11:69   0.10   pH units   17-OCT-19   R4873   SMoleture   15-OCT-19   R4873   SMoleture	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Sample Preparation         11.69         0.10         pH units         17-OCT-19         R4873           Final pH         7.56         0.10         pH units         17-OCT-19         R4873           Physical Tests         0.26         0.25         %         16-OCT-19         R4871           Woisture         0.26         0.25         %         16-OCT-19         R4871           TCLP Metals         0.050         0.050         mg/L         17-OCT-19         R4873           Arsenic (As)         <0.050	Sampled By: BC/SJS on 12-OCT-19 @ 11:00							
Initial pH								
Final pH       7.56       0.10       pH units       17-OCT-19       R4873         Physical Tests       % Moisture       0.26       0.25       %       16-OCT-19       16-OCT-19       R4871         TCLP Metals         Arsenic (As)       <0.050		11.69		0.10	pH units		17-OCT-19	R4873107
Physical Tests       0.26       0.25       %       16-OCT-19       R4871         TCLP Metals       4.0050       0.050       mg/L       17-OCT-19       R4873         Barium (Ba)       4.0       2.5       mg/L       17-OCT-19       R4873         Boron (B)       4.0       2.5       mg/L       17-OCT-19       R4873         Cadmium (Cd)       0.0375       0.0050       mg/L       17-OCT-19       R4873         Chromium (Cr)       1.70       0.050       mg/L       17-OCT-19       R4873         Lead (Pb)       <0.050       0.050       mg/L       17-OCT-19       R4873         Mercury (Hg)       <0.00010       0.00010       mg/L       17-OCT-19       R4873         Selenium (Se)       <0.025       0.025       mg/L       17-OCT-19       R4873         Silver (Ag)       <0.0050       0.050       mg/L       17-OCT-19       R4873         Uranium (U)       <0.25       0.25       mg/L       17-OCT-19       R4873					· ·			
TCLP Metals <td></td> <td></td> <td></td> <td></td> <td>·</td> <td></td> <td></td> <td></td>					·			
Arsenic (As)       <0.050		0.26		0.25	%	16-OCT-19	16-OCT-19	R4871796
Barium (Ba)       <0.50	TCLP Metals							
Boron (B)       4.0       2.5       mg/L       17-OCT-19       R48737         Cadmium (Cd)       0.0375       0.0050       mg/L       17-OCT-19       R48737         Chromium (Cr)       1.70       0.050       mg/L       17-OCT-19       R48737         Lead (Pb)       <0.050	Arsenic (As)	<0.050		0.050	mg/L		17-OCT-19	R4873293
Cadmium (Cd)       0.0375       0.0050       mg/L       17-OCT-19       R48732         Chromium (Cr)       1.70       0.050       mg/L       17-OCT-19       R48732         Lead (Pb)       <0.050	Barium (Ba)	<0.50		0.50	mg/L			
Chromium (Cr)         1.70         0.050         mg/L         17-OCT-19         R48732           Lead (Pb)         <0.050	Boron (B)	4.0		2.5	mg/L		17-OCT-19	R4873293
Lead (Pb)       <0.050	Cadmium (Cd)	0.0375		0.0050	mg/L		17-OCT-19	R4873293
Mercury (Hg)         <0.00010	Chromium (Cr)	1.70		0.050	mg/L		17-OCT-19	R4873293
Selenium (Se)       <0.025	Lead (Pb)	<0.050		0.050	mg/L		17-OCT-19	R4873293
Silver (Ag)       <0.0050	Mercury (Hg)	<0.00010		0.00010	mg/L		17-OCT-19	R4872753
Uranium (U) <0.25 0.25 mg/L 17-OCT-19 R4873	Selenium (Se)	<0.025		0.025	mg/L		17-OCT-19	R4873293
	Silver (Ag)	<0.0050		0.0050	mg/L		17-OCT-19	R4873293
Zinc (Zn)-Total	Uranium (U)	<0.25		0.25	mg/L		17-OCT-19	R4873293
	Zinc (Zn)-Total	<1.0		1.0	mg/L		17-OCT-19	R4873293

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2365589 CONTD....

