

APPENDIX E.8.4

Initial and Follow-up Spill Reports

Spill Report Number:

20-009



February 12, 2020

Water Resource Officer
Nunavut Field Operations
Crown-Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0
Jonathan.mesher@canada.ca

Regulatory Manager, Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-009, Reported on January 14, 2020
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On January 13, 2020 at approximately 20:00hrs, an operator was filling the rear compartment of fuel and lube tanker (FLT-018) at the designated Mine Site Fueling Module, when the operator observed that fuel had begun to overflow from the fuel tank. The operator immediately shut off the pump, closed the valves and utilized absorbents and spill trays to contain the release. Approximately 200L of diesel fuel was released to the ground surface impacting an approximate area of 10 m² within the lined engineered containment berm of the refueling area. The spill occurred >100 m to the nearest water course on Inuit Owned Land (IOL) and had no possibility of migration from the affected area.

Immediate and Follow-Up Action:

The operator immediately shut off the fuel pump, closed the valves and laid down spill pads, booms and spill trays to contain the spill. The contaminated material was removed and properly disposed of in two quatex bags to be back hauled offsite. The tanker fuel compartment maximum fill level label at 85% was added to prevent overfilling of the tank. Standard operating procedures are continuing to be reviewed with fuel operators and the importance of monitoring levels at all times.

Recommendations:

Review effectiveness of overfill prevention system on FLT-018 to ensure proper functionality.

Current Status:

The refueling and transportation of fuel continues and no further incidents have occurred.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux at (647) 253-0596 x6016.

Prepared By:

A handwritten signature in black ink, appearing to read "Connor Devereaux".

Connor Devereaux
Environmental Superintendent

Reviewed by:

A handwritten signature in black ink, appearing to read "Tim Nehring".

Tim Nehring
Mine Operations Superintendent

Attach: Photos, Map, NT-NU Spill Report

cc. Tim Sewell, Sylvain Proulx, Megan Lord-Hoyle, Francois Gaudreau, Brian Marshall, Christopher Murray, Shawn Stevens (Baffinland), Chris Spencer (QIA), Justin Hack, Jeremy Fraser (CIRNAC)



Photo 1. Spill location before clean-up

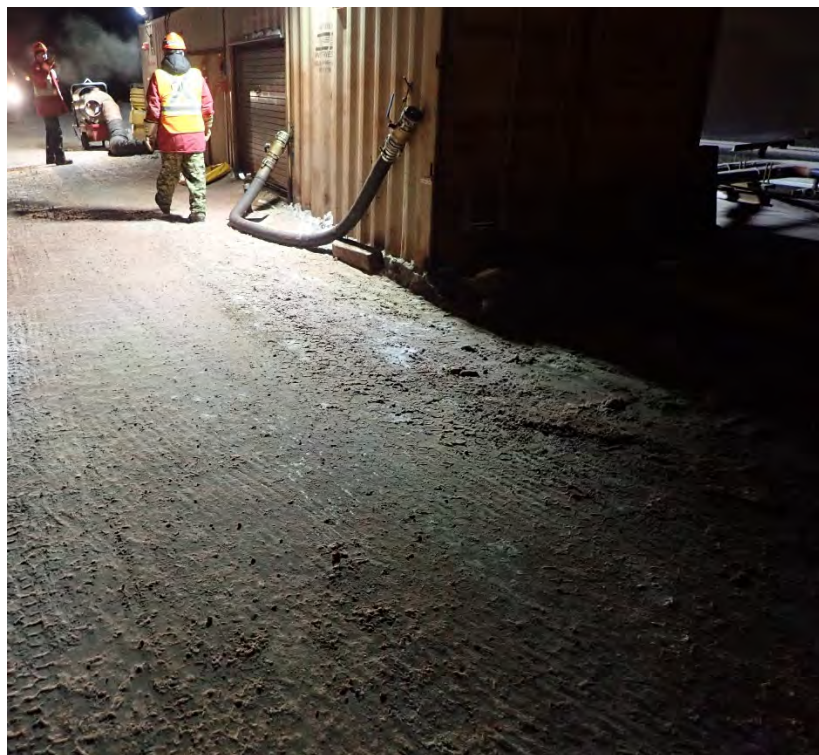


Photo 2. Spill location following clean-up



**Spill#20-009
200L Arctic Diesel
Mine Site
January 13, 2020**

Figure 1 – Map of spill location



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH - DAY - YEAR 01-14-2020		REPORT TIME 19:00		☒ ORIGINAL SPILL REPORT OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER 20 009
	OCCURRENCE DATE: MONTH - DAY - YEAR 01-13-2020		OCCURRENCE TIME 20:00			
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301			WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU			REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 18 SECONDS 52			LONGITUDE DEGREES 79 MINUTES 17 SECONDS 01		
	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.			RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED N/A			CONTRACTOR ADDRESS OR OFFICE LOCATION N/A		
	PRODUCT SPILLED Arctic Diesel			QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Approx. 200L		U.N. NUMBER N/A
H	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A			QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A		U.N. NUMBER N/A
	SPILL SOURCE Fuel & Lube Tanker			SPILL CAUSE Overfill		AREA OF CONTAMINATION IN SQUARE METRES 10m2
J	FACTORS AFFECTING SPILL OR RECOVERY Liner subsurface			DESCRIBE ANY ASSISTANCE REQUIRED N/A		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A
	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On January 13, 2020 at approximately 20:00 hrs, an operator was filling the rear compartment of the fuel and lube tanker (FLT-018) when the operator noticed fuel overflowing from the fuel tank. The compartment has a safe fill level of 95% but overflowed at 90%. The operator immediately shut off the fuel pump, closed the valves and laid down spill pads and a duck pond to contain the spill. Approx. 200L of diesel fuel was released to the ground surface within the refueling area which is a lined engineered containment berm, impacting an approx. area of 10m2. The contaminated material was removed and properly disposed of in quatrex bags. The spill occurred >100 m to the nearest water course (which is currently frozen). The investigation is ongoing and further details will be provided in the follow-up report. This spill is being reported as required by the conditions of NWB Water License no. 2AM-MRY1325, Part H, item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).					
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM Mary River	TELEPHONE 416 364 8820	
	ANY ALTERNATE CONTACT Shawn Stevens	POSITION HSES Manager	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE ext. 6016	
REPORT LINE USE ONLY						
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130	
	LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS		
LEAD AGENCY						
FIRST SUPPORT AGENCY						
SECOND SUPPORT AGENCY						
THIRD SUPPORT AGENCY						

PAGE 1 OF 1

Figure 2 – NT-NU Spill report

Spill Report Number:

20-044



March 11, 2020

Water Resources Officer
Nunavut Field Operations
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0
Jonathan.mesher@canada.ca

Regulatory Manager, Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-044
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On February 10, 2020 at approximately 13:30 hrs a site services worker identified a sewage release at the bottom of the Mine Site Sailiivik Complex (C Wing). An electrician confirmed the lift station fuse had malfunctioned, causing the pump to fail and the lift station to overflow. Approximately 12-15 m³ of sewage was released to the camp pad ground surface, impacting an area of approximately 176 m². The location is >100m to the nearest water course which is currently frozen.

Immediate and Follow-Up Action:

On arrival, the electrician reset and repaired the fuse to prevent any further spillage and notified the supervisor. A vacuum truck was dispatched to respond to the spill, and was used to clean up and remove the released sewage from the area. Following removal, the sewage was cleaned up and disposed of in the Polishing Waste Stabilization Ponds.

Recommendations:

An increased frequency of routine inspections of the system and routine checks for system alarms. Upon further investigation, the external alarm indicator light was also replaced at the water treatment plant.

Current Status:

The lift station is currently operating as per Baffinland's internal practices and procedures.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux at (647) 253- 0596 x 6016.

Prepared by:

A handwritten signature in black ink, appearing to read "Connor Devereaux".

Connor Devereaux
Environmental Superintendent

Reviewed by:

A handwritten signature in black ink, appearing to read "Shawn Parry".

Shawn Parry
Manager, Road Maintenance & Site Services

Attach: Photos, Map, Baffinland NT-NU Spill Report

cc. Tim Sewell, Sylvain Proulx, Megan Lord-Hoyle, Francois Gaudreau, Brian Marshall, Christopher Murray, Shawn Stevens, Lou Kamermans (Baffinland), Chris Spencer (QIA), Justin Hack, Jeremy Fraser (CIRNAC)



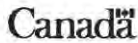
Photo 1. Spill location before clean-up



Photo 2. Spill location following clean-up



Figure 1. Map of spill location



NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH - DAY - YEAR 02-11-2020	REPORT TIME 21:30	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER 20 - 044
B	OCCURRENCE DATE: MONTH - DAY - YEAR 02-10-2020	OCCURRENCE TIME 13:30		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301	WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN	
E	LATITUDE DEGREES 71 MINUTES 18 SECONDS 51		LONGITUDE DEGREES 79 MINUTES 18 SECONDS 05	
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Sutie 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED Horizon North	CONTRACTOR ADDRESS OR OFFICE LOCATION N/A		
H	PRODUCT SPILLED Sewage	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Approx. 15m3	U.N. NUMBER N/A	
	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A	U.N. NUMBER N/A	
I	SPILL SOURCE Sewage Line	SPILL CAUSE Leaking Pipe	AREA OF CONTAMINATION IN SQUARE METRES 176 m2	
J	FACTORS AFFECTING SPILL OR RECOVERY Congested area, camp structure	DESCRIBE ANY ASSISTANCE REQUIRED N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On February 10, 2020 at 13:30 HRS, a site services worker identified a liquid near the bottom of the Mine Site Sailiivik Complex C Wing. A vacuum truck was immediately brought to the location but the liquid, identified to be spilled sewage, was frozen. Upon investigation, it was determined that a fuse had blown, causing the lift station pump to fail and subsequently overflowed. The spill originated under D Wing and flowed under C Wing through a conduit beside the affected lift station. Approximately 15 m3 of sewage was released under the camp pad ground surface, impacting approximately 176 m2 area. This location is >100 m to the nearest water course (currently frozen). The investigation of the incident is ongoing and details will be provided in the follow-up report. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).			
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 416-364-8820
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of HSES	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION 416-364-8820
TELEPHONE ext. 6016				
ALTERNATE TELEPHONE ext. 6006				
REPORT LINE USE ONLY				
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT
				REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN	
AGENCY			FILE STATUS ☐ OPEN ☐ CLOSED	
CONTACT NAME			REMARKS	
LEAD AGENCY				
FIRST SUPPORT AGENCY				
SECOND SUPPORT AGENCY				
THIRD SUPPORT AGENCY				

PAGE 1 OF 1

Figure 2. Baffinland NT NU spill report

Spill Report Number:

20-068



April 2, 2020

Water Resources Officer
Nunavut Field Operations
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0
Jonathan.Mesher@canada.ca

Regulatory Manager, Major Projects
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-068
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On March 3, 2020 at approximately 02:30 hrs a crusher operator identified hydraulic gear oil leaking from a hydraulic hose leading to the cone on Crusher B. It was determined that the hydraulic line cracked causing the line to leak at a low pressure. The spill originated under Crusher B and remained in the immediate area. Approximately 200L of hydraulic gear oil was released under Crusher B, impacting approximately 6 m². This location is >100 m to the nearest water course which is currently frozen.

Immediate and Follow-Up Action:

Once the spill was identified the unit was immediately shut off, spill pads were placed and a skid steer was dispatched to respond. The contaminated material was removed and properly disposed of in quatrex bags to be back hauled off site. The line was replaced within 24 hrs and a preventative maintenance inspection was scheduled for all similar crushing systems.

Recommendations:

The frequency of preventative maintenance inspections has been increased for this, and similar, systems.

Current Status:

The system has been repaired back to designed specification and no further incidents have occurred.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux at (647) 253- 0596 x6016.

Prepared by:

A handwritten signature in black ink, appearing to read "Connor Devereaux".

Connor Devereaux
Environmental Superintendent

Reviewed by:

A handwritten signature in black ink, appearing to read "Lyle Johnson".

Lyle Johnson
Crushing Superintendent

Attach: Photos, Map, Baffinland NT-NU Spill Report

cc. Tim Sewell, Sylvain Proulx, Megan Lord-Hoyle, Francois Gaudreau, Brian Marshall, Christopher Murray, Shawn Stevens, Lou Kamermans (Baffinland), Chris Spencer (QIA), Justin Hack, Jeremy Fraser (CIRNAC)



Photo 1. Spill location before clean-up



Photo 2. Spill location following clean-up



Figure 1. Map of spill location



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH—DAY—YEAR 03-03-2020	REPORT TIME 18:00	☒ ORIGINAL SPILL REPORT OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER 20-068
B	OCCURRENCE DATE: MONTH—DAY—YEAR 03-03-2020	OCCURRENCE TIME 2:30		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301	WATER LICENSE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN	
E	LATITUDE DEGREES 71 MINUTES 18 SECONDS 40		LONGITUDE DEGREES 79 MINUTES 16 SECONDS 26	
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED N/A	CONTRACTOR ADDRESS OR OFFICE LOCATION N/A		
H	PRODUCT SPILLED Mobil SHC Gear 150	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Approx. 200L	U.N. NUMBER N/A	
H	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A	U.N. NUMBER N/A	
I	SPELL SOURCE Crusher B	SPILL CAUSE Cracked Hydraulic Line	AREA OF CONTAMINATION IN SQUARE METRES 6 m2	
J	FACTORS AFFECTING SPILL OR RECOVERY Cold temps, structure above	DESCRIBE ANY ASSISTANCE REQUIRED N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On March 3, 2020 at 2:30 HRS, a crusher operator identified hydraulic oil leaking from a hydraulic hose leading to the cone on Crusher B. The unit was immediately shut off, spill pads were put down and a skid steer was brought to the location the spill. Using the skid steer 2 quatrex bags of spill contaminated material was re-mediated. Upon investigation, it was determined that the hydraulic line cracked causing the the line to leak at a low pressure. The spill originated under Crusher B and remained in the immediate area. Approximately 200L of hydraulic gear oil was released under Crusher B, impacting approximately 6 m2. This location is >100 m to the nearest water course (currently frozen). The investigation of the incident is ongoing and details will be provided in the follow-up report. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).			
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 416-364-8820
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of HSES	EMPLOYER Baffinland	ALTERNATE CONTACT 416-364-8820
REPORT LINE USE ONLY				
N	RECEIVED AT SPILL LINE BY STATION OPERATOR	POSITION STATION OPERATOR	EMPLOYER YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN	
AGENCY			FILE STATUS ☐ OPEN ☐ CLOSED	
CONTACT NAME			REMARKS	
LEAD AGENCY				
FIRST SUPPORT AGENCY				
SECOND SUPPORT AGENCY				
THIRD SUPPORT AGENCY				

PAGE 1 OF 1

Figure 2. Baffinland NT NU spill report

Spill Report Number:

20-115



May 25, 2020

Water Resources Officer
Nunavut Field Operations
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0
Jonathan.Mesher@canada.ca

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-115
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On April 26, 2020 at 14:00 HRS, while clearing snow in the R3 laydown, a loader operator made contact with a tote of motor oil. The spotter noticed that this resulted in a puncture in the tote and immediately notified the operator. The tote was immediately placed on its side to stop any further release to the ground. A berm was constructed from the surrounding snow to prevent any further migration of the spill and spill pads were placed over the contaminated area, impacting approximately 6 m².

Immediate and Follow-Up Action:

The tote was placed on its side to prevent further release. A berm was constructed from the surrounding snow and spill pads were placed down. The Environmental Department was contacted and the clean up commenced. The contaminated snow and spill pads were removed and placed in quatrex bags for disposal. The following morning a tool box meeting was presented focusing on the importance of a spotter and communication.

Current Status:

The contaminated material has been removed from the area.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux or Aaron MacDonell at (647) 253- 0596 x6016.

Prepared by:

Aaron MacDonell
Environmental Superintendent

Reviewed by:

Remi Pelletier
Road Maintenance Superintendent

Attach: Photos, Map, Baffinland NT-NU Spill Report

cc. Tayfun Eldem, Tim Sewell, Shawn Stevens, Connor Devereaux, Brian Marshall, Francois Gaudreau, Christopher Murray, Amanda McKenzie, Shawn Parry, Ryan Edwards (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).



Photo 1. Motor Oil spill on R3 Laydown



Photo 2. Remediated area at R3 Laydown



Figure 1. Map of spill location



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: SDMS@baffinland.ca

A REPORT DATE: MONTH - DAY - YEAR 04-27-2020		REPORT TIME 13:30		☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # TO THE ORIGINAL SPILL REPORT		REPORT NUMBER 20-115
B OCCURRENCE DATE: MONTH - DAY - YEAR 04-26-2020		OCCURRENCE TIME 14:00				
C LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301			WATER LICENSE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"			
D GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU			REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN			
E LATITUDE DEGREES 71 MINUTES 50 SECONDS 98			LONGITUDE DEGREES 80 MINUTES 50 SECONDS 57			
F RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3				
G ANY CONTRACTOR INVOLVED Qikiqtaaluk Sana		CONTRACTOR ADDRESS OR OFFICE LOCATION 1700 Talbot Blvd., Office 400, Chicoutimi, QC G7H 7Y1				
H PRODUCT SPILLED Motor oil		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Approx. 600L		U.N. NUMBER N/A		
SECOND PRODUCT SPILLED (IF APPLICABLE) N/A		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A		U.N. NUMBER N/A		
I SPILL SOURCE Storage tote		SPILL CAUSE Tote puncture		AREA OF CONTAMINATION IN SQUARE METRES 6 m2		
J FACTORS AFFECTING SPILL OR RECOVERY Snow accumulation		DESCRIBE ANY ASSISTANCE REQUIRED N/A		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A		
K ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On April 26, 2020 at 14:00 HRS, while clearing snow in the R3 laydown, a loader operator made contact with a tote of motor oil. The spotter noticed that this resulted in a puncture in the tote and immediately notified the operator. The tote was immediately placed on its side to stop any further release to the ground. A berm was constructed from the surrounding snow to prevent any further migration of the spill and spill pads were placed over the contaminated area, impacting approximately 6 m2. The contaminated snow was then removed and deposited in a quatrex bag. This location is >100 m to the nearest water course which is currently frozen. An investigation of the incident is ongoing and details will be provided in the follow-up report. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9(b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).						
L REPORTED TO SPILL LINE BY Connor Devereaux		POSITION Env. Superintendent		EMPLOYER Baffinland		LOCATION CALLING FROM 416-364-8820
M ANY ALTERNATE CONTACT Shawn Stevens		POSITION Manager of HSES		EMPLOYER Baffinland		ALTERNATE CONTACT 416-364-8820 LOCATION ext. 6006
REPORT LINE USE ONLY						
N RECEIVED AT SPILL LINE BY		POSITION STATION OPERATOR		EMPLOYER		LOCATION CALLED YELLOWKNIFE, NT
LEAD AGENCY ☐ EC ☐ COG ☐ GNWT ☐ GN ☐ RA ☐ INAC ☐ NEB ☐ TC				SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME		CONTACT TIME		REMARKS
LEAD AGENCY						
FIRST SUPPORT AGENCY						
SECOND SUPPORT AGENCY						
THIRD SUPPORT AGENCY						

Figure 2. Baffinland NT NU spill report

Spill Report Number:

20-141



June 15, 2020

Water Resources Officer
Nunavut Field Operations
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Enforcement Officer
Environment and Climate Change Canada
933 Mivvik Street
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-141 - Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On May 16, 2020, warming temperatures resulted in snowmelt runoff containing sediment-laden water which was observed to be flowing at the following locations at the Mary River Mine Site:

Sample Location	Description	Location (UTM; NAD83 Zone 17W)	
		Easting	Northing
CLSP-OUT	Camp Lake Sedimentation Ponds outlet	557805.43	7914795
CLT-OUT	Camp Lake Tributary 1 (100 m upstream of Camp Lake outfall)	557686.20	7914947
SDLT-OUT	Sheardown Lake Tributary 1 (100 m upstream of Sheardown Lake outfall)	560332.41	7913519
LDFG-OUT	Sheardown Lake Landfill gate tributary (40 m Upstream of Sheardown Lake outfall)	561017.65	7912968

The source of the sedimentation was snow melt from the surrounding mine site infrastructure. The event resulted in sediment-laden water flowing onto and under the ice of Camp Lake and Sheardown Lake. Attachment 4 outlines the water quality results from monitoring conducted from May 16 to June 13, 2020.

Immediate and Follow-Up Action:

Upon discovery of the elevated instream Total Suspended Solids (TSS) conditions at these drainages, personnel worked to install sedimentation mitigation measures including check dams, silt fences, sand bags and coir logs in accordance with Baffinland's Surface Water and Aquatic Ecosystem Management Plan to slow the flow and settle sediments prior to the water entering the streams. Water diversion and pumping strategies were also implemented to reduce potential erosion and sedimentation. With freshet conditions present, daily monitoring of the water quality is ongoing. As per Baffinland's Freshet Monitoring Procedure, daily monitoring is conducted until seven (7) compliant sample results are obtained and, subsequently, the sampling frequency is reduced to weekly. The sampling frequency returns to a daily frequency if further non-compliant results are obtained.



In 2020, permanent erosion and sediment control measures were implemented and reinforced, including the maintenance of check dams up slope of the CLSP outfall, and rip rapping of high risk areas, including the sandy slope upstream of the CLSP outfall. In the days leading up to freshet, snow pack around the inlets and outlets of select culvert locations was excavated, including the CLT and SDLT crossings, to reduce the volume of snow melt and thus, the amount of overland flow present to mobilize sediment.