Reference Information

PAGE 3 of 3 Version: FINAL

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP EPA 200.8

Leachate

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

### **Chain of Custody Numbers:**

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2365589 Report Date: 17-OCT-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R4871796								
WG3192041-3 DUP % Moisture		<b>L2365199-3</b> 14.2	13.7		%	3.8	20	16-OCT-19
<b>WG3192041-2 LCS</b> % Moisture			100.3		%		90-110	16-OCT-19
<b>WG3192041-1 MB</b> % Moisture			<0.25		%		0.25	16-OCT-19
HG-TCLP-WT	Waste							
Batch R4872753								
WG3193423-3 DUP Mercury (Hg)		<b>L2362291-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	17-OCT-19
WG3193423-2 LCS Mercury (Hg)			99.2		%		70-130	17-OCT-19
WG3193423-1 MB Mercury (Hg)			<0.00010		mg/L		0.0001	17-OCT-19
WG3193423-4 MS Mercury (Hg)		L2362291-1	89.6		%		50-140	17-OCT-19
MET-TCLP-EXTRA-WT	Waste							
Batch R4873293								
WG3193449-4 DUP Zinc (Zn)-Total		<b>WG3193449-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	17-OCT-19
WG3193449-2 LCS Zinc (Zn)-Total			94.4		%		70-130	17-OCT-19
WG3193449-1 MB Zinc (Zn)-Total			<1.0		mg/L		1	17-OCT-19
WG3193449-5 MS		WG3193449-3			-			
Zinc (Zn)-Total			95.1		%		70-130	17-OCT-19
MET-TCLP-WT	Waste							
Batch R4873293		WC2402440.2						
<b>WG3193449-4 DUP</b> Silver (Ag)		<b>WG3193449-3</b> < 0.0050	<0.0050	RPD-NA	mg/L	N/A	50	17-OCT-19
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	17-OCT-19
Boron (B)		<2.5	<2.5	RPD-NA	mg/L	N/A	50	17-OCT-19
Barium (Ba)		<0.50	<0.50	RPD-NA	mg/L	N/A	50	17-OCT-19
Cadmium (Cd)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	17-OCT-19
Chromium (Cr)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	17-OCT-19
Lead (Pb)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	17-OCT-19



Workorder: L2365589 Report Date: 17-OCT-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
	873293								
WG3193449-4 Selenium (Se)	DUP		<b>WG3193449-</b> 3 < 0.025	<b>3</b> <0.025	RPD-NA	mg/L	N/A	50	17 OCT 10
Uranium (U)			<0.025	<0.025	RPD-NA	mg/L	N/A N/A	50	17-OCT-19 17-OCT-19
WG3193449-2	LCS		<b>VO.25</b>	<b>\0.25</b>	KFD-NA	mg/L	IN/A	30	17-001-19
Silver (Ag)	LUS			96.8		%		70-130	17-OCT-19
Arsenic (As)				95.5		%		70-130	17-OCT-19
Boron (B)				91.3		%		70-130	17-OCT-19
Barium (Ba)				98.0		%		70-130	17-OCT-19
Cadmium (Cd)				96.3		%		70-130	17-OCT-19
Chromium (Cr)				98.1		%		70-130	17-OCT-19
Lead (Pb)				98.2		%		70-130	17-OCT-19
Selenium (Se)				95.6		%		70-130	17-OCT-19
Uranium (U)				98.6		%		70-130	17-OCT-19
<b>WG3193449-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	17-OCT-19
Arsenic (As)				<0.050		mg/L		0.05	17-OCT-19
Boron (B)				<2.5		mg/L		2.5	17-OCT-19
Barium (Ba)				<0.50		mg/L		0.5	17-OCT-19
Cadmium (Cd)				<0.0050		mg/L		0.005	17-OCT-19
Chromium (Cr)				< 0.050		mg/L		0.05	17-OCT-19
Lead (Pb)				< 0.050		mg/L		0.05	17-OCT-19
Selenium (Se)				<0.025		mg/L		0.025	17-OCT-19
Uranium (U)				<0.25		mg/L		0.25	17-OCT-19
<b>WG3193449-5</b> Silver (Ag)	MS		WG3193449-3	<b>3</b> 105.2		%		50-140	17-OCT-19
Arsenic (As)				96.4		%		50-140	17-OCT-19
Boron (B)				94.3		%		50-140	17-OCT-19
Barium (Ba)				97.2		%		50-140	17-OCT-19
Cadmium (Cd)				96.9		%		50-140	17-OCT-19
Chromium (Cr)				97.8		%		50-140	17-OCT-19
Lead (Pb)				99.2		%		50-140	17-OCT-19
Selenium (Se)				97.6		%		50-140	17-OCT-19
Uranium (U)				98.2		%		50-140	17-OCT-19

Workorder: L2365589 Report Date: 17-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

### Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3



## Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2365589-COFC

COC Number: 15 -

1 of

- 1

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Report To	Contact and compa	ny name below will app	ear on the final report			Report Forma	/ DISTRIBUTION		Select 9	Service Lo	vel Below	Please con								
Company:	Baffinland Iron Mines C	orp.			Select Report Fo	<del></del>	J EXCEL J E		L		jular (R)		indard 1	AT if re					- no surcha	
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	Company address below	will appear on the final	report							2 day [P2] Statutory holiday [E0]										
Street:	2275 Upper Middle Rd.	E., Suite #300			Email 1 or Fax	bimcore@alsgloba	l.com		Date and Time Required for all E&P TATs:											
City/Province:	Oakville, ON				Email 2				For test	s that ca	n not be pe	formed acco	ording to	the ser	vice leve	el select	ed, you w	rill be c	ontacted.	
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Baffinland Iron Mine's Corporation (Oakville)

ATTN: Connor Devereaux 2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 16-OCT-19

Report Date: 17-OCT-19 15:04 (MT)

Version: FINAL

Client Phone: 647-253-0596

## **Certificate of Analysis**

**Lab Work Order #: L2365592**Project P.O. #: 4500057496

Job Reference: MP-ASH-226

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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L2365592 CONTD....

PAGE 2 of 3 Version: FINAL

### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2365592-1 MP-ASH-226 Sampled By: EA/LC on 11-OCT-19 @ 09:15 Matrix: SOIL							
Sample Preparation							
Initial pH	12.17		0.10	pH units		17-OCT-19	R4873107
Final pH	7.78		0.10	pH units		17-OCT-19	
Physical Tests							
% Moisture	31.9		0.25	%	16-OCT-19	16-OCT-19	R4871796
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		17-OCT-19	
Barium (Ba)	<0.50		0.50	mg/L		17-OCT-19	
Boron (B)	2.8		2.5	mg/L		17-OCT-19	
Cadmium (Cd)	<0.0050		0.0050	mg/L		17-OCT-19	R4873293
Chromium (Cr)	0.833		0.050	mg/L		17-OCT-19	R4873293
Lead (Pb)	<0.050		0.050	mg/L		17-OCT-19	R4873293
Mercury (Hg)	<0.00010		0.00010	mg/L		17-OCT-19	R4872753
Selenium (Se)	< 0.025		0.025	mg/L		17-OCT-19	R4873293
Silver (Ag)	<0.0050		0.0050	mg/L		17-OCT-19	R4873293
Uranium (U)	<0.25		0.25	mg/L		17-OCT-19	R4873293
Zinc (Zn)-Total	<1.0		1.0	mg/L		17-OCT-19	R4873293

<sup>\*</sup> Refer to Referenced Information for Qualifiers (if any) and Methodology.

L2365592 CONTD....

PAGE 3 of 3
Version: FINAL

### **Reference Information**

### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	EPA 1631E

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter and analysed using atomic absorption spectrophotometry (EPA 1631E).

LEACH-TCLP-WT Waste Leachate Procedure for Reg 347 EPA 1311

Inorganic and Semi-Volatile Organic contaminants are leached from waste samples in strict accordance with US EPA Method 1311, "Toxicity Characteristic Leaching Procedure" (TCLP). Test results are reported in leachate concentration units (normally mg/L).