Current Status:

Conditions at CLT, CLSP, SDLT and LDGF, as well as other freshet monitoring locations, are currently being sampled and assessed as per Baffinland's Freshet Monitoring Program. An updated report will be submitted on completion of the monitoring program to document the water quality of water bodies and surface water drainages near Project infrastructure and summarize the corrective actions implemented to address sediment releases and other areas of concern identified during freshet 2020. Monitoring will continue during the presence of freshet conditions and routine maintenance of check dams, silt fences and other ESC measures will be performed as necessary to ensure their effective operation.

Sampling at outfall sample locations LDGF and CLT has indicated seven (7) consecutive days of compliant TSS results and, as such, the sampling frequency at these two (2) locations was reduced from daily to weekly, in accordance with the Freshet Monitoring Program. A return to the daily frequency will resume at these locations if future non-compliant results are received.

Water Licence compliance samples for contact water and surface runoff taken on May 25 and June 5 at downstream surface discharge monitoring station MS-C-E, located near CV-187, indicate TSS concentrations of 4.4 mg/L and 35.0 mg/L, respectively.

Should you require further information or clarification on the incident described above, please feel free to contact Aaron MacDonell at (647) 253-0596 (ext. 6735) or Connor Devereaux (ext. 6016).

Prepared by:

A handwritten signature in blue ink, appearing to read "Connor Devereaux".

Connor Devereaux
Environmental Superintendent

Reviewed by:

A handwritten signature in blue ink, appearing to read "Shawn Stevens".

Shawn Stevens
Manager of Health, Safety, Environment and Security

Cc: Justin Hack, Jeremy Fraser (CIRNAC)
Tayfun Eldem, Tim Sewell, Shawn Stevens, Connor Devereaux, Brian Marshall, Francois Gaudreau,
Christopher Murray, Amanda McKenzie (Baffinland)



Attachments

Attachment 1: Photos

Attachment 2: Mine Site Freshet Monitoring Locations

Attachment 3: Baffinland NT-NU Spill Report

Attachment 4: Water Quality Results



Attachment 1

Photos

CLT Drainage



Photo 1. Snow Clearing at the Outlet of BG-01 (May 14, 2020)



Photo 2. CLT Outfall on May 14, 2020



Photo 3. CLT Outfall on May 16, 2020



Photo 4: BG-01 Downstream Ditch with Sand Bags (May 18, 2020)



Photo 5. Silt Fencing at the Outlet of BG-01 (May 18, 2020)



Photo 6. Pumping Diversion from Unstable Sandy Slope at the Outlet of BG-01 (May 18, 2020)



Photo 7. CLT Outfall on June 11, 2020

CLSP Drainage



Photo 1. Snow Removal at the Camp Lake Check Dams on April 21, 2020



Photo 2. Camp Lake Check Dams on May 16, 2020



Photo 3: CLSP Outfall on May 16, 2020



Photo 4: Camp Lake Sump with Coir Log on May 18, 2020



Photo 5: Camp Lake Check Dams with Sand Bags on May 18, 2020



Photo 6: Camp Lake Settling Improvements on May 21, 2020



Photo 7: Camp Lake Check Dam Improvements on May 21, 2020



Photo 8: Camp Lake Slope Rip Rapping on May 23, 2020



Photo 9: CLSP Outfall into Silt Curtain on June 11, 2020

SDLT Drainage



Photo 1: Snow removal upstream of SDLT-OUT on May 16, 2020



Photo 2: SDLT Outfall on May 14, 2020



Photo 3. SDLT Outfall on May 16, 2020



Photo 4. Erosion and Sediment Control Down Slope of Power Generation Building Minimizing Sediment Entering CV-187 (May 22, 2020)



Photo 5. Check Dam Reinforcement and Expansion at the Inlet of CV-187 (May 20, 2020)



Photo 6: SDLT Outfall on June 13, 2020

LDFG Drainage



Photo 1: LDFG Outfall on May 14, 2020



Photo 2: LDGF Outfall on May 17, 2020



Photo 3: LDGF Outfall on June 11, 2020



Attachment 2

Mine Site Freshet Monitoring Locations



LEGEND

- Freshet Monitoring Location
- Project Development Area

ᓄᓐᓇᓐ ᐃᓕᓕᓐᓇᓐ MARY RIVER PROJECT

Mine Site Monitoring Locations

Projection: NAD 1983 UTM ZONE 17N.
Base Map: © 2019 Digital Globe, Inc.
Imagery is representative as of August 2019.

0 120 240 480
Meters



ᓄᓐᓇᓐ ᐃᓕᓕᓐᓇᓐ
FIGURE

3



Attachment 3

Baffinland NT-NU Spill Report



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR		REPORT TIME		☐ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER _____
	OCCURRENCE DATE: MONTH – DAY – YEAR		OCCURRENCE TIME			
C	LAND USE PERMIT NUMBER (IF APPLICABLE)			WATER LICENCE NUMBER (IF APPLICABLE)		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION				REGION ☐ NWT ☐ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN	
E	LATITUDE DEGREES MINUTES SECONDS			LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION			
G	ANY CONTRACTOR INVOLVED		CONTRACTOR ADDRESS OR OFFICE LOCATION			
H	PRODUCT SPILLED		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES		U.N. NUMBER	
I	SPILL SOURCE		SPILL CAUSE		AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS					
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE	
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE	

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLED	REPORT LINE NUMBER
		STATION OPERATOR		YELLOWKNIFE, NT	(867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					



Attachment 4

Water Quality Results



Table 1. CLT Outfall Water Quality Results

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2448446-3	L2448471-1	L2448485-2	L2450893-5	L2450957-5	L2450971-1	L2451385-2	L2451851-1	L2452769-1	L2454043-1	L2454046-2
	Sample Date & Time			2020-05-16 17:50	2020-05-17 11:30	2020-05-18 15:15	2020-05-22 11:15	2020-05-23 8:30	2020-05-24 11:05	2020-05-25 10:05	2020-05-26 8:15	2020-05-27 9:30	2020-05-28 9:05	2020-05-29 10:05
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits											
pH	pH units	0.1	6.0 - 9.5	8.12	7.61	7.67	7.76	7.66	7.69	7.70	7.75	7.70	7.79	7.78
Total Suspended Solids	mg/L	2	30	422	113	9.2	53.5	8.8	8.8	11.7	8.0	8.3	20.2	22.5
Total Dissolved Solids	mg/L	20	-	228	116	78	236	26	33	66	67	98	90	73
Turbidity	NTU	0.1	-	742	150	44.4	83.8	26.2	21.2	28.7	24.0	14.2	27.5	27.2

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2454126-2	L2454149-1	L2455249-1	L2455933-1	L2456613-1	L2457275-1	L2457742-1	L2459153-4	L24604354-1	L2460353-1	L2460439-1
	Sample Date & Time			2020-05-30 9:45	2020-05-31 8:40	2020-06-02 9:00	2020-06-03 7:50	2020-06-04 8:10	2020-06-07 9:45	2020-06-08 8:45	6/10/2020 10:35	6/11/2020 7:45	6-12-2020 8:05	6-13-2020 10:55
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits											
pH	pH units	0.1	6.0 - 9.5	7.94	7.70	7.56	7.60	7.58	7.90	7.57	7.61	7.56	7.59	7.59
Total Suspended Solids	mg/L	2	30	10.2	4.5	5.4	21.1	13.2	188	26.4	13.9	7	4.5	8.7
Total Dissolved Solids	mg/L	20	-	104	67	48	71	64	132	58	40	49	39	59
Turbidity	NTU	0.1	-	15.2	11.7	8.09	25.0	9.35	125	27.0	21.7	13.6	9.75	11.5

Table 2. CLSP Outfall Water Quality Results

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT ¹
	ALS Laboratory Sample ID			L2448446-1	L2448485-1	L2450893-4	L2450957-4	L2451385-1	L2454046-1	L2454126-1
	Sample Date & Time			2020-05-16 17:15	2020-05-18 14:45	2020-05-22 10:30	2020-05-23 8:45	2020-05-25 9:40	2020-05-29 9:45	2020-05-30 9:30
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	7.78	7.78	7.91	7.89	7.92	7.57	7.69
Total Suspended Solids	mg/L	2	30	520	60.7	117	71.4	46.0	37.8	121
Total Dissolved Solids	mg/L	20	-	178	130	246	230	152	64	125
Turbidity	NTU	0.1	-	835	244	400	264	216	99.9	180

1. No additional samples taken due to frozen and then no flow conditions.



Table 3. SDLT Outfall Water Quality Results

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	
	ALS Laboratory Sample ID			L2448446-4	L2448471-3	L2448485-3	L2448977-3	L2450893-2	L2450957-2	L2450971-2	L2451385-3	L2451851-3	L2454046-3	L2454126-3
	Sample Date & Time			2020-05-16 18:20	2020-05-17 12:20	2020-05-18 16:00	2020-05-19 17:50	2020-05-22 9:40	2020-05-23 9:25	2020-05-24 12:15	2020-05-25 11:35	2020-05-26 8:50	2020-05-29 10:50	2020-05-30 10:15
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits											
pH	pH units	0.1	6.0 - 9.5	7.64	7.63	7.47	7.57	7.70	7.63	7.82	7.67	7.68	7.47	7.56
Total Suspended Solids	mg/L	2	30	98.1	96.3	7.6	16.0	13.6	7.6	3.2	6.5	2.4	60.9	17.9
Total Dissolved Solids	mg/L	20	-	155	120	79	41	99	44	40	87	113	49	72
Turbidity	NTU	0.1	-	353	191	63.8	64.7	52.5	38.9	18.3	30.0	24.3	51.3	28.3

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	
	ALS Laboratory Sample ID			L2454149-3	L2455249-3	L2455933-3	L2456613-2	L2457149-1	L2457251-1	L2457275-3	L2457742-2	L2459153-3	L2460354-4	L2460353-4	L2460439-3
	Sample Date & Time			2020-05-31 9:30	2020-06-02 9:45	2020-06-03 8:30	2020-06-04 8:40	2020-06-05 9:50	2020-06-06 9:30	2020-06-07 11:40	2020-06-08 9:20	6/10/2020 10:00	6/11/2020 9:05	6/12/2020 9:25	6/13/2020 18:35
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits												
pH	pH units	0.1	6.0 - 9.5	7.57	7.66	7.73	7.77	7.67	7.57	7.59	7.63	7.59	7.63	7.66	7.74
Total Suspended Solids	mg/L	2	30	11.0	18.8	25.9	27.7	75.0	38.8	17.4	67.2	17.4	67.2	16.1	5.5
Total Dissolved Solids	mg/L	20	-	75	62	99	165	142	91	63	104	63	104	67	87
Turbidity	NTU	0.1	-	22.2	33.0	58.7	56.8	124	75.0	43.7	161	43.7	161	41.4	26.6

Table 4. LDFG Outfall Water Quality Results

Analyte	Sample ID			LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	
	ALS Laboratory Sample ID			L2448471-4	L2448485-5	L2448977-1	L2450893-1	L2450957-1	L2450971-3	L2451385-4	L2451851-4	L2454046-5	L2454126-5	L2457275-4
	Sample Date & Time			2020-05-17 12:55	2020-05-18 16:20	2020-05-19 8:50	2020-05-22 8:40	2020-05-23 9:50	2020-05-24 14:35	2020-05-25 12:00	2020-05-26 9:35	2020-05-29 11:20	2020-05-30 10:40	2020-06-07 12:00
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits											
pH	pH units	0.1	6.0 - 9.5	7.47	7.40	7.39	7.56	7.51	7.60	7.62	7.65	7.41	7.46	7.53
Total Suspended Solids	mg/L	2	30	34.0	2.4	4.0	6.0	2.4	<2.0	<2.0	<2.0	7.5	2.5	6.5
Total Dissolved Solids	mg/L	20	-	85	65	32	70	21	30	40	71	24	44	30
Turbidity	NTU	0.1	-	84.7	27.4	18.5	36.5	23.3	25.4	18.1	18.1	31.2	27.7	38.1



Analyte	Sample ID			LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT
	ALS Laboratory Sample ID			L2457742-3	L2459153-1	L2460354-3	L2460353-2
	Sample Date & Time			2020-06-08 9:55	6-10-2020 9:40	6-11-2020 8:40	6-12-2020 8:40
	QA/QC Sample Type			N/A	N/A	N/A	N/A
	Units	LOR					
pH	pH units	0.1	6.0 - 9.5	7.54	7.66	7.67	7.74
Total Suspended Solids	mg/L	2	30	6.1	9.6	3.4	4.6
Total Dissolved Solids	mg/L	20	-	38	45	56	73
Turbidity	NTU	0.1	-	31.0	35.8	15.6	14.4

Spill Report Number:

20-179



July 14, 2020

Water Resources Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Enforcement Officer
Environment and Climate Change Canada
933 Mivvik Street
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-179
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On June 14th 2020, temperature fluctuations experienced on Deposit 1 caused rapid snow melt/runoff from the Mine Haul Road ditches at km 108.5, 107 and 106.5 to flow onto the tundra. Water flowing through the road's ditching and culvert system resulting in sediment-impacted water traveling across the mountain tundra, entering the Mary River Tributary and Mary River.

Sample Location	Description	Coordinates (Lat/Long)
E0-20	Mary River- Downstream of Project Infrastructure	71°17'45.1"N 79°16'34.5"W

Immediate and Follow-Up Action:

Upon discovery of the elevated TSS conditions, as outlined in the Surface Water Aquatic Effects Management Plan, sedimentation mitigation measures were implemented. Project personnel worked to install sedimentation mitigation measures, including ditch maintenance to ensure all runoff reported to the ditches and reduced interaction with impacted road surfaces. Check dams were maintained and silt fences added in an attempt to settle sediments before reaching the receiving environment.

Water quality samples, were collected on June 15th on Mary River at E0-20, an approved Aquatic Effects Monitoring Program sample site downstream of sediment releases to evaluate the impact on the receiving environment,.

In the days leading up to freshet, snow pack around the Mine Haul Road culverts and ditches were excavated to reduce the volume of snowmelt and thus, reduce the amount of overland flow present to mobilize sediment. Rip rap and check dams were also maintained at strategic locations. Water diversion and pumping strategies were implemented to reduce potential erosion and sedimentation.

Current Status:

Conditions at Mary River are currently being sampled and assessed as per Baffinland's Aquatic Effects Monitoring Program. Mary River is currently observed to be flowing under normal conditions and routine maintenance of check dams down gradient of the road is ongoing.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux or Aaron MacDonnell at (647) 253- 0596 x6016.



Prepared by:

Aaron MacDonnell
Environmental Superintendent

Attach: Photos, Map, Baffinland NT-NU Spill Report, Water Quality Results

cc. Sylvain Proulx, Tayfun Eldem, Tim Sewell, Shawn Stevens, Connor Devereaux, Brian Marshall, Francois Gaudreau, Christopher Murray, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC)



Photo 1.

KM106.5 Extended Culvert with Rip Rap



Photo 2. Sediment impacted water traveling across the tundra on June 15, 2020



Photo 3. Sediment impacted water traveling across the tundra on June 15, 2020

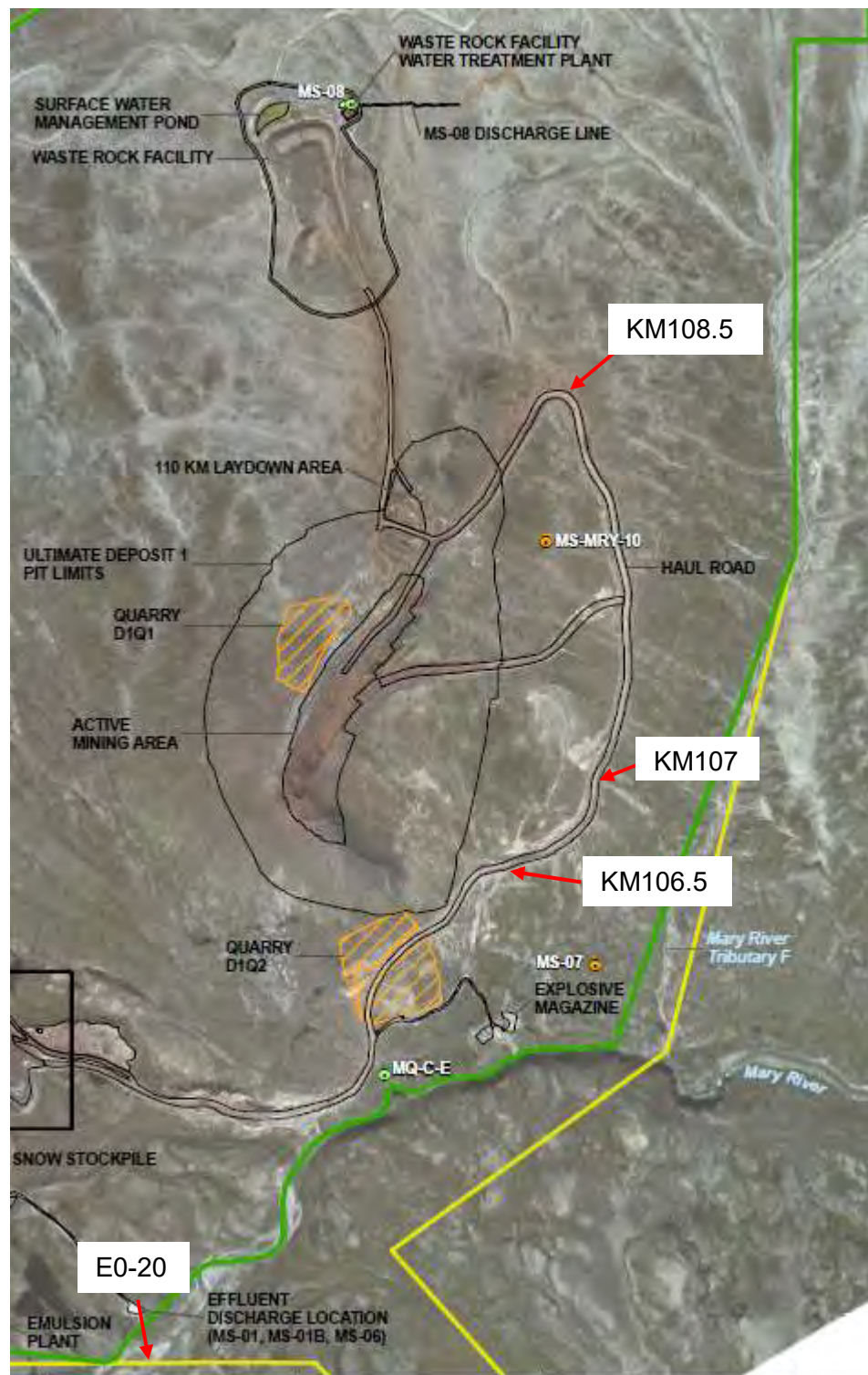


Photo 4. Sediment-impacted water quality at E0-20 on Mary River on June 15, 2020



Photo 5. Water quality at E0-20 on Mary River on July 3, 2020

Figure 1. Map of E0-20 sample location, KM 108.5, 107 and KM 106.5 impacted sediment locations





Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH - DAY - YEAR 06-15-2020	REPORT TIME 18:00	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT		REPORT NUMBER 20-179
B	OCCURRENCE DATE: MONTH - DAY - YEAR 06-14-2020		OCCURRENCE TIME Unknown		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301		WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Milne Inlet Site, Baffin Island, NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 18 SECONDS 39		LONGITUDE DEGREES 79 MINUTES 11 SECONDS 56		
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED N/A		CONTRACTOR ADDRESS OR OFFICE LOCATION N/A		
H	PRODUCT SPILLED Sediment		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES unquantifiable	U.N. NUMBER N/A	
	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A	U.N. NUMBER N/A	
I	SPILL SOURCE Snow melt		SPILL CAUSE Rapid snow melt	AREA OF CONTAMINATION IN SQUARE METRES N/A	
J	FACTORS AFFECTING SPILL OR RECOVERY Steep embankment, poor access		DESCRIBE ANY ASSISTANCE REQUIRED N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS: On June 14th 2020, temperature fluctuations experienced on Deposit 1 caused rapid snow melt/runoff from the Mine Haul Road ditches at km 108.5, 107 and 106.5 to flow impacted onto the tundra. Water runoff was observed through the road's ditching and culvert system resulting in sediment impacted water traveling across the mountain tundra, entering the Mary River Tributary and Mary River. In accordance with the surface water management plan, mitigation measures are being implemented including; reinforcing check dams, silt fences and ditch maintenance to settle sediments before discharge to the receiving environment. Surface water has also been diverted away from problematic areas to minimize the impacted water entering Mary River. A follow up report will be provided with further information on additional mitigation measures. This incident is being reported as required by the conditions of Water License no. 2AM-MRY1325, Part H, item 9(b) and as required by subsection 38(5) of the Fisheries Act.				
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 416-364-8820	TELEPHONE ext. 6016
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of HSES	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION 416-364-8820	ALTERNATE TELEPHONE ext. 6006
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY STATION OPERATOR	POSITION STATION OPERATOR	EMPLOYER STATION OPERATOR	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS: ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME		CONTACT TIME	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

PAGE 1 OF _____

Figure 2. Baffinland NT NU spill report



Table 1. E0-20 Water Quality Results

Analyte	Sample ID			E0-20	E0-20
	ALS Laboratory Sample ID			L2460909-1	L2470180-12
	Sample Date & Time			2020-06-15 09:50	2020-07-03 12:30
	Units	LOR	Limits		
pH	pH units	0.1	6.0 - 9.5	7.61	7.54
Total Suspended Solids	mg/L	2	30	45.9	7.7
Total Dissolved Solids	mg/L	20	-	73	67
Turbidity	NTU	0.1	-	31.3	6.79

Spill Report Number:

20-199



July 30, 2020

Water Resources Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Enforcement Officer
Environment and Climate Change Canada
933 Mivvik Street
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-199
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On June 30, 2020, environmental personnel monitoring the Waste Rock Facility (WRF) observed water bypassing the facility's west collection ditch and flowing to the tundra at the southwest corner of the WRF. A rain event triggered the increased runoff observed within the WRF and surrounding area. Material was placed in the southwest corner due to operator error and subsequently changed the interim flow path. The runoff leaving the facility was subsequently tested, at the locations identified below, and field readings indicated compliant results. See Appendix A for the laboratory Certificates of Analysis (COAs).