MET-TCLP-EXTRA-WT Waste O. Reg 347 Extra Metals on TCLP EPA 200.8

Leachate

MET-TCLP-WT Waste O.Reg 347 TCLP Leachable Metals EPA 6020B

This analysis is carried out in accordance with the extraction procedure outlined in "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods Volume 1C" SW-846 EPA Method 1311, published by the United States Environmental Protection Agency (EPA). In summary, the sample is extracted at a 20:1 liquid to solids ratio for 16 to 20 hours using either extraction fluid #1 (glacial acetic acid, water and sodium hydroxide) or extraction fluid #2 (glacial acetic acid), depending on the pH of the original sample. The extract is then filtered through a 0.6 to 0.8 micron glass fibre filter. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020B).

MOISTURE-WT Soil % Moisture CCME PHC in Soil - Tier 1 (mod)

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

### **Chain of Custody Numbers:**

### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid weight of sample

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2365592 Report Date: 17-OCT-19 Page 1 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	Soil							
Batch R4871796								
WG3192041-3 DUP % Moisture		<b>L2365199-3</b> 14.2	13.7		%	3.8	20	16-OCT-19
<b>WG3192041-2 LCS</b> % Moisture			100.3		%		90-110	16-OCT-19
<b>WG3192041-1 MB</b> % Moisture			<0.25		%		0.25	16-OCT-19
HG-TCLP-WT	Waste							
Batch R4872753								
WG3193423-3 DUP Mercury (Hg)		<b>L2362291-1</b> <0.00010	<0.00010	RPD-NA	mg/L	N/A	50	17-OCT-19
WG3193423-2 LCS Mercury (Hg)			99.2		%		70-130	17-OCT-19
WG3193423-1 MB Mercury (Hg)			<0.00010		mg/L		0.0001	17-OCT-19
WG3193423-4 MS Mercury (Hg)		L2362291-1	89.6		%		50-140	17-OCT-19
MET-TCLP-EXTRA-WT	Waste							
Batch R4873293								
WG3193449-4 DUP Zinc (Zn)-Total		<b>WG3193449-3</b> <1.0	<1.0	RPD-NA	mg/L	N/A	30	17-OCT-19
WG3193449-2 LCS Zinc (Zn)-Total			94.4		%		70-130	17-OCT-19
WG3193449-1 MB Zinc (Zn)-Total			<1.0		mg/L		1	17-OCT-19
WG3193449-5 MS		WG3193449-3			-			
Zinc (Zn)-Total			95.1		%		70-130	17-OCT-19
MET-TCLP-WT	Waste							
Batch R4873293		WC2402440.2						
<b>WG3193449-4 DUP</b> Silver (Ag)		<b>WG3193449-3</b> < 0.0050	<0.0050	RPD-NA	mg/L	N/A	50	17-OCT-19
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	17-OCT-19
Boron (B)		<2.5	<2.5	RPD-NA	mg/L	N/A	50	17-OCT-19
Barium (Ba)		<0.50	<0.50	RPD-NA	mg/L	N/A	50	17-OCT-19
Cadmium (Cd)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	17-OCT-19
Chromium (Cr)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	17-OCT-19
Lead (Pb)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	17-OCT-19