Sample Location	Description	Coordinates (Lat/Long)
MS-WRF-01W	West of the Ring Road at the Waste Rock Facility	N71° 20' 16.8" W79° 14' 18.7"
MS-D1-02	Sample location down gradient of the Water Rock Facility	N71° 20' 29.6" W79° 17' 32.4"

Immediate and Follow-Up Action:

Upon discovery of the water flowing to the tundra, project personnel were notified. The WRF ring road allows for access to the west ditch and also acts as a clean water diversion as per Baffinland's Waste Rock Management Plan (March 2019). A swale on the east side of the ring road was constructed to divert water to the west ditch. An excavator was dispatched to ensure all contact water reported to the west ditch.

A sample of water not captured by the facility ditch (MS-WRF-01W) was collected on June 30th and submitted for analysis to an external laboratory. The external laboratory water quality results confirmed the water was compliant; as previously determined by field readings. Water samples in the west ditch were also collected down-gradient (MS-D1-02) on July 1st and July 2nd and the results were compliant. The sampling results are summarized in Table 1 and the external laboratory COAs are included in Appendix A.

Current Status:

The swale on the east side of the ring road is diverting water to the west ditch. The west ditch is functional and conveying water, as constructed, to the WRF Pond. Inspections of the WRF will continue on a weekly basis.

As per Section 31 of the Metal and Diamond Mining Effluent Regulations (MDMER):

- Surface water runoff within the WRF and surrounding area.
- Unknown quantity.
- The release was first observed at approximately 21:00 on June 30, 2020. A summary of the sampling events that occurred upon observation of the uncontrolled release which includes date, time and respective water quality results is included in Table 1.
- The quantity of surface water released is unknown therefore the quantity of deleterious substance cannot be determined. The location of the release is listed below and shown in Figure 1.



Coordinates	N 71°20'18"	W 79°14'14"
-------------	-------------	-------------

- e. Not applicable as the release did not occur through the final discharge point.
- f. Mary River Tributary F and Mary River are the receiving bodies of water. The release was contained to the adjacent tundra at the southwest corner of the WRF, which is over three (3) kilometers from Mary River; the nearest fish bearing waters. It is not suspected that the released water travelled beyond the localized area.
- g. No acute lethality test could be taken at the time of the deposit because the flow was too low to collect a representative sample. However a toxicity sample was taken down-gradient in the west collection ditch and found to be not acutely toxic.
- h. See the summary above for the circumstances of the surface water release. As per Baffinland's MDMER Emergency Response Plan, an excavator was dispatched to ensure all contact water reported to the WRF collection ditches.
- i. Ground works were completed to ensure all contact water reports to the WRF collection ditches. Inspections of the WRF continue on a weekly basis and no further releases have been observed.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux or Aaron MacDonnell at (647) 253- 0596 x6016.

Prepared by:

Reviewed by:

A handwritten signature in blue ink, appearing to read "A. MacDonnell".

Aaron MacDonnell
Environmental Superintendent

A handwritten signature in blue ink, appearing to read "D. Janusauskas".

Daniel Janusauskas
Technical Services Superintendent

Attach: Photos, Map, Baffinland NT-NU Spill Report, Water Quality Results, COAs

cc. Sylvain Proulx, Tim Sewell, Shawn Stevens, Connor Devereaux, Brian Marshall, Francois Gaudreau, Christopher Murray, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC)

Photo 1. West of Ring Road Seepage Area June 30



Photo 2. Ring Road Ditch Swale after Enhancement



Photo 3. West of Ring Road Seepage Area July 3



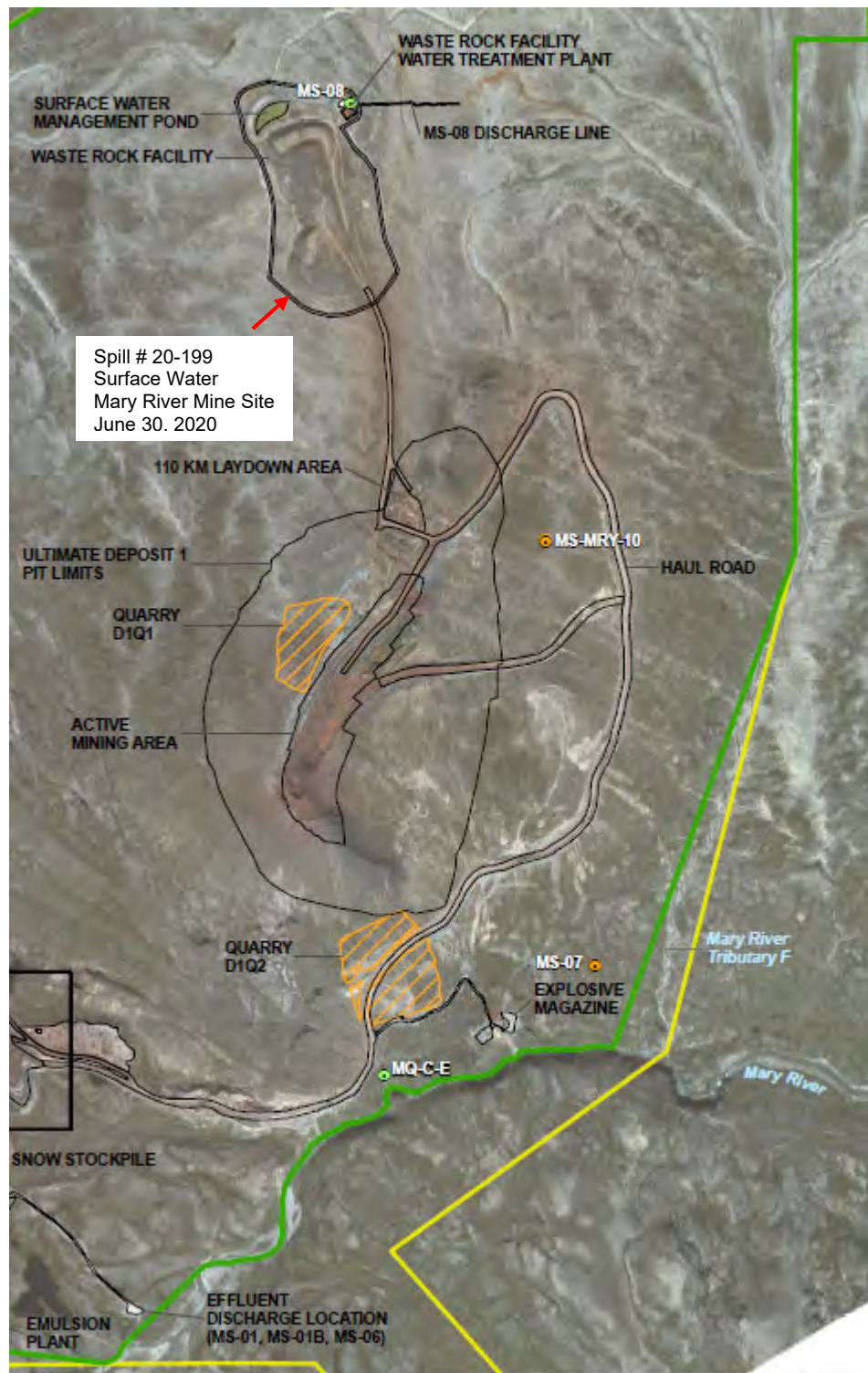


Figure 1. Map of the WRF



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH - DAY - YEAR 07-01-2020	REPORT TIME 19:00	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # TO THE ORIGINAL SPILL REPORT		REPORT NUMBER 20 199
	B	OCCURRENCE DATE: MONTH - DAY - YEAR 06-30-2020	OCCURRENCE TIME 21:00		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301		WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 20 SECONDS 18		LONGITUDE DEGREES 79 MINUTES 14 SECONDS 14		
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3			
G	ANY CONTRACTOR INVOLVED N/A	CONTRACTOR ADDRESS OR OFFICE LOCATION N/A			
H	PRODUCT SPILLED Surface Water	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Unquantifiable	U.N. NUMBER N/A		
	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A	U.N. NUMBER N/A		
I	SPILL SOURCE Waste Rock Facility	SPILL CAUSE Significant rain event	AREA OF CONTAMINATION IN SQUARE METRES N/A		
J	FACTORS AFFECTING SPILL OR RECOVERY Drainage to tundra	DESCRIBE ANY ASSISTANCE REQUIRED N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A		
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On June 30th, Environmental personnel monitoring the Waste Rock Facility, observed water flowing to the tundra at the southwest corner bypassing the west collection ditch. A rain event triggered increased runoff observed within the Waste Rock Facility and surrounding area. The runoff was subsequently tested and field readings indicate compliant results. An excavator was dispatched to ensure all runoff from the south perimeter of the waste rock facility reports to the collection ditches. Water quality monitoring results and additional information will be presented in the follow-up report. The event occurred on IOL located > 3 km from nearest fish bearing water. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9(b); section 31 of the Metal and Diamond Mining Effluent Regulations under the Fisheries Act; and the Government of Nunavut's Environmental Protection Act paragraph 5.1(a).				
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 416-364-8820	TELEPHONE ext. 6016
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION HSEST Manager	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION 416-364-8820	ALTERNATE TELEPHONE ext. 6006
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ IGN ☐ ILA ☐ INAC ☐ NED ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

PAGE 1 OF 1

Figure 2. Baffinland NT NU spill report



Analyte	Sample ID			MS-WRF-01W	MS-D1-02	MS-D1-02
	ALS Laboratory Sample ID			L2468357-2	L2470903-1	L2469869-1
	Sample Date & Time			30-Jun-2020 21:15	1-Jul-2020 15:55	2-Jul-2020 19:35
	Units	LOR	Limits			
pH	pH units	0.1	6.0 - 9.5	7.89	7.66	7.62
Total Suspended Solids	mg/L	2	30	7.3	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	494	64	28
Arsenic	mg/L	0.00010	0.5	<0.00010	<0.00010	<0.00010
Copper	mg/L	0.00050	0.3	0.00080	0.00180	0.00123
Lead	mg/L	0.000050	0.2	0.000345	0.000181	0.000154
Nickel	mg/L	0.00050	0.5	0.00114	<0.00050	<0.00050
Zinc	mg/L	0.0030	0.5	<0.0030	<0.0030	<0.0030
Toxicity	-	-	Not Acutely Toxic	-	-	Not Acutely Toxic

Appendix A

Laboratory Certificates of Analysis (COAs)



Baffinland Iron Mine's Corporation
(Oakville)
ATTN: Connor Devereaux
2275 Upper Middle Rd. E.
Suite #300
Oakville ON L6H 0C3

Date Received: 01-JUL-20
Report Date: 16-JUL-20 15:43 (MT)
Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2468357
Project P.O. #: 4500073372
Job Reference: MS-WRF-01
C of C Numbers:
Legal Site Desc:

Comments: ADDITIONAL 06-JUL-20 08:09

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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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2468357-1	MS-WRF-01E							
Sampled By:	ML/LM on 30-JUN-20 @ 21:30							
Matrix:	Water							
Physical Tests								
Conductivity		1700		3.0	umhos/cm		10-JUL-20	R5150377
Hardness (as CaCO3)		903		0.50	mg/L		13-JUL-20	
pH		7.67		0.10	pH units		01-JUL-20	R5139059
Total Suspended Solids		15.3		2.0	mg/L		01-JUL-20	R5139061
Total Dissolved Solids		1280		10	mg/L		02-JUL-20	R5139997
Turbidity		6.13		0.10	NTU		01-JUL-20	R5139282
Anions and Nutrients								
Alkalinity, Total (as CaCO3)		38		10	mg/L		10-JUL-20	R5150377
Ammonia, Total (as N)		0.774	DLHC	0.020	mg/L		13-JUL-20	R5149716
Chloride (Cl)		8.1	DLDS	2.5	mg/L		10-JUL-20	R5149979
Fluoride (F)		<0.10	DLDS	0.10	mg/L		10-JUL-20	R5149979
Nitrate (as N)		8.17	DLDS	0.10	mg/L		10-JUL-20	R5149979
Total Kjeldahl Nitrogen		1.22		0.15	mg/L	13-JUL-20	13-JUL-20	R5150223
Phosphorus, Total		0.0073		0.0030	mg/L	13-JUL-20	15-JUL-20	R5153706
Sulfate (SO4)		932	DLDS	1.5	mg/L		10-JUL-20	R5149979
Organic / Inorganic Carbon								
Dissolved Carbon Filtration Location		FIELD				30-JUN-20	10-JUL-20	R5147646
Dissolved Organic Carbon		1.76		0.50	mg/L	30-JUN-20	15-JUL-20	R5154537
Total Organic Carbon		2.38		0.50	mg/L		15-JUL-20	R5154539
Inorganic Parameters								
Acidity (as CaCO3)		2.4		2.0	mg/L		11-JUL-20	R5148262
Total Metals								
Aluminum (Al)-Total		0.184		0.0050	mg/L	09-JUL-20	10-JUL-20	R5147581
Antimony (Sb)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Arsenic (As)-Total		0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Barium (Ba)-Total		0.0256		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Beryllium (Be)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Boron (B)-Total		0.011		0.010	mg/L	09-JUL-20	10-JUL-20	R5147581
Cadmium (Cd)-Total		0.0000495		0.0000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Calcium (Ca)-Total		49.0		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Cesium (Cs)-Total		0.000022		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Chromium (Cr)-Total		<0.00050		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Cobalt (Co)-Total		0.00939		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Copper (Cu)-Total		0.00148		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Iron (Fe)-Total		0.310		0.010	mg/L	09-JUL-20	10-JUL-20	R5147581
Lead (Pb)-Total		0.000171		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Lithium (Li)-Total		0.0048		0.0010	mg/L	09-JUL-20	10-JUL-20	R5147581
Magnesium (Mg)-Total		163	DLHC	0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Manganese (Mn)-Total		1.14		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		13-JUL-20	R5149602
Molybdenum (Mo)-Total		0.000557		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2468357-1 MS-WRF-01E								
Sampled By: ML/LM on 30-JUN-20 @ 21:30								
Matrix: Water								
Total Metals								
Nickel (Ni)-Total		0.0134		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Phosphorus (P)-Total		<0.050		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Potassium (K)-Total		2.93		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Rubidium (Rb)-Total		0.00415		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Selenium (Se)-Total		0.00157		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Silicon (Si)-Total		1.42		0.10	mg/L	09-JUL-20	10-JUL-20	R5147581
Silver (Ag)-Total		<0.000050		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Sodium (Na)-Total		2.26		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Strontium (Sr)-Total		0.0367		0.0010	mg/L	09-JUL-20	10-JUL-20	R5147581
Sulfur (S)-Total		280		0.50	mg/L	09-JUL-20	10-JUL-20	R5147581
Tellurium (Te)-Total		<0.00020		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Thallium (Tl)-Total		0.000029		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Thorium (Th)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Tin (Sn)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Titanium (Ti)-Total		0.00923		0.00030	mg/L	09-JUL-20	10-JUL-20	R5147581
Tungsten (W)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Uranium (U)-Total		0.00161		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Vanadium (V)-Total		<0.00050		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Zinc (Zn)-Total		<0.0030		0.0030	mg/L	09-JUL-20	10-JUL-20	R5147581
Zirconium (Zr)-Total		0.00030		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					10-JUL-20	R5147698
Dissolved Metals Filtration Location		FIELD					10-JUL-20	R5147340
Aluminum (Al)-Dissolved		0.0122		0.0050	mg/L	10-JUL-20	13-JUL-20	R5149929
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Arsenic (As)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Barium (Ba)-Dissolved		0.0245		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Boron (B)-Dissolved		0.014		0.010	mg/L	10-JUL-20	13-JUL-20	R5149929
Cadmium (Cd)-Dissolved		0.0000650		0.0000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Calcium (Ca)-Dissolved		53.3		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
Chromium (Cr)-Dissolved		<0.00050		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Cobalt (Co)-Dissolved		0.0104		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Copper (Cu)-Dissolved		0.00131		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
Iron (Fe)-Dissolved		0.060		0.010	mg/L	10-JUL-20	13-JUL-20	R5149929
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Lithium (Li)-Dissolved		0.0065		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
Magnesium (Mg)-Dissolved		187	DLHC	0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Manganese (Mn)-Dissolved		1.32		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2468357-1 MS-WRF-01E Sampled By: ML/LM on 30-JUN-20 @ 21:30 Matrix: Water Dissolved Metals Mercury (Hg)-Dissolved Molybdenum (Mo)-Dissolved Nickel (Ni)-Dissolved Phosphorus (P)-Dissolved Potassium (K)-Dissolved Rubidium (Rb)-Dissolved Selenium (Se)-Dissolved Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved Thallium (Tl)-Dissolved Thorium (Th)-Dissolved Tin (Sn)-Dissolved Titanium (Ti)-Dissolved Tungsten (W)-Dissolved Uranium (U)-Dissolved Vanadium (V)-Dissolved Zinc (Zn)-Dissolved Zirconium (Zr)-Dissolved	MS-WRF-01E ML/LM on 30-JUN-20 @ 21:30 Water							
		<0.0000050		0.0000050	mg/L	10-JUL-20	13-JUL-20	R5149749
		0.000552		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
		0.0148		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.050		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
		2.97		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
		0.00372		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
		0.00193		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
		1.23		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
		2.52		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
		0.0381		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
		297		0.50	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.00020		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
		0.000026		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.00030		0.00030	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
		0.00151		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.00050		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
		0.0021		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
		<0.00020		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
L2468357-2 MS-WRF-01W Sampled By: ML/LM on 30-JUN-20 @ 21:15 Matrix: Water Physical Tests Conductivity Hardness (as CaCO3) pH Total Suspended Solids Total Dissolved Solids Turbidity Anions and Nutrients Alkalinity, Total (as CaCO3) Ammonia, Total (as N) Chloride (Cl) Fluoride (F) Nitrate (as N) Total Kjeldahl Nitrogen Phosphorus, Total Sulfate (SO4) Organic / Inorganic Carbon	MS-WRF-01W ML/LM on 30-JUN-20 @ 21:15 Water							
		727		3.0	umhos/cm		10-JUL-20	R5150377
		364		0.50	mg/L		13-JUL-20	
		7.89		0.10	pH units		01-JUL-20	R5139059
		7.3		2.0	mg/L		01-JUL-20	R5139061
		494		10	mg/L		02-JUL-20	R5139997
		1.18		0.10	NTU		01-JUL-20	R5139282
		67		10	mg/L		10-JUL-20	R5150377
		0.126		0.010	mg/L		10-JUL-20	R5149716
		2.32		0.50	mg/L		10-JUL-20	R5149979
		0.041		0.020	mg/L		10-JUL-20	R5149979
		2.46		0.020	mg/L		10-JUL-20	R5149979
		0.29		0.15	mg/L	13-JUL-20	13-JUL-20	R5150223
		0.0055		0.0030	mg/L	13-JUL-20	15-JUL-20	R5153706
		290		0.30	mg/L		10-JUL-20	R5149979

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2468357-2	MS-WRF-01W							
Sampled By:	ML/LM on 30-JUN-20 @ 21:15							
Matrix:	Water							
Organic / Inorganic Carbon								
Dissolved Carbon Filtration Location		FIELD				30-JUN-20	10-JUL-20	R5147646
Dissolved Organic Carbon		1.26		0.50	mg/L	30-JUN-20	15-JUL-20	R5154537
Total Organic Carbon		1.99		0.50	mg/L		15-JUL-20	R5154539
Inorganic Parameters								
Acidity (as CaCO3)		<2.0		2.0	mg/L		11-JUL-20	R5148262
Total Metals								
Aluminum (Al)-Total		0.115		0.0050	mg/L	09-JUL-20	10-JUL-20	R5147581
Antimony (Sb)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Arsenic (As)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Barium (Ba)-Total		0.0199		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Beryllium (Be)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Boron (B)-Total		<0.010		0.010	mg/L	09-JUL-20	10-JUL-20	R5147581
Cadmium (Cd)-Total		0.0000106		0.0000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Calcium (Ca)-Total		45.2		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Cesium (Cs)-Total		0.000013		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Chromium (Cr)-Total		<0.00050		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Cobalt (Co)-Total		0.00077		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Copper (Cu)-Total		0.00080		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Iron (Fe)-Total		0.161		0.010	mg/L	09-JUL-20	10-JUL-20	R5147581
Lead (Pb)-Total		0.000345		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Lithium (Li)-Total		0.0015		0.0010	mg/L	09-JUL-20	10-JUL-20	R5147581
Magnesium (Mg)-Total		60.3		0.0050	mg/L	09-JUL-20	10-JUL-20	R5147581
Manganese (Mn)-Total		0.0699		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		13-JUL-20	R5149602
Molybdenum (Mo)-Total		0.000811		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Nickel (Ni)-Total		0.00114		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Phosphorus (P)-Total		<0.050		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Potassium (K)-Total		2.72		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Rubidium (Rb)-Total		0.00337		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Selenium (Se)-Total		0.000615		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Silicon (Si)-Total		1.08		0.10	mg/L	09-JUL-20	10-JUL-20	R5147581
Silver (Ag)-Total		<0.000050		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Sodium (Na)-Total		1.03		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Strontium (Sr)-Total		0.0265		0.0010	mg/L	09-JUL-20	10-JUL-20	R5147581
Sulfur (S)-Total		103		0.50	mg/L	09-JUL-20	10-JUL-20	R5147581
Tellurium (Te)-Total		<0.00020		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Thallium (Tl)-Total		0.000011		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Thorium (Th)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Tin (Sn)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Titanium (Ti)-Total		<0.0060	DLUI	0.0060	mg/L	09-JUL-20	10-JUL-20	R5147581

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2468357-2	MS-WRF-01W							
Sampled By:	ML/LM on 30-JUN-20 @ 21:15							
Matrix:	Water							
Total Metals								
Tungsten (W)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Uranium (U)-Total		0.00209		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Vanadium (V)-Total		<0.00050		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Zinc (Zn)-Total		<0.0030		0.0030	mg/L	09-JUL-20	10-JUL-20	R5147581
Zirconium (Zr)-Total		<0.00020		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					10-JUL-20	R5147698
Dissolved Metals Filtration Location		FIELD					10-JUL-20	R5147340
Aluminum (Al)-Dissolved		0.0063		0.0050	mg/L	10-JUL-20	13-JUL-20	R5149929
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Arsenic (As)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Barium (Ba)-Dissolved		0.0187		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Boron (B)-Dissolved		<0.010		0.010	mg/L	10-JUL-20	13-JUL-20	R5149929
Cadmium (Cd)-Dissolved		0.0000080		0.0000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Calcium (Ca)-Dissolved		48.2		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
Chromium (Cr)-Dissolved		<0.00050		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Cobalt (Co)-Dissolved		0.00071		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Copper (Cu)-Dissolved		0.00057		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
Iron (Fe)-Dissolved		<0.010		0.010	mg/L	10-JUL-20	13-JUL-20	R5149929
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Lithium (Li)-Dissolved		0.0021		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
Magnesium (Mg)-Dissolved		59.2		0.0050	mg/L	10-JUL-20	13-JUL-20	R5149929
Manganese (Mn)-Dissolved		0.0676		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	10-JUL-20	13-JUL-20	R5149749
Molybdenum (Mo)-Dissolved		0.000845		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Nickel (Ni)-Dissolved		0.00091		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Potassium (K)-Dissolved		2.65		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Rubidium (Rb)-Dissolved		0.00298		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
Selenium (Se)-Dissolved		0.000654		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Silicon (Si)-Dissolved		0.881		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Silver (Ag)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Sodium (Na)-Dissolved		1.00		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Strontium (Sr)-Dissolved		0.0277		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
Sulfur (S)-Dissolved		102		0.50	mg/L	10-JUL-20	13-JUL-20	R5149929
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
Thallium (Tl)-Dissolved		<0.000010		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2468357-2	MS-WRF-01W							
Sampled By:	ML/LM on 30-JUN-20 @ 21:15							
Matrix:	Water							
Dissolved Metals								
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Titanium (Ti)-Dissolved		<0.00030		0.00030	mg/L	10-JUL-20	13-JUL-20	R5149929
Tungsten (W)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Uranium (U)-Dissolved		0.00200		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
Vanadium (V)-Dissolved		<0.00050		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Zinc (Zn)-Dissolved		<0.0010		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
Zirconium (Zr)-Dissolved		<0.00020		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2468357-1, -2
Matrix Spike	Aluminum (Al)-Total	MS-B	L2468357-1, -2
Matrix Spike	Barium (Ba)-Total	MS-B	L2468357-1, -2
Matrix Spike	Calcium (Ca)-Total	MS-B	L2468357-1, -2
Matrix Spike	Iron (Fe)-Total	MS-B	L2468357-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2468357-1, -2
Matrix Spike	Manganese (Mn)-Total	MS-B	L2468357-1, -2
Matrix Spike	Potassium (K)-Total	MS-B	L2468357-1, -2
Matrix Spike	Silicon (Si)-Total	MS-B	L2468357-1, -2
Matrix Spike	Strontium (Sr)-Total	MS-B	L2468357-1, -2
Matrix Spike	Sulfur (S)-Total	MS-B	L2468357-1, -2
Matrix Spike	Uranium (U)-Total	MS-B	L2468357-1, -2

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
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**
ACIDITY-WT	Water	Acidity (as CaCO3)	APHA 2310 B - Potentiometric Titration
ALK-WT	Water	Alkalinity, Total (as CaCO3)	APHA 2320B

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint.

CL-IC-N-WT	Water	Chloride by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

DOC-WT	Water	Dissolved Organic Carbon	APHA 5310B
Sample is filtered through a 0.45um filter, then injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic carbon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			
EC-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510

Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.

EC-WT	Water	Conductivity	APHA 2510 B
Water samples can be measured directly by immersing the conductivity cell into the sample.			
F-IC-N-WT	Water	Fluoride in Water by IC	EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

HARDNESS-CALC-WT	Water	Hardness	APHA 2340 B
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Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-D-CVAA-WT	Water	Dissolved Mercury in Water by CVAAS	EPA 1631E (mod)
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Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

HG-T-CVAA-WT	Water	Total Mercury in Water by CVAAS	EPA 1631E (mod)
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Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
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Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
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Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).

NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
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This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-IC-WT	Water	Nitrate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-COL-WT	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is deteremined colourimetrically after persulphate digestion of the sample.

PH-BF	Water	pH	APHA 4500 H-Electrode
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Water samples are analyzed directly by a calibrated pH meter.

SO4-IC-N-WT	Water	Sulfate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-BF	Water	Total Dissolved Solids	APHA 2540C
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A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 180 +/- 2C for 1hr.

SOLIDS-TSS-BF	Water	Suspended solids	APHA 2540 D-Gravimetric
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A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104 +/- 1C for a minimum of four hours or until a constant weight is achieved.

TKN-WT	Water	Total Kjeldahl Nitrogen	APHA 4500-Norg D
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This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by sample digestion at 380 Celsius with analysis using an automated colorimetric method.

TOC-WT	Water	Total Organic Carbon	APHA 5310B
Sample is injected into a heated reaction chamber which is packed with an oxidative catalyst. The water is vaporized and the organic cabon is oxidized to carbon dioxide. The carbon dioxide is transported in a carrier gas and is measured by a non-dispersive infrared detector.			
TURBIDITY-BF	Water	Turbidity	APHA 2130 B
Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

** 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
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, 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 wwwt - 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.



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 3 of 17

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-4	DUP	WG3359513-3						
Aluminum (Al)-Dissolved		0.0122	0.0127		mg/L	3.7	20	13-JUL-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Barium (Ba)-Dissolved		0.0245	0.0248		mg/L	1.3	20	13-JUL-20
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-20
Boron (B)-Dissolved		0.014	0.013		mg/L	3.0	20	13-JUL-20
Cadmium (Cd)-Dissolved		0.0000650	0.0000576		mg/L	12	20	13-JUL-20
Calcium (Ca)-Dissolved		53.3	53.3		mg/L	0.0	20	13-JUL-20
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	13-JUL-20
Chromium (Cr)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-JUL-20
Cobalt (Co)-Dissolved		0.0104	0.0106		mg/L	1.3	20	13-JUL-20
Copper (Cu)-Dissolved		0.00131	0.00138		mg/L	5.3	20	13-JUL-20
Iron (Fe)-Dissolved		0.060	0.065		mg/L	7.9	20	13-JUL-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-20
Lithium (Li)-Dissolved		0.0065	0.0060		mg/L	8.5	20	13-JUL-20
Magnesium (Mg)-Dissolved		187	184		mg/L	1.6	20	13-JUL-20
Manganese (Mn)-Dissolved		1.32	1.31		mg/L	0.6	20	13-JUL-20
Molybdenum (Mo)-Dissolved		0.000552	0.000575		mg/L	4.0	20	13-JUL-20
Nickel (Ni)-Dissolved		0.0148	0.0149		mg/L	0.5	20	13-JUL-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-JUL-20
Potassium (K)-Dissolved		2.97	2.98		mg/L	0.3	20	13-JUL-20
Rubidium (Rb)-Dissolved		0.00372	0.00371		mg/L	0.2	20	13-JUL-20
Selenium (Se)-Dissolved		0.00193	0.00192		mg/L	0.4	20	13-JUL-20
Silicon (Si)-Dissolved		1.23	1.23		mg/L	0.1	20	13-JUL-20
Silver (Ag)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-20
Sodium (Na)-Dissolved		2.52	2.49		mg/L	1.2	20	13-JUL-20
Strontium (Sr)-Dissolved		0.0381	0.0393		mg/L	3.1	20	13-JUL-20
Sulfur (S)-Dissolved		297	304		mg/L	2.1	20	13-JUL-20
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	13-JUL-20
Thallium (Tl)-Dissolved		0.000026	0.000027		mg/L	3.8	20	13-JUL-20
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Tin (Sn)-Dissolved		<0.00010	<0.00010		mg/L			13-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 4 of 17

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-4 DUP		WG3359513-3						
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	13-JUL-20
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Uranium (U)-Dissolved		0.00151	0.00148		mg/L	1.9	20	13-JUL-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-JUL-20
Zinc (Zn)-Dissolved		0.0021	0.0020		mg/L	2.0	20	13-JUL-20
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	13-JUL-20
WG3359513-2 LCS								
Aluminum (Al)-Dissolved			105.3		%		80-120	13-JUL-20
Antimony (Sb)-Dissolved			99.2		%		80-120	13-JUL-20
Arsenic (As)-Dissolved			101.6		%		80-120	13-JUL-20
Barium (Ba)-Dissolved			100.1		%		80-120	13-JUL-20
Beryllium (Be)-Dissolved			103.9		%		80-120	13-JUL-20
Bismuth (Bi)-Dissolved			99.7		%		80-120	13-JUL-20
Boron (B)-Dissolved			103.3		%		80-120	13-JUL-20
Cadmium (Cd)-Dissolved			101.2		%		80-120	13-JUL-20
Calcium (Ca)-Dissolved			106.6		%		80-120	13-JUL-20
Cesium (Cs)-Dissolved			103.2		%		80-120	13-JUL-20
Chromium (Cr)-Dissolved			102.3		%		80-120	13-JUL-20
Cobalt (Co)-Dissolved			98.7		%		80-120	13-JUL-20
Copper (Cu)-Dissolved			100.8		%		80-120	13-JUL-20
Iron (Fe)-Dissolved			104.4		%		80-120	13-JUL-20
Lead (Pb)-Dissolved			101.5		%		80-120	13-JUL-20
Lithium (Li)-Dissolved			106.6		%		80-120	13-JUL-20
Magnesium (Mg)-Dissolved			105.8		%		80-120	13-JUL-20
Manganese (Mn)-Dissolved			102.0		%		80-120	13-JUL-20
Molybdenum (Mo)-Dissolved			97.0		%		80-120	13-JUL-20
Nickel (Ni)-Dissolved			100.2		%		80-120	13-JUL-20
Phosphorus (P)-Dissolved			101.7		%		80-120	13-JUL-20
Potassium (K)-Dissolved			96.9		%		80-120	13-JUL-20
Rubidium (Rb)-Dissolved			102.0		%		80-120	13-JUL-20
Selenium (Se)-Dissolved			102.4		%		80-120	13-JUL-20
Silicon (Si)-Dissolved			98.5		%		60-140	13-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 5 of 17

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-2	LCS							
Silver (Ag)-Dissolved			96.5		%		80-120	13-JUL-20
Sodium (Na)-Dissolved			101.1		%		80-120	13-JUL-20
Strontium (Sr)-Dissolved			103.0		%		80-120	13-JUL-20
Sulfur (S)-Dissolved			101.3		%		80-120	13-JUL-20
Tellurium (Te)-Dissolved			100.0		%		80-120	13-JUL-20
Thallium (Tl)-Dissolved			102.8		%		80-120	13-JUL-20
Thorium (Th)-Dissolved			96.3		%		80-120	13-JUL-20
Tin (Sn)-Dissolved			99.6		%		80-120	13-JUL-20
Titanium (Ti)-Dissolved			96.3		%		80-120	13-JUL-20
Tungsten (W)-Dissolved			98.2		%		80-120	13-JUL-20
Uranium (U)-Dissolved			111.3		%		80-120	13-JUL-20
Vanadium (V)-Dissolved			100.6		%		80-120	13-JUL-20
Zinc (Zn)-Dissolved			108.4		%		80-120	13-JUL-20
Zirconium (Zr)-Dissolved			92.1		%		80-120	13-JUL-20
WG3359513-1	MB							
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	13-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-20
Chromium (Cr)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUL-20
Manganese (Mn)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 6 of 17

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Silver (Ag)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	13-JUL-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	13-JUL-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUL-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUL-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
WG3359513-5 MS		WG3359513-6						
Aluminum (Al)-Dissolved			95.3		%		70-130	13-JUL-20
Antimony (Sb)-Dissolved			98.4		%		70-130	13-JUL-20
Arsenic (As)-Dissolved			105.1		%		70-130	13-JUL-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Beryllium (Be)-Dissolved			98.8		%		70-130	13-JUL-20
Bismuth (Bi)-Dissolved			88.5		%		70-130	13-JUL-20
Boron (B)-Dissolved			96.3		%		70-130	13-JUL-20
Cadmium (Cd)-Dissolved			103.8		%		70-130	13-JUL-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Cesium (Cs)-Dissolved			104.7		%		70-130	13-JUL-20
Chromium (Cr)-Dissolved			98.3		%		70-130	13-JUL-20
Cobalt (Co)-Dissolved			94.3		%		70-130	13-JUL-20
Copper (Cu)-Dissolved			94.2		%		70-130	13-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 7 of 17

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-5 MS		WG3359513-6						
Iron (Fe)-Dissolved			93.3		%		70-130	13-JUL-20
Lead (Pb)-Dissolved			94.6		%		70-130	13-JUL-20
Lithium (Li)-Dissolved			96.8		%		70-130	13-JUL-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Molybdenum (Mo)-Dissolved			99.3		%		70-130	13-JUL-20
Nickel (Ni)-Dissolved			93.1		%		70-130	13-JUL-20
Phosphorus (P)-Dissolved			106.1		%		70-130	13-JUL-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Rubidium (Rb)-Dissolved			95.4		%		70-130	13-JUL-20
Selenium (Se)-Dissolved			117.6		%		70-130	13-JUL-20
Silicon (Si)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Silver (Ag)-Dissolved			93.5		%		70-130	13-JUL-20
Sodium (Na)-Dissolved			92.4		%		70-130	13-JUL-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Sulfur (S)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Tellurium (Te)-Dissolved			106.5		%		70-130	13-JUL-20
Thallium (Tl)-Dissolved			96.4		%		70-130	13-JUL-20
Thorium (Th)-Dissolved			86.4		%		70-130	13-JUL-20
Tin (Sn)-Dissolved			97.4		%		70-130	13-JUL-20
Titanium (Ti)-Dissolved			97.8		%		70-130	13-JUL-20
Tungsten (W)-Dissolved			99.0		%		70-130	13-JUL-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Vanadium (V)-Dissolved			100.3		%		70-130	13-JUL-20
Zinc (Zn)-Dissolved			98.9		%		70-130	13-JUL-20
Zirconium (Zr)-Dissolved			90.4		%		70-130	13-JUL-20

MET-T-CCMS-WT Water

Batch **R5147581**

WG3359506-4 DUP

WG3359506-3

Aluminum (Al)-Total	0.115	0.104		mg/L	10	20	10-JUL-20
Antimony (Sb)-Total	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Arsenic (As)-Total	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Barium (Ba)-Total	0.0199	0.0185		mg/L	7.1	20	10-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 8 of 17

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-4	DUP	WG3359506-3						
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUL-20
Cadmium (Cd)-Total		0.0000106	0.0000095		mg/L	11	20	10-JUL-20
Calcium (Ca)-Total		45.2	45.0		mg/L	0.4	20	10-JUL-20
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUL-20
Cesium (Cs)-Total		0.000013	0.000011		mg/L	11	20	10-JUL-20
Cobalt (Co)-Total		0.00077	0.00076		mg/L	1.9	20	10-JUL-20
Copper (Cu)-Total		0.00080	0.00075		mg/L	5.7	20	10-JUL-20
Iron (Fe)-Total		0.161	0.146		mg/L	9.5	20	10-JUL-20
Lead (Pb)-Total		0.000345	0.000349		mg/L	1.1	20	10-JUL-20
Lithium (Li)-Total		0.0015	0.0015		mg/L	0.7	20	10-JUL-20
Magnesium (Mg)-Total		60.3	57.8		mg/L	4.1	20	10-JUL-20
Manganese (Mn)-Total		0.0699	0.0674		mg/L	3.7	20	10-JUL-20
Molybdenum (Mo)-Total		0.000811	0.000798		mg/L	1.6	20	10-JUL-20
Nickel (Ni)-Total		0.00114	0.00109		mg/L	3.9	20	10-JUL-20
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	10-JUL-20
Potassium (K)-Total		2.72	2.59		mg/L	4.9	20	10-JUL-20
Rubidium (Rb)-Total		0.00337	0.00327		mg/L	2.8	20	10-JUL-20
Selenium (Se)-Total		0.000615	0.000553		mg/L	11	20	10-JUL-20
Silicon (Si)-Total		1.08	1.03		mg/L	4.8	20	10-JUL-20
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-20
Sodium (Na)-Total		1.03	0.960		mg/L	6.8	20	10-JUL-20
Strontium (Sr)-Total		0.0265	0.0255		mg/L	3.8	20	10-JUL-20
Sulfur (S)-Total		103	99.5		mg/L	3.8	25	10-JUL-20
Thallium (Tl)-Total		0.000011	0.000011		mg/L	2.8	20	10-JUL-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-JUL-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	25	10-JUL-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Titanium (Ti)-Total		<0.0060	<0.0060	RPD-NA	mg/L	N/A	20	10-JUL-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Uranium (U)-Total		0.00209	0.00205		mg/L	2.1	20	10-JUL-20
Vanadium (V)-Total		<0.00050	<0.00050		mg/L			10-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 9 of 17

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-4	DUP	WG3359506-3						
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUL-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	10-JUL-20
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-JUL-20
WG3359506-2	LCS							
Aluminum (Al)-Total			109.2		%		80-120	10-JUL-20
Antimony (Sb)-Total			107.3		%		80-120	10-JUL-20
Arsenic (As)-Total			108.9		%		80-120	10-JUL-20
Barium (Ba)-Total			108.6		%		80-120	10-JUL-20
Beryllium (Be)-Total			100.9		%		80-120	10-JUL-20
Bismuth (Bi)-Total			105.5		%		80-120	10-JUL-20
Boron (B)-Total			100.9		%		80-120	10-JUL-20
Cadmium (Cd)-Total			112.2		%		80-120	10-JUL-20
Calcium (Ca)-Total			104.2		%		80-120	10-JUL-20
Chromium (Cr)-Total			105.3		%		80-120	10-JUL-20
Cesium (Cs)-Total			106.8		%		80-120	10-JUL-20
Cobalt (Co)-Total			104.9		%		80-120	10-JUL-20
Copper (Cu)-Total			105.0		%		80-120	10-JUL-20
Iron (Fe)-Total			104.0		%		80-120	10-JUL-20
Lead (Pb)-Total			110.6		%		80-120	10-JUL-20
Lithium (Li)-Total			97.7		%		80-120	10-JUL-20
Magnesium (Mg)-Total			110.9		%		80-120	10-JUL-20
Manganese (Mn)-Total			108.6		%		80-120	10-JUL-20
Molybdenum (Mo)-Total			99.2		%		80-120	10-JUL-20
Nickel (Ni)-Total			105.5		%		80-120	10-JUL-20
Phosphorus (P)-Total			110.6		%		70-130	10-JUL-20
Potassium (K)-Total			101.7		%		80-120	10-JUL-20
Rubidium (Rb)-Total			108.5		%		80-120	10-JUL-20
Selenium (Se)-Total			111.1		%		80-120	10-JUL-20
Silicon (Si)-Total			106.9		%		60-140	10-JUL-20
Silver (Ag)-Total			102.4		%		80-120	10-JUL-20
Sodium (Na)-Total			104.9		%		80-120	10-JUL-20
Strontium (Sr)-Total			104.4		%		80-120	10-JUL-20
Sulfur (S)-Total			102.5		%		80-120	10-JUL-20
Thallium (Tl)-Total			108.3				80-120	



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 10 of 17

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-2	LCS							
Thallium (Tl)-Total			108.3		%		80-120	10-JUL-20
Tellurium (Te)-Total			102.3		%		80-120	10-JUL-20
Thorium (Th)-Total			103.2		%		70-130	10-JUL-20
Tin (Sn)-Total			107.1		%		80-120	10-JUL-20
Titanium (Ti)-Total			102.6		%		80-120	10-JUL-20
Tungsten (W)-Total			109.8		%		80-120	10-JUL-20
Uranium (U)-Total			109.8		%		80-120	10-JUL-20
Vanadium (V)-Total			108.1		%		80-120	10-JUL-20
Zinc (Zn)-Total			105.5		%		80-120	10-JUL-20
Zirconium (Zr)-Total			94.1		%		80-120	10-JUL-20
WG3359506-1	MB							
Aluminum (Al)-Total			<0.0050		mg/L		0.005	10-JUL-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUL-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUL-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	10-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUL-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	10-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUL-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	10-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 11 of 17