Workorder: L2365592 Report Date: 17-OCT-19 Page 2 of 3

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste							
Batch R4	873293								
<b>WG3193449-4</b> Selenium (Se)	DUP		<b>WG3193449-3</b> < 0.025	<0.025	RPD-NA	mg/L	N/A	50	17-OCT-19
Uranium (U)			<0.25	<0.25	RPD-NA	mg/L	N/A	50	17-OCT-19
<b>WG3193449-2</b> Silver (Ag)	LCS			96.8		%		70-130	17-OCT-19
Arsenic (As)				95.5		%		70-130	17-OCT-19
Boron (B)				91.3		%		70-130	17-OCT-19
Barium (Ba)				98.0		%		70-130	17-OCT-19
Cadmium (Cd)				96.3		%		70-130	17-OCT-19
Chromium (Cr)				98.1		%		70-130	17-OCT-19
Lead (Pb)				98.2		%		70-130	17-OCT-19
Selenium (Se)				95.6		%		70-130	17-OCT-19
Uranium (U)				98.6		%		70-130	17-OCT-19
<b>WG3193449-1</b> Silver (Ag)	MB			<0.0050		mg/L		0.005	17-OCT-19
Arsenic (As)				<0.050		mg/L		0.05	17-OCT-19
Boron (B)				<2.5		mg/L		2.5	17-OCT-19
Barium (Ba)				<0.50		mg/L		0.5	17-OCT-19
Cadmium (Cd)				<0.0050		mg/L		0.005	17-OCT-19
Chromium (Cr)				<0.050		mg/L		0.05	17-OCT-19
Lead (Pb)				< 0.050		mg/L		0.05	17-OCT-19
Selenium (Se)				<0.025		mg/L		0.025	17-OCT-19
Uranium (U)				<0.25		mg/L		0.25	17-OCT-19
WG3193449-5	MS		WG3193449-3						
Silver (Ag)				105.2		%		50-140	17-OCT-19
Arsenic (As)				96.4		%		50-140	17-OCT-19
Boron (B)				94.3		%		50-140	17-OCT-19
Barium (Ba)				97.2		%		50-140	17-OCT-19
Cadmium (Cd)				96.9		%		50-140	17-OCT-19
Chromium (Cr)				97.8		%		50-140	17-OCT-19
Lead (Pb)				99.2		%		50-140	17-OCT-19
Selenium (Se)				97.6		%		50-140	17-OCT-19
Uranium (U)				98.2		%		50-140	17-OCT-19

Workorder: L2365592 Report Date: 17-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

### Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

IRM Internal Reference Material
CRM Certified Reference Material
CCV Continuing Calibration Verification
CVS Calibration Verification Standard
LCSD Laboratory Control Sample Duplicate

### **Sample Parameter Qualifier Definitions:**

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### **Hold Time Exceedances:**

All test results reported with this submission were conducted within ALS recommended hold times.

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The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 3 of 3



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Contact:	Wiliam Bowden and Conno	r Devereaux	Quality Control (QC) Report with Report						1781				_ 1 2 1				Same Day, Weekend or				_			
Phone:	Phone: 647-253-0596 EXT 6016				Compare Results to Criteria on Report - provide details below if box checked					1 2 5 1				- 1	MERGEN									
Company address below will appear on the final report					Select Distribution:   EMAIL   MAIL   FAX					Е					<u> </u>		Statutory holiday [E0]							
Street:	2275 Upper Middle Rd. E.,		Email 1 or Fax bimcore@alsglobal.com						Date and Time Required for all E&P TATs:  For tests that can not be performed according to the service level selected, you will be contacted.															
City/Province:	Oakville, ON		Email 2	For tes	ts that co	n not be	performe	d accord						rill be c	ontacted.									
Postal Code:	L6H 0C3	· · ·			Email 3						Analysis Request													
Invoice To	Same as Report To	✓ YES [	NO			Invoice Distribution					Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below													
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Drinking Water (DW) Samples <sup>1</sup> (client use)				/ - <b>-</b>	pecify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				Froz	en						Observ				_	No			
Are samples taken from a Regulated DW System?					-					Ice Packs 🔲 Ice Cubes 🔲 Custody seal intact Yes 🔲 No														
☐ YES ☑ NO									ling Ini															
Are samples for human drinking water use?									INII	MPERA	MPERATURES °C				FINAL COOLER TEMPE				URES °C					
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SHIPMENT RELEASE (client use)					INITIAL SHIPMENT RECEPTION (lab use only)						Г		FIN	IAL SI	IIPM	ENTF	RECE	PTION	ا (lab	use o	nly)			
Released By : Sten Sundin Date : 14-Oct-19 Time:			ime:	Received by: Date:					<b>=</b> :	Rece	eived b	y:		./	) T	Date			-10	<b>7</b> [8	M9/1C			
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REFER TO BAC	K PAGE FOR ALS LOCATIONS	AND SAMPLIN	IG INFORMATION			WH	IITE - LABORATO	RY COPY YEL	LOW -	CLIEN	T COP	Υ			<b>J</b>							OCTOBER 2015 FRO		

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

<sup>1.</sup> If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.