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-1 MB								
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUL-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUL-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	10-JUL-20
Sulfur (S)-Total			<0.50		mg/L		0.5	10-JUL-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUL-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	10-JUL-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUL-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUL-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JUL-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	10-JUL-20
WG3359506-5 MS		WG3359506-3						
Aluminum (Al)-Total			N/A	MS-B	%		-	10-JUL-20
Antimony (Sb)-Total			102.0		%		70-130	10-JUL-20
Arsenic (As)-Total			100.6		%		70-130	10-JUL-20
Barium (Ba)-Total			N/A	MS-B	%		-	10-JUL-20
Beryllium (Be)-Total			91.2		%		70-130	10-JUL-20
Bismuth (Bi)-Total			92.8		%		70-130	10-JUL-20
Boron (B)-Total			91.9		%		70-130	10-JUL-20
Cadmium (Cd)-Total			104.5		%		70-130	10-JUL-20
Calcium (Ca)-Total			N/A	MS-B	%		-	10-JUL-20
Chromium (Cr)-Total			97.7		%		70-130	10-JUL-20
Cesium (Cs)-Total			101.2		%		70-130	10-JUL-20
Cobalt (Co)-Total			94.6		%		70-130	10-JUL-20
Copper (Cu)-Total			93.3		%		70-130	10-JUL-20
Iron (Fe)-Total			N/A	MS-B	%		-	10-JUL-20
Lead (Pb)-Total			94.1		%		70-130	10-JUL-20
Lithium (Li)-Total			90.2		%		70-130	10-JUL-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	10-JUL-20



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 14 of 17

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
SOLIDS-TDS-BF	Water							
Batch	R5139997							
WG3353764-3 DUP		L2468306-1						
Total Dissolved Solids		348	349		mg/L	0.3	20	02-JUL-20
WG3353764-2 LCS								
Total Dissolved Solids			100.9		%		85-115	02-JUL-20
WG3353764-1 MB								
Total Dissolved Solids			<10		mg/L		10	02-JUL-20
SOLIDS-TSS-BF	Water							
Batch	R5139061							
WG3353493-3 DUP		L2467515-21						
Total Suspended Solids		<2.0	<2.0	RPD-NA	mg/L	N/A	25	01-JUL-20
WG3353493-2 LCS								
Total Suspended Solids			100.6		%		85-115	01-JUL-20
WG3353493-1 MB								
Total Suspended Solids			<2.0		mg/L		2	01-JUL-20
TKN-WT	Water							
Batch	R5150223							
WG3360025-3 DUP		L2470180-23						
Total Kjeldahl Nitrogen		<0.15	<0.15	RPD-NA	mg/L	N/A	20	13-JUL-20
WG3360025-2 LCS								
Total Kjeldahl Nitrogen			110.1		%		75-125	13-JUL-20
WG3360025-1 MB								
Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	13-JUL-20
WG3360025-4 MS		L2470180-23						
Total Kjeldahl Nitrogen			112.4		%		70-130	13-JUL-20
TOC-WT	Water							
Batch	R5154539							
WG3360092-3 DUP		L2470180-29						
Total Organic Carbon		1.97	2.02		mg/L	2.6	20	15-JUL-20
WG3360092-2 LCS								
Total Organic Carbon			100.7		%		80-120	15-JUL-20
WG3360092-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	15-JUL-20
WG3360092-4 MS		L2470180-29						
Total Organic Carbon			111.1		%		70-130	15-JUL-20
TURBIDITY-BF	Water							



Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Page 15 of 17

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
TURBIDITY-BF		Water						
Batch	R5139282							
WG3353888-3	DUP	L2468357-2						
Turbidity		1.18	1.26		NTU	6.5	15	01-JUL-20
WG3353888-2	LCS							
Turbidity			102.2		%		85-115	01-JUL-20
WG3353888-1	MB							
Turbidity			<0.10		NTU		0.1	01-JUL-20

Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 16 of 17

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
J	Duplicate results and limits are expressed in terms of absolute difference.
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.

Quality Control Report

Workorder: L2468357

Report Date: 16-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 17 of 17

Contact: Connor Devereaux

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Leachable Anions & Nutrients							
Nitrate in Water by IC							
	1	30-JUN-20 21:30	10-JUL-20 00:00	7	9	days	EHT
	2	30-JUN-20 21:15	10-JUL-20 00:00	7	9	days	EHT

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 L2468357 were received on 01-JUL-20 01:00.

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 pre-determined 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.



Affix ALS barcode label here
(Lab use only)

COC Number: 17 -

Page 1 of 1

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Failure to complete all portions of this form may delay analysis. Please fill in this form (EQUUS 4) by the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back, logo of the author, report copy. If any vector samples are taken from a Regulated Drinking Water (RDW) System, please submit using an Authorized DW DOC form.



Baffinland Iron Mine's Corporation
(Oakville)
ATTN: Connor Devereaux
2275 Upper Middle Rd. E.
Suite #300
Oakville ON L6H 0C3

Date Received: 07-JUL-20
Report Date: 16-JUL-20 12:16 (MT)
Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2470903
Project P.O. #: 4500073372
Job Reference: MS-D1-02
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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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2470903-1	MS-D1-02							
Sampled By:	BC/KC on 01-JUL-20 @ 15:55							
Matrix:	Water							
Physical Tests								
Conductivity		46.6		2.0	uS/cm		15-JUL-20	R5154557
pH		7.66		0.10	pH units		08-JUL-20	R5146326
Total Suspended Solids		<2.0		2.0	mg/L		08-JUL-20	R5146323
Total Dissolved Solids		64		10	mg/L		09-JUL-20	R5146500
Turbidity		4.46		0.10	NTU		08-JUL-20	R5146325
Anions and Nutrients								
Ammonia, Total (as N)		<0.010		0.010	mg/L		10-JUL-20	R5149716
Total Metals								
Aluminum (Al)-Total		0.0839		0.0050	mg/L	09-JUL-20	10-JUL-20	R5147581
Antimony (Sb)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Arsenic (As)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Barium (Ba)-Total		0.00529		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Beryllium (Be)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Boron (B)-Total		<0.010		0.010	mg/L	09-JUL-20	10-JUL-20	R5147581
Cadmium (Cd)-Total		0.0000074		0.0000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Calcium (Ca)-Total		4.25		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Cesium (Cs)-Total		0.000012		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Chromium (Cr)-Total		<0.00050		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Cobalt (Co)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Copper (Cu)-Total		0.00180		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Iron (Fe)-Total		0.124		0.010	mg/L	09-JUL-20	10-JUL-20	R5147581
Lead (Pb)-Total		0.000181		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Lithium (Li)-Total		<0.0010		0.0010	mg/L	09-JUL-20	10-JUL-20	R5147581
Magnesium (Mg)-Total		2.88		0.0050	mg/L	09-JUL-20	10-JUL-20	R5147581
Manganese (Mn)-Total		0.00226		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Molybdenum (Mo)-Total		0.000188		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Nickel (Ni)-Total		<0.00050		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Phosphorus (P)-Total		<0.050		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Potassium (K)-Total		1.05		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Rubidium (Rb)-Total		0.00272		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Selenium (Se)-Total		<0.000050		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Silicon (Si)-Total		0.54		0.10	mg/L	09-JUL-20	10-JUL-20	R5147581
Silver (Ag)-Total		<0.000050		0.000050	mg/L	09-JUL-20	10-JUL-20	R5147581
Sodium (Na)-Total		0.262		0.050	mg/L	09-JUL-20	10-JUL-20	R5147581
Strontium (Sr)-Total		0.0029		0.0010	mg/L	09-JUL-20	10-JUL-20	R5147581
Sulfur (S)-Total		<0.50		0.50	mg/L	09-JUL-20	10-JUL-20	R5147581
Tellurium (Te)-Total		<0.00020		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Thallium (Tl)-Total		<0.000010		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Thorium (Th)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Tin (Sn)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2470903-1	MS-D1-02							
Sampled By:	BC/KC on 01-JUL-20 @ 15:55							
Matrix:	Water							
Total Metals								
Titanium (Ti)-Total		0.00321		0.00030	mg/L	09-JUL-20	10-JUL-20	R5147581
Tungsten (W)-Total		<0.00010		0.00010	mg/L	09-JUL-20	10-JUL-20	R5147581
Uranium (U)-Total		0.000270		0.000010	mg/L	09-JUL-20	10-JUL-20	R5147581
Vanadium (V)-Total		<0.00050		0.00050	mg/L	09-JUL-20	10-JUL-20	R5147581
Zinc (Zn)-Total		<0.0030		0.0030	mg/L	09-JUL-20	10-JUL-20	R5147581
Zirconium (Zr)-Total		<0.00020		0.00020	mg/L	09-JUL-20	10-JUL-20	R5147581
Dissolved Metals								
Dissolved Metals Filtration Location		FIELD					10-JUL-20	R5147340
Aluminum (Al)-Dissolved		0.0131		0.0050	mg/L	10-JUL-20	13-JUL-20	R5149929
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Arsenic (As)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Barium (Ba)-Dissolved		0.00474		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Boron (B)-Dissolved		<0.010		0.010	mg/L	10-JUL-20	13-JUL-20	R5149929
Cadmium (Cd)-Dissolved		<0.0000050		0.0000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Calcium (Ca)-Dissolved		4.21		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
Chromium (Cr)-Dissolved		<0.00050		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Cobalt (Co)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Copper (Cu)-Dissolved		0.00113		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
Iron (Fe)-Dissolved		0.015		0.010	mg/L	10-JUL-20	13-JUL-20	R5149929
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Lithium (Li)-Dissolved		<0.0010		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
Magnesium (Mg)-Dissolved		2.69		0.0050	mg/L	10-JUL-20	13-JUL-20	R5149929
Manganese (Mn)-Dissolved		0.00068		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Molybdenum (Mo)-Dissolved		0.000195		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Nickel (Ni)-Dissolved		<0.00050		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Potassium (K)-Dissolved		0.964		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Rubidium (Rb)-Dissolved		0.00216		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
Selenium (Se)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Silicon (Si)-Dissolved		0.389		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Silver (Ag)-Dissolved		<0.000050		0.000050	mg/L	10-JUL-20	13-JUL-20	R5149929
Sodium (Na)-Dissolved		0.263		0.050	mg/L	10-JUL-20	13-JUL-20	R5149929
Strontium (Sr)-Dissolved		0.0031		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
Sulfur (S)-Dissolved		0.52		0.50	mg/L	10-JUL-20	13-JUL-20	R5149929
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929
Thallium (Tl)-Dissolved		<0.000010		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2470903-1	MS-D1-02							
Sampled By:	BC/KC on 01-JUL-20 @ 15:55							
Matrix:	Water							
Dissolved Metals								
Titanium (Ti)-Dissolved		0.00041		0.00030	mg/L	10-JUL-20	13-JUL-20	R5149929
Tungsten (W)-Dissolved		<0.00010		0.00010	mg/L	10-JUL-20	13-JUL-20	R5149929
Uranium (U)-Dissolved		0.000225		0.000010	mg/L	10-JUL-20	13-JUL-20	R5149929
Vanadium (V)-Dissolved		<0.00050		0.00050	mg/L	10-JUL-20	13-JUL-20	R5149929
Zinc (Zn)-Dissolved		<0.0010		0.0010	mg/L	10-JUL-20	13-JUL-20	R5149929
Zirconium (Zr)-Dissolved		<0.00020		0.00020	mg/L	10-JUL-20	13-JUL-20	R5149929

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2470903-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2470903-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2470903-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2470903-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2470903-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2470903-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2470903-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2470903-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2470903-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L2470903-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2470903-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2470903-1
Matrix Spike	Iron (Fe)-Total	MS-B	L2470903-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2470903-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2470903-1
Matrix Spike	Potassium (K)-Total	MS-B	L2470903-1
Matrix Spike	Silicon (Si)-Total	MS-B	L2470903-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2470903-1
Matrix Spike	Sulfur (S)-Total	MS-B	L2470903-1
Matrix Spike	Uranium (U)-Total	MS-B	L2470903-1
Matrix Spike	Ammonia, Total (as N)	MS-B	L2470903-1

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	Matrix	Test Description	Method Reference**
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-D-CCMS-WT	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
MET-T-CCMS-WT	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).			
NH3-F-WT	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
PH-BF	Water	pH	APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

SOLIDS-TDS-BF Water Total Dissolved Solids APHA 2540C

A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 180 +/- 2C for 1hr.

SOLIDS-TSS-BF Water Suspended solids APHA 2540 D-Gravimetric

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104 +/- 1C for a minimum of four hours or until a constant weight is achieved.

TURBIDITY-BF Water Turbidity APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, 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 ww - 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.



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 1 of 13

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
EC-PCT-VA		Water						
Batch	R5154557							
WG3362547-4	DUP	L2473169-1						
Conductivity		2910	2940		uS/cm	1.0	10	15-JUL-20
WG3362547-3	LCS							
Conductivity			100.3		%		90-110	15-JUL-20
WG3362547-1	MB							
Conductivity			<2.0		uS/cm		2	15-JUL-20
MET-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-4	DUP	WG3359513-3						
Aluminum (Al)-Dissolved		0.0122	0.0127		mg/L	3.7	20	13-JUL-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Barium (Ba)-Dissolved		0.0245	0.0248		mg/L	1.3	20	13-JUL-20
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-20
Boron (B)-Dissolved		0.014	0.013		mg/L	3.0	20	13-JUL-20
Cadmium (Cd)-Dissolved		0.0000650	0.0000576		mg/L	12	20	13-JUL-20
Calcium (Ca)-Dissolved		53.3	53.3		mg/L	0.0	20	13-JUL-20
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	13-JUL-20
Chromium (Cr)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-JUL-20
Cobalt (Co)-Dissolved		0.0104	0.0106		mg/L	1.3	20	13-JUL-20
Copper (Cu)-Dissolved		0.00131	0.00138		mg/L	5.3	20	13-JUL-20
Iron (Fe)-Dissolved		0.060	0.065		mg/L	7.9	20	13-JUL-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-20
Lithium (Li)-Dissolved		0.0065	0.0060		mg/L	8.5	20	13-JUL-20
Magnesium (Mg)-Dissolved		187	184		mg/L	1.6	20	13-JUL-20
Manganese (Mn)-Dissolved		1.32	1.31		mg/L	0.6	20	13-JUL-20
Molybdenum (Mo)-Dissolved		0.000552	0.000575		mg/L	4.0	20	13-JUL-20
Nickel (Ni)-Dissolved		0.0148	0.0149		mg/L	0.5	20	13-JUL-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	13-JUL-20
Potassium (K)-Dissolved		2.97	2.98		mg/L	0.3	20	13-JUL-20
Rubidium (Rb)-Dissolved		0.00372	0.00371		mg/L	0.2	20	13-JUL-20
Selenium (Se)-Dissolved		0.00193	0.00192		mg/L	0.4	20	13-JUL-20
Silicon (Si)-Dissolved		1.23	1.23		mg/L	0.1	20	13-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 2 of 13

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-4 DUP		WG3359513-3						
Silver (Ag)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	13-JUL-20
Sodium (Na)-Dissolved		2.52	2.49		mg/L	1.2	20	13-JUL-20
Strontium (Sr)-Dissolved		0.0381	0.0393		mg/L	3.1	20	13-JUL-20
Sulfur (S)-Dissolved		297	304		mg/L	2.1	20	13-JUL-20
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	13-JUL-20
Thallium (Tl)-Dissolved		0.000026	0.000027		mg/L	3.8	20	13-JUL-20
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	13-JUL-20
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	13-JUL-20
Uranium (U)-Dissolved		0.00151	0.00148		mg/L	1.9	20	13-JUL-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	13-JUL-20
Zinc (Zn)-Dissolved		0.0021	0.0020		mg/L	2.0	20	13-JUL-20
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	13-JUL-20
WG3359513-2 LCS								
Aluminum (Al)-Dissolved			105.3		%		80-120	13-JUL-20
Antimony (Sb)-Dissolved			99.2		%		80-120	13-JUL-20
Arsenic (As)-Dissolved			101.6		%		80-120	13-JUL-20
Barium (Ba)-Dissolved			100.1		%		80-120	13-JUL-20
Beryllium (Be)-Dissolved			103.9		%		80-120	13-JUL-20
Bismuth (Bi)-Dissolved			99.7		%		80-120	13-JUL-20
Boron (B)-Dissolved			103.3		%		80-120	13-JUL-20
Cadmium (Cd)-Dissolved			101.2		%		80-120	13-JUL-20
Calcium (Ca)-Dissolved			106.6		%		80-120	13-JUL-20
Cesium (Cs)-Dissolved			103.2		%		80-120	13-JUL-20
Chromium (Cr)-Dissolved			102.3		%		80-120	13-JUL-20
Cobalt (Co)-Dissolved			98.7		%		80-120	13-JUL-20
Copper (Cu)-Dissolved			100.8		%		80-120	13-JUL-20
Iron (Fe)-Dissolved			104.4		%		80-120	13-JUL-20
Lead (Pb)-Dissolved			101.5		%		80-120	13-JUL-20
Lithium (Li)-Dissolved			106.6		%		80-120	13-JUL-20
Magnesium (Mg)-Dissolved			105.8		%		80-120	13-JUL-20
Manganese (Mn)-Dissolved			102.0		%		80-120	13-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 3 of 13

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-2		LCS						
Molybdenum (Mo)-Dissolved			97.0		%		80-120	13-JUL-20
Nickel (Ni)-Dissolved			100.2		%		80-120	13-JUL-20
Phosphorus (P)-Dissolved			101.7		%		80-120	13-JUL-20
Potassium (K)-Dissolved			96.9		%		80-120	13-JUL-20
Rubidium (Rb)-Dissolved			102.0		%		80-120	13-JUL-20
Selenium (Se)-Dissolved			102.4		%		80-120	13-JUL-20
Silicon (Si)-Dissolved			98.5		%		60-140	13-JUL-20
Silver (Ag)-Dissolved			96.5		%		80-120	13-JUL-20
Sodium (Na)-Dissolved			101.1		%		80-120	13-JUL-20
Strontium (Sr)-Dissolved			103.0		%		80-120	13-JUL-20
Sulfur (S)-Dissolved			101.3		%		80-120	13-JUL-20
Tellurium (Te)-Dissolved			100.0		%		80-120	13-JUL-20
Thallium (Tl)-Dissolved			102.8		%		80-120	13-JUL-20
Thorium (Th)-Dissolved			96.3		%		80-120	13-JUL-20
Tin (Sn)-Dissolved			99.6		%		80-120	13-JUL-20
Titanium (Ti)-Dissolved			96.3		%		80-120	13-JUL-20
Tungsten (W)-Dissolved			98.2		%		80-120	13-JUL-20
Uranium (U)-Dissolved			111.3		%		80-120	13-JUL-20
Vanadium (V)-Dissolved			100.6		%		80-120	13-JUL-20
Zinc (Zn)-Dissolved			108.4		%		80-120	13-JUL-20
Zirconium (Zr)-Dissolved			92.1		%		80-120	13-JUL-20
WG3359513-1		MB						
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	13-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	13-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	13-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-20
Chromium (Cr)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 4 of 13

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-1 MB								
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	13-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	13-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	13-JUL-20
Manganese (Mn)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Silver (Ag)-Dissolved			<0.000050		mg/L		0.00005	13-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	13-JUL-20
Strontium (Sr)-Dissolved			<0.0010		mg/L		0.001	13-JUL-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	13-JUL-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	13-JUL-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	13-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	13-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	13-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	13-JUL-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	13-JUL-20
WG3359513-5 MS		WG3359513-6						
Aluminum (Al)-Dissolved			95.3		%		70-130	13-JUL-20
Antimony (Sb)-Dissolved			98.4		%		70-130	13-JUL-20
Arsenic (As)-Dissolved			105.1		%		70-130	13-JUL-20
Barium (Ba)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Beryllium (Be)-Dissolved			98.8		%		70-130	13-JUL-20
Bismuth (Bi)-Dissolved			88.5		%		70-130	13-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 5 of 13

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-D-CCMS-WT		Water						
Batch	R5149929							
WG3359513-5	MS	WG3359513-6						
Boron (B)-Dissolved			96.3		%		70-130	13-JUL-20
Cadmium (Cd)-Dissolved			103.8		%		70-130	13-JUL-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Cesium (Cs)-Dissolved			104.7		%		70-130	13-JUL-20
Chromium (Cr)-Dissolved			98.3		%		70-130	13-JUL-20
Cobalt (Co)-Dissolved			94.3		%		70-130	13-JUL-20
Copper (Cu)-Dissolved			94.2		%		70-130	13-JUL-20
Iron (Fe)-Dissolved			93.3		%		70-130	13-JUL-20
Lead (Pb)-Dissolved			94.6		%		70-130	13-JUL-20
Lithium (Li)-Dissolved			96.8		%		70-130	13-JUL-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Manganese (Mn)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Molybdenum (Mo)-Dissolved			99.3		%		70-130	13-JUL-20
Nickel (Ni)-Dissolved			93.1		%		70-130	13-JUL-20
Phosphorus (P)-Dissolved			106.1		%		70-130	13-JUL-20
Potassium (K)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Rubidium (Rb)-Dissolved			95.4		%		70-130	13-JUL-20
Selenium (Se)-Dissolved			117.6		%		70-130	13-JUL-20
Silicon (Si)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Silver (Ag)-Dissolved			93.5		%		70-130	13-JUL-20
Sodium (Na)-Dissolved			92.4		%		70-130	13-JUL-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Sulfur (S)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Tellurium (Te)-Dissolved			106.5		%		70-130	13-JUL-20
Thallium (Tl)-Dissolved			96.4		%		70-130	13-JUL-20
Thorium (Th)-Dissolved			86.4		%		70-130	13-JUL-20
Tin (Sn)-Dissolved			97.4		%		70-130	13-JUL-20
Titanium (Ti)-Dissolved			97.8		%		70-130	13-JUL-20
Tungsten (W)-Dissolved			99.0		%		70-130	13-JUL-20
Uranium (U)-Dissolved			N/A	MS-B	%		-	13-JUL-20
Vanadium (V)-Dissolved			100.3		%		70-130	13-JUL-20
Zinc (Zn)-Dissolved			98.9		%		70-130	13-JUL-20
Zirconium (Zr)-Dissolved			90.4		%		70-130	13-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 6 of 13

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-4	DUP	WG3359506-3						
Aluminum (Al)-Total		0.115	0.104		mg/L	10	20	10-JUL-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Barium (Ba)-Total		0.0199	0.0185		mg/L	7.1	20	10-JUL-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-20
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUL-20
Cadmium (Cd)-Total		0.0000106	0.0000095		mg/L	11	20	10-JUL-20
Calcium (Ca)-Total		45.2	45.0		mg/L	0.4	20	10-JUL-20
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUL-20
Cesium (Cs)-Total		0.000013	0.000011		mg/L	11	20	10-JUL-20
Cobalt (Co)-Total		0.00077	0.00076		mg/L	1.9	20	10-JUL-20
Copper (Cu)-Total		0.00080	0.00075		mg/L	5.7	20	10-JUL-20
Iron (Fe)-Total		0.161	0.146		mg/L	9.5	20	10-JUL-20
Lead (Pb)-Total		0.000345	0.000349		mg/L	1.1	20	10-JUL-20
Lithium (Li)-Total		0.0015	0.0015		mg/L	0.7	20	10-JUL-20
Magnesium (Mg)-Total		60.3	57.8		mg/L	4.1	20	10-JUL-20
Manganese (Mn)-Total		0.0699	0.0674		mg/L	3.7	20	10-JUL-20
Molybdenum (Mo)-Total		0.000811	0.000798		mg/L	1.6	20	10-JUL-20
Nickel (Ni)-Total		0.00114	0.00109		mg/L	3.9	20	10-JUL-20
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	10-JUL-20
Potassium (K)-Total		2.72	2.59		mg/L	4.9	20	10-JUL-20
Rubidium (Rb)-Total		0.00337	0.00327		mg/L	2.8	20	10-JUL-20
Selenium (Se)-Total		0.000615	0.000553		mg/L	11	20	10-JUL-20
Silicon (Si)-Total		1.08	1.03		mg/L	4.8	20	10-JUL-20
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-20
Sodium (Na)-Total		1.03	0.960		mg/L	6.8	20	10-JUL-20
Strontium (Sr)-Total		0.0265	0.0255		mg/L	3.8	20	10-JUL-20
Sulfur (S)-Total		103	99.5		mg/L	3.8	25	10-JUL-20
Thallium (Tl)-Total		0.000011	0.000011		mg/L	2.8	20	10-JUL-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-JUL-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	25	10-JUL-20
Tin (Sn)-Total		<0.00010	<0.00010		mg/L			10-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 7 of 13

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-4 DUP		WG3359506-3						
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Titanium (Ti)-Total		<0.0060	<0.0060	RPD-NA	mg/L	N/A	20	10-JUL-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-20
Uranium (U)-Total		0.00209	0.00205		mg/L	2.1	20	10-JUL-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUL-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	10-JUL-20
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	10-JUL-20
WG3359506-2 LCS								
Aluminum (Al)-Total			109.2		%		80-120	10-JUL-20
Antimony (Sb)-Total			107.3		%		80-120	10-JUL-20
Arsenic (As)-Total			108.9		%		80-120	10-JUL-20
Barium (Ba)-Total			108.6		%		80-120	10-JUL-20
Beryllium (Be)-Total			100.9		%		80-120	10-JUL-20
Bismuth (Bi)-Total			105.5		%		80-120	10-JUL-20
Boron (B)-Total			100.9		%		80-120	10-JUL-20
Cadmium (Cd)-Total			112.2		%		80-120	10-JUL-20
Calcium (Ca)-Total			104.2		%		80-120	10-JUL-20
Chromium (Cr)-Total			105.3		%		80-120	10-JUL-20
Cesium (Cs)-Total			106.8		%		80-120	10-JUL-20
Cobalt (Co)-Total			104.9		%		80-120	10-JUL-20
Copper (Cu)-Total			105.0		%		80-120	10-JUL-20
Iron (Fe)-Total			104.0		%		80-120	10-JUL-20
Lead (Pb)-Total			110.6		%		80-120	10-JUL-20
Lithium (Li)-Total			97.7		%		80-120	10-JUL-20
Magnesium (Mg)-Total			110.9		%		80-120	10-JUL-20
Manganese (Mn)-Total			108.6		%		80-120	10-JUL-20
Molybdenum (Mo)-Total			99.2		%		80-120	10-JUL-20
Nickel (Ni)-Total			105.5		%		80-120	10-JUL-20
Phosphorus (P)-Total			110.6		%		70-130	10-JUL-20
Potassium (K)-Total			101.7		%		80-120	10-JUL-20
Rubidium (Rb)-Total			108.5		%		80-120	10-JUL-20
Selenium (Se)-Total			111.1		%		80-120	10-JUL-20
Silicon (Si)-Total			106.9		%		60-140	10-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 8 of 13

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-2	LCS							
Silver (Ag)-Total			102.4		%		80-120	10-JUL-20
Sodium (Na)-Total			104.9		%		80-120	10-JUL-20
Strontium (Sr)-Total			104.4		%		80-120	10-JUL-20
Sulfur (S)-Total			102.5		%		80-120	10-JUL-20
Thallium (Tl)-Total			108.3		%		80-120	10-JUL-20
Tellurium (Te)-Total			102.3		%		80-120	10-JUL-20
Thorium (Th)-Total			103.2		%		70-130	10-JUL-20
Tin (Sn)-Total			107.1		%		80-120	10-JUL-20
Titanium (Ti)-Total			102.6		%		80-120	10-JUL-20
Tungsten (W)-Total			109.8		%		80-120	10-JUL-20
Uranium (U)-Total			109.8		%		80-120	10-JUL-20
Vanadium (V)-Total			108.1		%		80-120	10-JUL-20
Zinc (Zn)-Total			105.5		%		80-120	10-JUL-20
Zirconium (Zr)-Total			94.1		%		80-120	10-JUL-20
WG3359506-1	MB							
Aluminum (Al)-Total			<0.0050		mg/L		0.005	10-JUL-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Boron (B)-Total			<0.010		mg/L		0.01	10-JUL-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	10-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	10-JUL-20
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	10-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	10-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	10-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	10-JUL-20
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	10-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 9 of 13

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-1 MB								
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	10-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	10-JUL-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	10-JUL-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Silicon (Si)-Total			<0.10		mg/L		0.1	10-JUL-20
Silver (Ag)-Total			<0.000050		mg/L		0.00005	10-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	10-JUL-20
Strontium (Sr)-Total			<0.0010		mg/L		0.001	10-JUL-20
Sulfur (S)-Total			<0.50		mg/L		0.5	10-JUL-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	10-JUL-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	10-JUL-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	10-JUL-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	10-JUL-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	10-JUL-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	10-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	10-JUL-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	10-JUL-20
WG3359506-5 MS		WG3359506-3						
Aluminum (Al)-Total			N/A	MS-B	%		-	10-JUL-20
Antimony (Sb)-Total			102.0		%		70-130	10-JUL-20
Arsenic (As)-Total			100.6		%		70-130	10-JUL-20
Barium (Ba)-Total			N/A	MS-B	%		-	10-JUL-20
Beryllium (Be)-Total			91.2		%		70-130	10-JUL-20
Bismuth (Bi)-Total			92.8		%		70-130	10-JUL-20
Boron (B)-Total			91.9		%		70-130	10-JUL-20
Cadmium (Cd)-Total			104.5		%		70-130	10-JUL-20
Calcium (Ca)-Total			N/A	MS-B	%		-	10-JUL-20
Chromium (Cr)-Total			97.7		%		70-130	10-JUL-20
Cesium (Cs)-Total			101.2		%		70-130	10-JUL-20
Cobalt (Co)-Total			94.6		%		70-130	10-JUL-20
Copper (Cu)-Total			93.3		%		70-130	10-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 10 of 13

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-T-CCMS-WT		Water						
Batch	R5147581							
WG3359506-5 MS		WG3359506-3						
Iron (Fe)-Total			N/A	MS-B	%		-	10-JUL-20
Lead (Pb)-Total			94.1		%		70-130	10-JUL-20
Lithium (Li)-Total			90.2		%		70-130	10-JUL-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	10-JUL-20
Manganese (Mn)-Total			N/A	MS-B	%		-	10-JUL-20
Molybdenum (Mo)-Total			95.0		%		70-130	10-JUL-20
Nickel (Ni)-Total			92.8		%		70-130	10-JUL-20
Phosphorus (P)-Total			103.3		%		70-130	10-JUL-20
Potassium (K)-Total			N/A	MS-B	%		-	10-JUL-20
Rubidium (Rb)-Total			96.4		%		70-130	10-JUL-20
Selenium (Se)-Total			104.7		%		70-130	10-JUL-20
Silicon (Si)-Total			N/A	MS-B	%		-	10-JUL-20
Silver (Ag)-Total			91.8		%		70-130	10-JUL-20
Sodium (Na)-Total			90.6		%		70-130	10-JUL-20
Strontium (Sr)-Total			N/A	MS-B	%		-	10-JUL-20
Sulfur (S)-Total			N/A	MS-B	%		-	10-JUL-20
Thallium (Tl)-Total			95.7		%		70-130	10-JUL-20
Tellurium (Te)-Total			96.1		%		70-130	10-JUL-20
Thorium (Th)-Total			91.7		%		70-130	10-JUL-20
Tin (Sn)-Total			99.5		%		70-130	10-JUL-20
Titanium (Ti)-Total			80.9		%		70-130	10-JUL-20
Tungsten (W)-Total			101.7		%		70-130	10-JUL-20
Uranium (U)-Total			N/A	MS-B	%		-	10-JUL-20
Vanadium (V)-Total			100.6		%		70-130	10-JUL-20
Zinc (Zn)-Total			89.8		%		70-130	10-JUL-20
Zirconium (Zr)-Total			89.6		%		70-130	10-JUL-20
NH3-F-WT		Water						
Batch	R5149716							
WG3359618-3 DUP		L2471132-1						
Ammonia, Total (as N)		0.376	0.376		mg/L	0.2	20	10-JUL-20
WG3359618-2 LCS								
Ammonia, Total (as N)			111.3		%		85-115	10-JUL-20
WG3359618-1 MB								
Ammonia, Total (as N)			<0.010		mg/L		0.01	10-JUL-20



Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Page 11 of 13

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	
NH3-F-WT		Water							
Batch	R5149716								
WG3359618-4	MS	L2471132-1							
Ammonia, Total (as N)			N/A	MS-B	%		-	10-JUL-20	
PH-BF		Water							
Batch	R5146326								
WG3357640-2	DUP	L2470907-2							
pH			8.51	8.52	J	pH units	0.01	0.2	08-JUL-20
WG3357640-1	LCS								
pH				7.00		pH units		6.9-7.1	08-JUL-20
SOLIDS-TDS-BF		Water							
Batch	R5146500								
WG3357615-3	DUP	L2470898-1							
Total Dissolved Solids			4980	4980		mg/L	0.0	20	09-JUL-20
WG3357615-2	LCS								
Total Dissolved Solids				105.0		%		85-115	09-JUL-20
WG3357615-1	MB								
Total Dissolved Solids				<10		mg/L		10	09-JUL-20
SOLIDS-TSS-BF		Water							
Batch	R5146323								
WG3357587-3	DUP	L2470898-1							
Total Suspended Solids			14.3	13.4		mg/L	6.5	25	08-JUL-20
WG3357587-2	LCS								
Total Suspended Solids				100.4		%		85-115	08-JUL-20
WG3357587-1	MB								
Total Suspended Solids				<2.0		mg/L		2	08-JUL-20
TURBIDITY-BF		Water							
Batch	R5146325								
WG3357628-3	DUP	L2470898-1							
Turbidity			36.9	37.0		NTU	0.3	15	08-JUL-20
WG3357628-2	LCS								
Turbidity				97.4		%		85-115	08-JUL-20
WG3357628-1	MB								
Turbidity				<0.10		NTU		0.1	08-JUL-20

Quality Control Report

Workorder: L2470903

Report Date: 16-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
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Page 12 of 13

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
J	Duplicate results and limits are expressed in terms of absolute difference.
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.

Quality Control Report

Workorder: L2470903

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Client: Baffinland Iron Mine's Corporation (Oakville)
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Oakville ON L6H 0C3

Page 13 of 13

Contact: Connor Devereaux

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Turbidity	1	01-JUL-20 15:55	08-JUL-20 03:00	48	155	hours	EHTR
pH	1	01-JUL-20 15:55	08-JUL-20 03:00	4	6	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 L2470903 were received on 07-JUL-20 19:00.

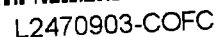
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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



Canada Toll Free: 1 800 668 9878



Number: 17 -

Page 1 of 1

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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NOV 2018 FRONT

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.

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: Connor Devereaux
2275 Upper Middle Rd. E.
Suite #300
Oakville ON L6H 0C3

Date Received: 06-JUL-20
Report Date: 28-JUL-20 16:37 (MT)
Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2469869
Project P.O. #: 4500073372
Job Reference: MS SNP
C of C Numbers:
Legal Site Desc:

Comments: Unable to report Radium re: insufficient volume received.

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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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469869-1	MS-D1-02							
Sampled By: ML/KC on 02-JUL-20 @ 19:35								
Matrix: WATER								
Physical Tests								
Conductivity		41.2		2.0	uS/cm		08-JUL-20	R5146366
pH		7.62		0.10	pH units		03-JUL-20	R5143053
Total Suspended Solids		<2.0		2.0	mg/L		04-JUL-20	R5143297
Total Dissolved Solids		28		10	mg/L		04-JUL-20	R5143301
Turbidity		4.55		0.10	NTU		03-JUL-20	R5143047
Anions and Nutrients								
Acidity (as CaCO3)		<2.0		2.0	mg/L		08-JUL-20	R5146356
Alkalinity, Total (as CaCO3)		19.4		1.0	mg/L		08-JUL-20	R5146366
Ammonia, Total (as N)		<0.0050		0.0050	mg/L		13-JUL-20	R5150857
Chloride (Cl)		<0.50		0.50	mg/L		08-JUL-20	R5147148
Fluoride (F)		<0.020		0.020	mg/L		08-JUL-20	R5147148
Nitrate (as N)		0.0297		0.0050	mg/L		08-JUL-20	R5147148
Total Kjeldahl Nitrogen		<0.050		0.050	mg/L	08-JUL-20	08-JUL-20	R5146488
Phosphorus (P)-Total		0.0056		0.0020	mg/L		08-JUL-20	R5146205
Sulfate (SO4)		0.65		0.30	mg/L		08-JUL-20	R5147148
Organic / Inorganic Carbon								
Dissolved Organic Carbon		0.85		0.50	mg/L		28-JUL-20	R5169058
Total Organic Carbon		0.53		0.50	mg/L		07-JUL-20	R5144760
Total Metals								
Aluminum (Al)-Total		0.0608		0.0030	mg/L		09-JUL-20	R5147285
Antimony (Sb)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Arsenic (As)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Barium (Ba)-Total		0.00450		0.00010	mg/L		09-JUL-20	R5147285
Beryllium (Be)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L		09-JUL-20	R5147285
Boron (B)-Total		<0.010		0.010	mg/L		09-JUL-20	R5147285
Cadmium (Cd)-Total		0.0000407		0.0000050	mg/L		09-JUL-20	R5147285
Calcium (Ca)-Total		3.93		0.050	mg/L		09-JUL-20	R5147285
Cesium (Cs)-Total		<0.000010		0.000010	mg/L		09-JUL-20	R5147285
Chromium (Cr)-Total		0.00019		0.00010	mg/L		09-JUL-20	R5147285
Cobalt (Co)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Copper (Cu)-Total		0.00123		0.00050	mg/L		09-JUL-20	R5147285
Iron (Fe)-Total		0.084		0.010	mg/L		09-JUL-20	R5147285
Lead (Pb)-Total		0.000154		0.000050	mg/L		09-JUL-20	R5147285
Lithium (Li)-Total		<0.0010		0.0010	mg/L		09-JUL-20	R5147285
Magnesium (Mg)-Total		2.38		0.0050	mg/L		09-JUL-20	R5147285
Manganese (Mn)-Total		0.00182		0.00010	mg/L		09-JUL-20	R5147285
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		10-JUL-20	R5147432
Molybdenum (Mo)-Total		0.000205		0.000050	mg/L		09-JUL-20	R5147285
Nickel (Ni)-Total		<0.00050		0.00050	mg/L		09-JUL-20	R5147285
Phosphorus (P)-Total		<0.050		0.050	mg/L		09-JUL-20	R5147285
Potassium (K)-Total		1.04		0.050	mg/L		09-JUL-20	R5147285

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469869-1	MS-D1-02							
Sampled By:	ML/KC on 02-JUL-20 @ 19:35							
Matrix:	WATER							
Total Metals								
Rubidium (Rb)-Total		0.00221		0.00020	mg/L		09-JUL-20	R5147285
Selenium (Se)-Total		0.00164		0.000050	mg/L		09-JUL-20	R5147285
Silicon (Si)-Total		0.42		0.10	mg/L		09-JUL-20	R5147285
Silver (Ag)-Total		<0.000010		0.000010	mg/L		09-JUL-20	R5147285
Sodium (Na)-Total		0.274		0.050	mg/L		09-JUL-20	R5147285
Strontium (Sr)-Total		0.00280		0.00020	mg/L		09-JUL-20	R5147285
Sulfur (S)-Total		<0.50		0.50	mg/L		09-JUL-20	R5147285
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		09-JUL-20	R5147285
Thallium (Tl)-Total		<0.000010		0.000010	mg/L		09-JUL-20	R5147285
Thorium (Th)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Tin (Sn)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Titanium (Ti)-Total		0.00237		0.00030	mg/L		09-JUL-20	R5147285
Tungsten (W)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Uranium (U)-Total		0.000225		0.000010	mg/L		09-JUL-20	R5147285
Vanadium (V)-Total		<0.00050		0.00050	mg/L		09-JUL-20	R5147285
Zinc (Zn)-Total		<0.0030		0.0030	mg/L		09-JUL-20	R5147285
Zirconium (Zr)-Total		<0.00020		0.00020	mg/L		09-JUL-20	R5147285
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					09-JUL-20	R5146543
Dissolved Metals Filtration Location		FIELD					11-JUL-20	R5148423
Aluminum (Al)-Dissolved		0.0097		0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Arsenic (As)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Barium (Ba)-Dissolved		0.00418		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Boron (B)-Dissolved		<0.010		0.010	mg/L	11-JUL-20	11-JUL-20	R5148990
Cadmium (Cd)-Dissolved		<0.0000050		0.0000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Calcium (Ca)-Dissolved		3.77		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Chromium (Cr)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Cobalt (Co)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Copper (Cu)-Dissolved		0.00086		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Iron (Fe)-Dissolved		0.010		0.010	mg/L	11-JUL-20	11-JUL-20	R5148990
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Lithium (Li)-Dissolved		<0.0010		0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Magnesium (Mg)-Dissolved		2.29		0.0050	mg/L	11-JUL-20	11-JUL-20	R5148990
Manganese (Mn)-Dissolved		0.00054		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	09-JUL-20	09-JUL-20	R5146555
Molybdenum (Mo)-Dissolved		0.000210		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Nickel (Ni)-Dissolved		<0.00050		0.00050	mg/L	11-JUL-20	11-JUL-20	R5148990

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469869-1	MS-D1-02							
Sampled By:	ML/KC on 02-JUL-20 @ 19:35							
Matrix:	WATER							
Dissolved Metals								
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Potassium (K)-Dissolved		0.990		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Rubidium (Rb)-Dissolved		0.00207		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Selenium (Se)-Dissolved		<0.000050		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Silicon (Si)-Dissolved		0.307		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Silver (Ag)-Dissolved		<0.000010		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Sodium (Na)-Dissolved		0.247		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Strontium (Sr)-Dissolved		0.00252		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Sulfur (S)-Dissolved		<0.50		0.50	mg/L	11-JUL-20	11-JUL-20	R5148990
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Thallium (Tl)-Dissolved		<0.000010		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Titanium (Ti)-Dissolved		<0.00030		0.00030	mg/L	11-JUL-20	11-JUL-20	R5148990
Tungsten (W)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Uranium (U)-Dissolved		0.000190		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Vanadium (V)-Dissolved		<0.00050		0.00050	mg/L	11-JUL-20	11-JUL-20	R5148990
Zinc (Zn)-Dissolved		<0.0010		0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Zirconium (Zr)-Dissolved		<0.00020		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L2469869-1
Matrix Spike	Chloride (Cl)	MS-B	L2469869-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2469869-1
Matrix Spike	Nitrate (as N)	MS-B	L2469869-1

Sample Parameter Qualifier key listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
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**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO3)' have not been peroxide treated.			
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO3-L-IC-N-VA	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.			
Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.			
PH-BF	Water	pH	APHA 4500 H-Electrode
Water samples are analyzed directly by a calibrated pH meter.			
SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
SOLIDS-TDS-BF	Water	Total Dissolved Solids	APHA 2540C
A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 180 +/- 2C for 1hr.			
SOLIDS-TSS-BF	Water	Suspended solids	APHA 2540 D-Gravimetric
A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104 +/- 1C for a minimum of four hours or until a constant weight is achieved.			
TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TURBIDITY-BF	Water	Turbidity	APHA 2130 B
Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.			

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, 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 ww - 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.



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 3 of 17

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
HG-T-CVAA-VA		Water						
Batch	R5147432							
WG3359549-3	DUP	L2471433-3						
Mercury (Hg)-Total		0.0000063	0.0000061		mg/L	3.1	20	10-JUL-20
WG3359549-5	DUP	L2470763-1						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-JUL-20
WG3359549-7	DUP	L2469881-1						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-JUL-20
WG3359549-9	DUP	L2471232-1						
Mercury (Hg)-Total		0.0000288	0.0000295		mg/L	2.3	20	10-JUL-20
WG3359549-2	LCS							
Mercury (Hg)-Total			101.0		%		80-120	10-JUL-20
WG3359549-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	10-JUL-20
WG3359549-10	MS	L2471232-2						
Mercury (Hg)-Total			100.6		%		70-130	10-JUL-20
WG3359549-11	MS	L2470748-1						
Mercury (Hg)-Total			104.7		%		70-130	10-JUL-20
WG3359549-4	MS	L2470684-1						
Mercury (Hg)-Total			103.2		%		70-130	10-JUL-20
WG3359549-6	MS	L2470799-1						
Mercury (Hg)-Total			96.5		%		70-130	10-JUL-20
WG3359549-8	MS	L2469886-1						
Mercury (Hg)-Total			96.6		%		70-130	10-JUL-20
MET-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-3	DUP	L2469501-2						
Aluminum (Al)-Dissolved		0.0228	0.0227		mg/L	0.3	20	11-JUL-20
Antimony (Sb)-Dissolved		0.00021	0.00020		mg/L	4.2	20	11-JUL-20
Arsenic (As)-Dissolved		0.00098	0.00095		mg/L	3.0	20	11-JUL-20
Barium (Ba)-Dissolved		0.00110	0.00109		mg/L	0.8	20	11-JUL-20
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Boron (B)-Dissolved		0.130	0.134		mg/L	2.6	20	11-JUL-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Calcium (Ca)-Dissolved		11.5	11.7		mg/L	1.0	20	11-JUL-20
Cesium (Cs)-Dissolved		0.000072	0.000076		mg/L	5.0	20	11-JUL-20
Chromium (Cr)-Dissolved		0.00094	0.00097		mg/L	3.6	20	11-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 4 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-3 DUP		L2469501-2						
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Copper (Cu)-Dissolved		0.00581	0.00581		mg/L	0.0	20	11-JUL-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-JUL-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Lithium (Li)-Dissolved		0.0020	0.0021		mg/L	0.9	20	11-JUL-20
Magnesium (Mg)-Dissolved		1.81	1.79		mg/L	1.5	20	11-JUL-20
Manganese (Mn)-Dissolved		0.00089	0.00092		mg/L	3.3	20	11-JUL-20
Molybdenum (Mo)-Dissolved		0.000721	0.000740		mg/L	2.5	20	11-JUL-20
Nickel (Ni)-Dissolved		0.00085	0.00081		mg/L	5.2	20	11-JUL-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-JUL-20
Potassium (K)-Dissolved		1.09	1.09		mg/L	0.4	20	11-JUL-20
Rubidium (Rb)-Dissolved		0.00163	0.00178		mg/L	8.8	20	11-JUL-20
Selenium (Se)-Dissolved		0.000342	0.000357		mg/L	4.4	20	11-JUL-20
Silicon (Si)-Dissolved		1.16	1.17		mg/L	1.2	20	11-JUL-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUL-20
Sodium (Na)-Dissolved		23.5	23.5		mg/L	0.1	20	11-JUL-20
Strontium (Sr)-Dissolved		0.0252	0.0256		mg/L	1.4	20	11-JUL-20
Sulfur (S)-Dissolved		1.86	1.94		mg/L	4.2	20	11-JUL-20
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-JUL-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUL-20
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Tin (Sn)-Dissolved		0.00013	0.00013		mg/L	1.6	20	11-JUL-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	11-JUL-20
Tungsten (W)-Dissolved		0.00016	0.00015		mg/L	4.0	20	11-JUL-20
Uranium (U)-Dissolved		0.000011	0.000011		mg/L	3.8	20	11-JUL-20
Vanadium (V)-Dissolved		0.00272	0.00275		mg/L	1.1	20	11-JUL-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-JUL-20
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	11-JUL-20
WG3360565-2 LCS								
Aluminum (Al)-Dissolved			101.2		%		80-120	11-JUL-20
Antimony (Sb)-Dissolved			102.7		%		80-120	11-JUL-20
Arsenic (As)-Dissolved			99.4		%		80-120	11-JUL-20
Barium (Ba)-Dissolved			104.1		%		80-120	11-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 5 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-2		LCS						
Beryllium (Be)-Dissolved			99.1		%		80-120	11-JUL-20
Bismuth (Bi)-Dissolved			102.8		%		80-120	11-JUL-20
Boron (B)-Dissolved			96.9		%		80-120	11-JUL-20
Cadmium (Cd)-Dissolved			99.3		%		80-120	11-JUL-20
Calcium (Ca)-Dissolved			107.4		%		80-120	11-JUL-20
Cesium (Cs)-Dissolved			98.6		%		80-120	11-JUL-20
Chromium (Cr)-Dissolved			97.5		%		80-120	11-JUL-20
Cobalt (Co)-Dissolved			98.1		%		80-120	11-JUL-20
Copper (Cu)-Dissolved			94.7		%		80-120	11-JUL-20
Iron (Fe)-Dissolved			101.4		%		80-120	11-JUL-20
Lead (Pb)-Dissolved			100.2		%		80-120	11-JUL-20
Lithium (Li)-Dissolved			98.5		%		80-120	11-JUL-20
Magnesium (Mg)-Dissolved			102.2		%		80-120	11-JUL-20
Manganese (Mn)-Dissolved			119.6		%		80-120	11-JUL-20
Molybdenum (Mo)-Dissolved			99.8		%		80-120	11-JUL-20
Nickel (Ni)-Dissolved			99.6		%		80-120	11-JUL-20
Phosphorus (P)-Dissolved			98.2		%		70-130	11-JUL-20
Potassium (K)-Dissolved			105.2		%		80-120	11-JUL-20
Rubidium (Rb)-Dissolved			102.8		%		80-120	11-JUL-20
Selenium (Se)-Dissolved			101.5		%		80-120	11-JUL-20
Silicon (Si)-Dissolved			104.0		%		60-140	11-JUL-20
Silver (Ag)-Dissolved			94.5		%		80-120	11-JUL-20
Sodium (Na)-Dissolved			107.1		%		80-120	11-JUL-20
Strontium (Sr)-Dissolved			100.6		%		80-120	11-JUL-20
Sulfur (S)-Dissolved			105.0		%		80-120	11-JUL-20
Tellurium (Te)-Dissolved			101.4		%		80-120	11-JUL-20
Thallium (Tl)-Dissolved			102.8		%		80-120	11-JUL-20
Thorium (Th)-Dissolved			92.7		%		80-120	11-JUL-20
Tin (Sn)-Dissolved			99.2		%		80-120	11-JUL-20
Titanium (Ti)-Dissolved			97.6		%		80-120	11-JUL-20
Tungsten (W)-Dissolved			102.2		%		80-120	11-JUL-20
Uranium (U)-Dissolved			108.8		%		80-120	11-JUL-20
Vanadium (V)-Dissolved			100.1		%		80-120	11-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 6 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-2	LCS							
Zinc (Zn)-Dissolved			95.8		%		80-120	11-JUL-20
Zirconium (Zr)-Dissolved			97.3		%		80-120	11-JUL-20
WG3360565-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-JUL-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	11-JUL-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 7 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-1 MB								
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-JUL-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
WG3360565-4 MS		L2469501-4						
Aluminum (Al)-Dissolved			97.8		%		70-130	11-JUL-20
Antimony (Sb)-Dissolved			100.5		%		70-130	11-JUL-20
Arsenic (As)-Dissolved			97.2		%		70-130	11-JUL-20
Barium (Ba)-Dissolved			104.7		%		70-130	11-JUL-20
Beryllium (Be)-Dissolved			95.0		%		70-130	11-JUL-20
Bismuth (Bi)-Dissolved			98.6		%		70-130	11-JUL-20
Boron (B)-Dissolved			96.1		%		70-130	11-JUL-20
Cadmium (Cd)-Dissolved			96.3		%		70-130	11-JUL-20
Calcium (Ca)-Dissolved			97.7		%		70-130	11-JUL-20
Cesium (Cs)-Dissolved			99.98		%		70-130	11-JUL-20
Chromium (Cr)-Dissolved			98.6		%		70-130	11-JUL-20
Cobalt (Co)-Dissolved			97.1		%		70-130	11-JUL-20
Copper (Cu)-Dissolved			95.0		%		70-130	11-JUL-20
Iron (Fe)-Dissolved			98.0		%		70-130	11-JUL-20
Lead (Pb)-Dissolved			99.4		%		70-130	11-JUL-20
Lithium (Li)-Dissolved			97.4		%		70-130	11-JUL-20
Magnesium (Mg)-Dissolved			95.4		%		70-130	11-JUL-20
Manganese (Mn)-Dissolved			101.3		%		70-130	11-JUL-20
Molybdenum (Mo)-Dissolved			97.4		%		70-130	11-JUL-20
Nickel (Ni)-Dissolved			99.4		%		70-130	11-JUL-20
Phosphorus (P)-Dissolved			86.8		%		70-130	11-JUL-20
Potassium (K)-Dissolved			101.6		%		70-130	11-JUL-20
Rubidium (Rb)-Dissolved			99.3		%		70-130	11-JUL-20
Selenium (Se)-Dissolved			96.6		%		70-130	11-JUL-20
Silicon (Si)-Dissolved			92.5		%		70-130	11-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 8 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-4	MS	L2469501-4						
Silver (Ag)-Dissolved			99.1		%		70-130	11-JUL-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	11-JUL-20
Strontium (Sr)-Dissolved			102.5		%		70-130	11-JUL-20
Sulfur (S)-Dissolved			95.3		%		70-130	11-JUL-20
Tellurium (Te)-Dissolved			101.3		%		70-130	11-JUL-20
Thallium (Tl)-Dissolved			98.3		%		70-130	11-JUL-20
Thorium (Th)-Dissolved			103.5		%		70-130	11-JUL-20
Tin (Sn)-Dissolved			96.4		%		70-130	11-JUL-20
Titanium (Ti)-Dissolved			99.4		%		70-130	11-JUL-20
Tungsten (W)-Dissolved			101.9		%		70-130	11-JUL-20
Uranium (U)-Dissolved			99.9		%		70-130	11-JUL-20
Vanadium (V)-Dissolved			98.4		%		70-130	11-JUL-20
Zinc (Zn)-Dissolved			94.8		%		70-130	11-JUL-20
Zirconium (Zr)-Dissolved			101.6		%		70-130	11-JUL-20
MET-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-3	DUP	L2468657-2						
Aluminum (Al)-Total		0.736	0.686		mg/L	6.9	20	09-JUL-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Arsenic (As)-Total		0.00017	0.00016		mg/L	6.4	20	09-JUL-20
Barium (Ba)-Total		0.0206	0.0228		mg/L	10	20	09-JUL-20
Beryllium (Be)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUL-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUL-20
Boron (B)-Total		0.292	0.297		mg/L	1.8	20	09-JUL-20
Cadmium (Cd)-Total		0.0000185	0.0000146	J	mg/L	0.0000039	0.00001	09-JUL-20
Calcium (Ca)-Total		52.7	54.0		mg/L	2.3	20	09-JUL-20
Cesium (Cs)-Total		0.000071	0.000076		mg/L	7.0	20	09-JUL-20
Chromium (Cr)-Total		0.00159	0.00185		mg/L	15	20	09-JUL-20
Cobalt (Co)-Total		0.00114	0.00116		mg/L	1.8	20	09-JUL-20
Copper (Cu)-Total		0.00184	0.00184		mg/L	0.0	20	09-JUL-20
Iron (Fe)-Total		0.559	0.596		mg/L	6.4	20	09-JUL-20
Lead (Pb)-Total		0.000351	0.000363		mg/L	3.5	20	09-JUL-20
Lithium (Li)-Total		0.0049	0.0050		mg/L	1.6	20	09-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 9 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-3	DUP	L2468657-2						
Magnesium (Mg)-Total		30.3	30.3		mg/L	0.0	20	09-JUL-20
Manganese (Mn)-Total		0.0591	0.0600		mg/L	1.7	20	09-JUL-20
Molybdenum (Mo)-Total		0.0111	0.0111		mg/L	0.5	20	09-JUL-20
Nickel (Ni)-Total		0.0226	0.0225		mg/L	0.4	20	09-JUL-20
Phosphorus (P)-Total		<0.30	<0.30	RPD-NA	mg/L	N/A	20	09-JUL-20
Potassium (K)-Total		6.38	6.47		mg/L	1.3	20	09-JUL-20
Rubidium (Rb)-Total		0.00763	0.00778		mg/L	1.9	20	09-JUL-20
Selenium (Se)-Total		0.00022	0.00017	J	mg/L	0.00004	0.0002	09-JUL-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUL-20
Sodium (Na)-Total		24.3	24.2		mg/L	0.4	20	09-JUL-20
Strontium (Sr)-Total		0.494	0.494		mg/L	0.1	20	09-JUL-20
Sulfur (S)-Total		55.2	55.5		mg/L	0.5	20	09-JUL-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUL-20
Thallium (Tl)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUL-20
Thorium (Th)-Total		0.00015	0.00017		mg/L	9.1	20	09-JUL-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Titanium (Ti)-Total		0.016	0.029	J	mg/L	0.012	0.02	09-JUL-20
Tungsten (W)-Total		0.00014	0.00014		mg/L	0.2	20	09-JUL-20
Uranium (U)-Total		0.00354	0.00360		mg/L	1.7	20	09-JUL-20
Vanadium (V)-Total		0.0014	0.0017		mg/L	14	20	09-JUL-20
Zinc (Zn)-Total		0.0042	0.0043		mg/L	3.0	20	09-JUL-20
Zirconium (Zr)-Total		0.00037	0.00061	J	mg/L	0.00024	0.0004	09-JUL-20
WG3358010-2	LCS							
Aluminum (Al)-Total			100.9		%		80-120	09-JUL-20
Antimony (Sb)-Total			105.3		%		80-120	09-JUL-20
Arsenic (As)-Total			97.8		%		80-120	09-JUL-20
Barium (Ba)-Total			99.3		%		80-120	09-JUL-20
Beryllium (Be)-Total			101.0		%		80-120	09-JUL-20
Bismuth (Bi)-Total			101.1		%		80-120	09-JUL-20
Boron (B)-Total			104.4		%		80-120	09-JUL-20
Cadmium (Cd)-Total			94.7		%		80-120	09-JUL-20
Calcium (Ca)-Total			97.5		%		80-120	09-JUL-20
Cesium (Cs)-Total			99.3		%		80-120	09-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 10 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-2	LCS							
Chromium (Cr)-Total			99.8		%		80-120	09-JUL-20
Cobalt (Co)-Total			98.5		%		80-120	09-JUL-20
Copper (Cu)-Total			99.9		%		80-120	09-JUL-20
Iron (Fe)-Total			99.1		%		80-120	09-JUL-20
Lead (Pb)-Total			99.9		%		80-120	09-JUL-20
Lithium (Li)-Total			99.9		%		80-120	09-JUL-20
Magnesium (Mg)-Total			99.8		%		80-120	09-JUL-20
Manganese (Mn)-Total			100.8		%		80-120	09-JUL-20
Molybdenum (Mo)-Total			98.6		%		80-120	09-JUL-20
Nickel (Ni)-Total			98.0		%		80-120	09-JUL-20
Phosphorus (P)-Total			97.4		%		80-120	09-JUL-20
Potassium (K)-Total			101.8		%		80-120	09-JUL-20
Rubidium (Rb)-Total			103.5		%		80-120	09-JUL-20
Selenium (Se)-Total			99.6		%		80-120	09-JUL-20
Silicon (Si)-Total			98.6		%		80-120	09-JUL-20
Silver (Ag)-Total			96.5		%		80-120	09-JUL-20
Sodium (Na)-Total			100.5		%		80-120	09-JUL-20
Strontium (Sr)-Total			99.4		%		80-120	09-JUL-20
Sulfur (S)-Total			99.4		%		80-120	09-JUL-20
Tellurium (Te)-Total			100.6		%		80-120	09-JUL-20
Thallium (Tl)-Total			99.9		%		80-120	09-JUL-20
Thorium (Th)-Total			92.6		%		80-120	09-JUL-20
Tin (Sn)-Total			99.8		%		80-120	09-JUL-20
Titanium (Ti)-Total			96.8		%		80-120	09-JUL-20
Tungsten (W)-Total			97.3		%		80-120	09-JUL-20
Uranium (U)-Total			102.0		%		80-120	09-JUL-20
Vanadium (V)-Total			100.9		%		80-120	09-JUL-20
Zinc (Zn)-Total			97.3		%		80-120	09-JUL-20
Zirconium (Zr)-Total			95.0		%		80-120	09-JUL-20
WG3358010-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-JUL-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 11 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-1	MB							
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Boron (B)-Total			<0.010		mg/L		0.01	09-JUL-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-JUL-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	09-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	09-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	09-JUL-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Silicon (Si)-Total			<0.10		mg/L		0.1	09-JUL-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	09-JUL-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Sulfur (S)-Total			<0.50		mg/L		0.5	09-JUL-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-JUL-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 12 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-1	MB							
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-JUL-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
WG3358010-4	MS	L2468657-3						
Aluminum (Al)-Total			96.5		%		70-130	09-JUL-20
Antimony (Sb)-Total			100.7		%		70-130	09-JUL-20
Arsenic (As)-Total			95.3		%		70-130	09-JUL-20
Barium (Ba)-Total			96.8		%		70-130	09-JUL-20
Beryllium (Be)-Total			101.4		%		70-130	09-JUL-20
Bismuth (Bi)-Total			99.0		%		70-130	09-JUL-20
Boron (B)-Total			106.7		%		70-130	09-JUL-20
Cadmium (Cd)-Total			98.0		%		70-130	09-JUL-20
Calcium (Ca)-Total			96.6		%		70-130	09-JUL-20
Cesium (Cs)-Total			98.4		%		70-130	09-JUL-20
Chromium (Cr)-Total			98.2		%		70-130	09-JUL-20
Cobalt (Co)-Total			98.9		%		70-130	09-JUL-20
Copper (Cu)-Total			99.7		%		70-130	09-JUL-20
Iron (Fe)-Total			97.5		%		70-130	09-JUL-20
Lead (Pb)-Total			99.4		%		70-130	09-JUL-20
Lithium (Li)-Total			104.0		%		70-130	09-JUL-20
Magnesium (Mg)-Total			98.2		%		70-130	09-JUL-20
Manganese (Mn)-Total			98.5		%		70-130	09-JUL-20
Molybdenum (Mo)-Total			97.2		%		70-130	09-JUL-20
Nickel (Ni)-Total			97.7		%		70-130	09-JUL-20
Phosphorus (P)-Total			94.3		%		70-130	09-JUL-20
Potassium (K)-Total			97.7		%		70-130	09-JUL-20
Rubidium (Rb)-Total			101.5		%		70-130	09-JUL-20
Selenium (Se)-Total			99.3		%		70-130	09-JUL-20
Silicon (Si)-Total			93.9		%		70-130	09-JUL-20
Silver (Ag)-Total			99.7		%		70-130	09-JUL-20
Sodium (Na)-Total			95.1		%		70-130	09-JUL-20
Strontium (Sr)-Total			101.0		%		70-130	09-JUL-20
Sulfur (S)-Total			95.4		%		70-130	09-JUL-20
Tellurium (Te)-Total			101.5		%		70-130	09-JUL-20
Thallium (Tl)-Total			96.6		%		70-130	09-JUL-20



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 13 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-4 MS		L2468657-3						
Thorium (Th)-Total			105.5		%		70-130	09-JUL-20
Tin (Sn)-Total			99.1		%		70-130	09-JUL-20
Titanium (Ti)-Total			94.5		%		70-130	09-JUL-20
Tungsten (W)-Total			96.7		%		70-130	09-JUL-20
Uranium (U)-Total			98.2		%		70-130	09-JUL-20
Vanadium (V)-Total			98.4		%		70-130	09-JUL-20
Zinc (Zn)-Total			99.9		%		70-130	09-JUL-20
Zirconium (Zr)-Total			99.9		%		70-130	09-JUL-20
NH3-F-VA		Water						
Batch	R5150857							
WG3357649-3 DUP		L2469875-1						
Ammonia, Total (as N)		0.917	0.915		mg/L	0.2	20	13-JUL-20
WG3357649-2 LCS			98.7		%		85-115	13-JUL-20
Ammonia, Total (as N)								
WG3357649-1 MB			<0.0050		mg/L		0.005	13-JUL-20
Ammonia, Total (as N)								
NO3-L-IC-N-VA		Water						
Batch	R5147148							
WG3357675-3 DUP		L2469119-1						
Nitrate (as N)		2.63	2.60		mg/L	1.0	20	08-JUL-20
WG3357675-2 LCS			101.4		%		90-110	08-JUL-20
Nitrate (as N)								
WG3357675-1 MB			<0.0050		mg/L		0.005	08-JUL-20
Nitrate (as N)								
WG3357675-4 MS		L2469121-1	N/A	MS-B	%		-	08-JUL-20
Nitrate (as N)								
P-T-PRES-COL-VA		Water						
Batch	R5146205							
WG3357650-3 DUP		L2470090-1						
Phosphorus (P)-Total		0.0096	0.0095		mg/L	1.9	20	08-JUL-20
WG3357650-2 LCS			98.5		%		80-120	08-JUL-20
Phosphorus (P)-Total								
WG3357650-1 MB			<0.0020		mg/L		0.002	08-JUL-20
Phosphorus (P)-Total								
WG3357650-4 MS		L2470090-2	103.8				70-130	
Phosphorus (P)-Total								



Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Page 15 of 17

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
TKN-F-VA		Water						
Batch	R5146488							
WG3357662-3	DUP	L2469875-1						
Total Kjeldahl Nitrogen		1.37	1.32		mg/L	3.9	20	08-JUL-20
WG3357662-2	LCS							
Total Kjeldahl Nitrogen			118.8		%		75-125	08-JUL-20
WG3357662-1	MB							
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-JUL-20
WG3357662-4	MS	L2469875-2						
Total Kjeldahl Nitrogen			105.0		%		70-130	08-JUL-20
TURBIDITY-BF		Water						
Batch	R5143047							
WG3355301-3	DUP	L2468355-3						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	03-JUL-20
WG3355301-2	LCS							
Turbidity			102.5		%		85-115	03-JUL-20
WG3355301-1	MB							
Turbidity			<0.10		NTU		0.1	03-JUL-20

Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 16 of 17

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
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
J	Duplicate results and limits are expressed in terms of absolute difference.
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.

Quality Control Report

Workorder: L2469869

Report Date: 28-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 17 of 17

Contact: Connor Devereaux

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Nitrate in Water by IC (Low Level)	1	02-JUL-20 19:35	08-JUL-20 06:20	3	5	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 L2469869 were received on 06-JUL-20 10:00.

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 pre-determined 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.



Acute Toxicity Test Results

Sample collected July 2, 2020

Final Report

July 22, 2020

Submitted to: **ALS Environmental**
Yellowknife, NT

SAMPLE INFORMATION

Sample ID/ Internal ID	Collected	Received	Dates		Receipt temperature
			Rainbow trout test initiation	<i>Daphnia magna</i> test initiation	
L2469869-1 MS-D1-02 / 1920-1591	2-Jul-20	7-Jul-20 at 1230h	7-Jul-20 at 1530h	7-Jul-20 at 1545h	8.5°C

TEST TYPES

- *Daphnia magna* 48-h LC50, EC50 test
- Rainbow trout 96-h single concentration screening test

RESULTS

Toxicity test results

Sample ID	Percent survival in 100% (v/v) sample	
	Rainbow trout	
L2469869-1 MS-D1-02	100	

Sample ID	<i>Daphnia magna</i> LC50/EC50 (% v/v)	
	LC50	EC50
L2469869-1 MS-D1-02	> 100	> 100

EC = Effect Concentration, LC = Lethal Concentration

QA/QC

QA/QC summary	Rainbow trout	<i>Daphnia magna</i>
Reference toxicant LC50 (95% CL)	2.9 (2.6-3.3) g/L KCl ¹	6.5 (6.0-6.9) g/L NaCl ²
Reference toxicant historical mean (2 SD Range)	3.4 (2.4-4.7) g/L KCl	6.0 (5.1-7.0) g/L NaCl
Reference toxicant CV	11.0%	5.2%
Organism health history	Acceptable	Acceptable
Protocol deviations	None	None
Water quality range deviations	None	None
Control performance	Acceptable	Acceptable
Test performance	Valid	Valid

¹ Test date, July 3, 2020; ² Test Date July 6, 2020

LC = Lethal Concentration; CL = Confidence Limit



Report By:
Adam Wilson, BSc
Biologist



Reviewed By:
Kayla Knol, BSc
Biologist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) survival test.

Test species	<i>Oncorhynchus mykiss</i>
Organism source	Fish hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	5 gallon glass aquariums
Test volume	10 - 20 L, depending on size of fish
Test solution depth	Minimum 15 cm
Test concentrations	100% (undiluted) sample plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light/8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test Measurements	pH, conductivity, dissolved oxygen and temperature were measured at test initiation and test completion; salinity measured at test initiation; evaluated for survival daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Statistical software	None
Test endpoints	Percent survival
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Potassium chloride (KCl)

Table 2. Summary of test conditions: 48-h *Daphnia magna* survival test.

Test species	<i>Daphnia magna</i>
Organism source	In-house culture
Organism age	<24 hours
Test type	Static
Test duration	48 hours
Test vessel	385 mL plastic vessels
Test volume	150 mL
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water amended with 4 mg/L KCl and with B12 (2 µg/L) and Na ₂ SeO ₄ (2 µg Se/L)
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light/8 hours dark
Aeration	None
Test measurements	pH, conductivity, dissolved oxygen and temperature measured at test initiation and completion; salinity and hardness measured at test initiation in undiluted sample; evaluated daily for survival
Test protocol	Environment Canada (2000), EPS 1/RM/14
Statistical software	None
Test endpoints	48-h LC50
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Method TRS Client ALS106 Reference 1920-1591 Chamber 9
Test Log

Day	Date	Time	Initial	Chem. Cart	Daily Data Review
0	2020/07/07	1530 *	AW/KK	1	SC
1	2020/07/08	0900	SC	-	MF
2	2020/07/09	0800	SC	-	MF
3	2020/07/10	0845	ME	-	SC
4	2020/07/11	0130	MW	1	SC

Sample Information

 Initial pH: 6.8
 Initial EC (µS/cm): 56
 Initial DO (mg/L): 9.1
 Initial Temp (°C): 20
 Salinity (ppt): 1

Note: * ; time when the test was loaded with fish

Sample Pre-Aeration

 Aeration rate adjusted to 6.5 +/- 1 mL/min/L: yes/no

Preaeration time

DO(mg/L) of 100%

0.5 hours	1 hour	1.5 hours	2 hours
<u>8.9, 9.5</u>	<u>9.2</u>	<u>8.9</u>	

DO in mg/L (70% - 100% saturation)**

6.2 mg/L - 8.9 mg/L at 14°C

6.1 mg/L - 8.8 mg/L at 15°C

6.0 mg/L - 8.6 mg/L at 16°C

**corrected for altitude

Test Chemistry and Biology

Conc.	CTL	100					
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pH (units) (range: 5.5-8.5)

Day 0	<u>7.3</u>	<u>7.4</u>					
Day 4	<u>7.3</u>	<u>7.8</u>					

EC (µS/cm)

Day 0	<u>430</u>	<u>52</u>					
Day 4	<u>435</u>	<u>56</u>					

DO (mg/L) (70-100% saturation at test temp.)

Day 0	<u>8.9</u>	<u>8.9</u>					
Day 4	<u>8.8</u>	<u>8.8</u>					

Temperature (°C) (range: 14-16°C)

Day 0	<u>14</u>	<u>14</u>					
Day 4	<u>15</u>	<u>15</u>					

Number Alive (In brackets number stressed)

Day 0	10	10					
Day 1	<u>10</u>	<u>10</u>					
Day 2	<u>10</u>	<u>10</u>					
Day 3	<u>10</u>	<u>10</u>					
Day 4	<u>10</u>	<u>10</u>					

Validity Criteria: must be ≤ 10% mortality and/or stressed behavior in the control

Unless otherwise noted, behavior is considered to be normal

Control Organism Data			Test Organism Information	
Control Fish	Length (cm)	Weight (g)	Batch	20200521TR
1	3.1	0.4	Loading Density (g/L):	0.2
2	2.7	0.2	(must be ≤ 0.5 g/L)	
3	2.7	0.3	Source	Troutlodge
4	2.6	0.3	Tank #	8
5	2.9	0.3	Mean Length (cm):	2.8
6	3.0	0.3	Length Range (cm):	2.6-3.1
7	2.9	0.3	Mean Weight (g):	0.3
8	2.9	0.3	(Must be ≥ 0.3 g)	
9	2.6	0.2	Weight Range (g):	0.2-0.4
10	2.7	0.2		
			Days Held at $15 \pm 2^{\circ}\text{C}$	
			(must be ≥ 14 days)	
			Percent stock mortality	0.24
			(7 days prior to test, must be $\leq 2\%$)	
			Test Volume (L)	
Comments :				

 Reviewed By: ML

 Date Reviewed: 2020/07/14

Method DAD

 Client ALS106

 Reference 1920-1591
Test Log

Day	Date	Time	Technician	Chem. Cart	Daily Data Review	Initial pH:	Initial EC (µS/cm):	Initial DO (mg/L):	Initial Temp (°C):	Salinity (ppt):
0	2020/07/07	1545	SCS	3	AW	6.8	56	9.1	20	
1	2020/07/08	0955	MF	3	AW					
2	2020/07/09	1030	SC	3	AW					
Lab Code	CTL	6	12	25	50	100				

day	pH (units) (range: 6.0-8.5)									
0	8.1	8.1	8.1	8.2	8.1	7.8				
2	8.1	8.1	8.1	8.1	8.0	7.8				
The pH of the sample was not adjusted prior to test setting, unless noted in the comments below										
	EC (µS/cm)									
0	429	416	400	369	311	177				
2	461	410	411	379	310	200				
	DO (mg/L) (40-100% saturation at test temp.)									
0	7.9	7.9	8.1	8.3	8.7	9.0				
2	7.9	7.9	7.9	7.9	7.9	7.9				
	Temperature (°C) (range: 18-22 °C)									
0	20	20	20	19	18	18				
2	20	20	20	20	20	20				
	Number Alive (F, floating; I, immobile; B, stuck on bubble; D, caught in debris)									
0	10	10	10	10	10	10				
1	10	10	10	10	10	10				
2	10	10	10	10	10	10				

Validity Criteria: must be ≤ 10% mortality and/or abnormal behavior in the control
 Notes: Immobile; daphnid can't swim after 60 sec. even if antenna still move
 Unless otherwise noted, behaviour is considered to be normal

Culture	
Young jar <u>D3</u>	Jar(s) mortality 7 days prior to test (must be ≤25%) <u>0</u>
QA (previous month)	
Days to first brood (≤12 days) <u>7</u>	Control Validity Criteria
Average number of young produced (≥15 young) <u>31</u>	Mean % mortality at 48 hours - (must be ≤10%) <u>0</u>
Were test treatments randomized on test tray? <u>Yes</u> / No	
Sample	
DO % of sample prior to aeration: <u>122</u>	Is aeration required (<40% or >100%)? <u>Yes or No</u>
Duration of aeration (37.5 +/- 12.5 mL/min/L): <u>20min</u>	Filtered with 110µm screen prior to testing <u>Yes or No</u>
Hardness (mg CaCO ₃ /L) of 100%: <u>18</u>	Is hardness adjustment required (<25 mg CaCO ₃ /L)? <u>Yes or No</u>
Hardness of sample after adjustment (must be between 25 - 30 mg CaCO ₃ /L) <u>29</u>	
Dilution Water	
Pail label / preparation date <u>1:06/29</u>	DO Levels (40-100% saturation) - corrected for altitude - 3.3 to 8.2 mg/L at 18°C 3.1 to 7.7 mg/L at 21°C 3.2 to 8.1 mg/L at 19°C 3.0 to 7.6 mg/L at 22°C 3.2 to 7.9 mg/L at 20°C
Hardness of dilution water (mg/L) <u>176</u>	
Comments:	

 Reviewed By: MG

 Date Reviewed: 2020/07/14

APPENDIX C – Chain-of-custody form

Subcontract Request Form
Subcontract To:
NAUTILUS ENVIRONMENTAL

8664 COMMERCE COURT
BURNABY, BC V5A 4N7

-CALGARY-

NOTES: Please reference on final report and invoice: PO# L2469869
ALS requires QC data to be provided with your final results.

Please see enclosed 1 sample(s) in 4 Container(s)

**SAMPLE
NUMBER**
ANALYTICAL REQUIRED
DATE SAMPLED
DUE DATE
**Priority
Flag**
L2469869-1 MS-D1-02

7/2/2020

Daphnia Magna LC50 (48 Hour) - Nautilus (DAPHNIA-
LC50-48HR-NL 1)
Trout Bioassay Pass/Fail CO2 Stabilized (TROUT-P/F-CO2-NL
1)

7/20/2020

7/20/2020

Subcontract Info Contact:

Mary-Lynn Pike (519) 886-6910

Analysis and reporting info contact:

Rick Hawthorne
60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910

Email: Rick.Hawthorne@alsglobal.com

Please email confirmation of receipt to:

Rick.Hawthorne@alsglobal.com

Shipped By:

Date Shipped:

Received By:

Date Received:

Verified By:

Date Verified:

Temperature:

Sample Integrity Issues:

All Single concentration

1920-1591 3x10L carb
2020/07/07 good cond
12:30 No s/ae
Jazoo yes s/yes
AE 8.50C
COC 1/2

**L2469869**

WATERLOO

Subcontract Request Form**Subcontract To:****ALS ENVIRONMENTAL -YELLOWKNIFE, NORTHWEST TERRITORIES CANADA**

314 OLD AIRPORT ROAD
Unit 116
YELLOWKNIFE, NT X1A 3T3

NOTES: Please reference on final report and invoice: PO# L2469869
ALS requires QC data to be provided with your final results.

Please see enclosed 1 sample(s) in 0 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
		DUE DATE	
L2469869-1 MS-D1-02		7/ 2/ 2020	
	Subsidized shipping charge (per cooler) (SHIPPING-LG-YL 14)	7/20/2020	

Subcontract Info Contact: Mary-Lynn Pike (519) 886-6910
Analysis and reporting info contact: Rick Hawthorne
60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910

Email: Rick.Hawthorne@alsglobal.com

Please email confirmation of receipt to: **Rick.Hawthorne@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

COC/2/2
1920-1591

END OF REPORT



Affix AI S barcode label here

COC Number: 17 -

(lab use only)

Page 1 of 1

[illegible]

Spill Report Number:

20-208



August 4, 2020

Water Resources Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Enforcement Officer
Environment and Climate Change Canada
933 Mivvik Street
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-208
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On July 4, 2020 at approximately 18:00, environmental personnel monitoring seepage at the Crusher Facility pad detected Rhodamine tracer dye at the southwest corner of the pad, shown in Figure 1 as CP-SEEPAGE-03. Rhodamine dye testing was conducted to confirm conclusions in 2019 regarding seepage observed at the Crusher Facility pad to be non-contact water. The detection of Rhodamine at this location suggests that contact water on the pad may be seeping through the pad and down gradient of the facility. All water on the pad was subsequently pumped to Crusher Facility Pond MS-06. Initial field readings of the release were compliant with applicable water license and Metal and Diamond Mining Effluent Regulations (MDMER) criteria. Subsequently, water samples were collected at sample location CP-SEEPAGE-03. During the follow up investigation, water was also observed at location CP-SEEPAGE-04 and water samples were subsequently collected at this location. There was no Rhodamine dye testing completed in this area and therefore it was unconfirmed at the time of the incident whether the seepage was originating from the Crusher Facility.

At the time of the seepage event, the contingency plan previously established to manage water at the Crusher Facility until the remediation of the compromised ditch system could be completed was in place. The contingency plan involves monitoring contact water, capturing contact water runoff with a diversion berm and active pumping of contact water from the pad directly to the MS-06 Pond.

Sample Location	Description	Coordinates (Lat/Long)
CP-SEEPAGE-03	Toe of the Crusher Facility Pad and MS-06 Pond	N71° 18' 38.6" W-79° 16' 34.1"
CP-SEEPAGE-04	Toe of the Crusher Facility Pad and MS-06 Pond	N71° 18' 35.118' W-79° 16' 32.02"

Immediate and Follow-Up Action:

Upon discovering the Rhodamine dye at the seepage location, water samples were collected on July 4, 2020 and submitted to an external laboratory for analyses. The immediate laboratory water quality results confirmed the seepage was compliant with all applicable water license and MDMER criteria with the exception of Total Suspended Solids (TSS) at sample location CP-SEEPAGE-03. It is suspected that the high TSS value is not representative of the actual water quality as there was limited water flow; preventing the collection of a representative sample. The toxicity sample collected at CP-SEEPAGE-03 was compromised during shipping and as a result only contained sufficient volume for *Daphnia magna* analysis. The analysis showed the seepage water was not acutely toxic to *Daphnia magna*. Results of an additional toxicity sample, collected downstream of the Crusher Facility at Surveillance Network Program (SNP) monitoring station MS-C-E on July 5, 2020, were also found to be not acutely toxic. Sumps have been strategically installed at the foot of the downstream toe of the collection ditch where seepage was present, as an interim remedial measure, in accordance with Part H Section 8 of the Water License. Baffinland will continue to implement the Ore Crusher Pad Regrading Strategy to prevent the pooling of water on and around the Crusher Facility pad. A pumping system has been installed to transfer collected seepage water from these sumps to Crusher Facility Pond MS-06.



The remedial work scheduled to be completed to repair the compromised sections of the ditch system is currently on hold as the work, as currently planned, may not be effective. Further investigation will be conducted to determine the appropriate corrective actions to effectively resolve the seepage.

Current Status:

The temporary sumps which were installed are functioning as intended and pumping seepage back to the Crusher Facility MS-06 Pond. The interim sumps are inspected on a regular basis.

As per Section 31 of the Metal and Diamond Mining Effluent Regulations (MDMER):

- a. Seepage from the Crusher Facility pad.
- b. Unknown quantity.
- c. The release was first observed at approximately 18:00 on July 4, 2020. A summary of the sampling events that occurred upon observation of the uncontrolled release, which includes date, time and respective water quality results is included in Table 1.
- d. The quantity of surface water released is unknown, therefore; the quantity of deleterious substance cannot be determined. The location of the release is listed below and shown in Figure 1.

Coordinates	N 71° 18' 38.6"	W 79° 16' 34.1"
-------------	-----------------	-----------------

- e. Not applicable as the release did not occur through the final discharge point.
- f. The incident occurred on IOL land located >1km from Sheardown Lake tributary, the nearest fish bearing waters and did not migrate from the vicinity of the release.
- g. A toxicity sample collected at CP-SEEGAGE-03 was compromised during shipping and as a result only contained sufficient volume for Daphnia magna analysis. The analysis showed the seepage water was not acutely toxic to Daphnia magna. Results of an additional toxicity sample, collected downstream of the Crusher Facility at Surveillance Network Program (SNP) monitoring station MS-C-E on July 5, 2020, were also found to be not acutely toxic. The external laboratory Certificates of Analysis (COAs) are included in Attachment 5.
- h. See the summary above for the circumstances of the surface water release. As per Baffinland's MDMER Emergency Response Plan, an excavator was dispatched to dig sumps to allow for water to be pumped to the MS-06 Pond.
- i. Ground works were completed to ensure all contact water reports to the MS-06 Pond. Inspections of the Crusher facility continue on a regular basis and no further releases have been observed.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux or Aaron MacDonnell at (647) 253- 0596 x6016.

Prepared by:

Aaron MacDonnell
Environmental Superintendent

Attach: Photos, Map, Baffinland NT-NU Spill Report, Water Quality Results, COAs

cc. Sylvain Proulx, Tim Sewell, Shawn Stevens, Connor Devereaux, Brian Marshall, Francois Gaudreau, Christopher Murray, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC)



Attachment 1

Photos

Photo 1: July 4 Seepage at CP-SEEPAGE-01



Photo 2: July 8 Seepage Area CP-SEEPAGE-01



Photo 3: Seepage Collection Sump



Photo 4: Crusher Pad





Attachment 2

Crusher Facility Pad Seepage Location

MS-06 SEEPAGE MONITORING LOCATIONS

CP-SEEPAGE-3

CP-SEEPAGE-4





Attachment 3

Baffinland NT-NU Spill Report



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR 07-05-2020	REPORT TIME 19:30	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT		REPORT NUMBER 20 - 208
B	OCCURRENCE DATE: MONTH – DAY – YEAR 07-04-2020	OCCURRENCE TIME 18:00			
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301	WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"			
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 18 SECONDS 38		LONGITUDE DEGREES 79 MINUTES 16 SECONDS 49		
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3			
G	ANY CONTRACTOR INVOLVED N/A	CONTRACTOR ADDRESS OR OFFICE LOCATION N/A			
H	PRODUCT SPILLED Surface Water	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Unknown	U.N. NUMBER N/A		
	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A	U.N. NUMBER N/A		
I	SPILL SOURCE Crusher Pad	SPILL CAUSE Seepage from pad	AREA OF CONTAMINATION IN SQUARE METRES N/A		
J	FACTORS AFFECTING SPILL OR RECOVERY Drainage to tundra	DESCRIBE ANY ASSISTANCE REQUIRED N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A		
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On July 4th 2020, at approximately 18:00, environmental personnel monitoring seepage at the crusher pad detected Rhodamine at location CP-SEEPAGE-01. Rhodamine dye testing was initiated over the last week to confirm conclusions in 2019 regarding seepage observed at the crusher pad to be non-contact water. The detection of Rhodamine at this location indicate that contact water on the pad may be seeping through the pad and down gradient of the facility. All water on the pad was subsequently pumped to the MS-06 pond. Initial field readings of the release were compliant with applicable water license and MDMER criteria. Water quality monitoring and corrective actions will be presented in the follow-up report. The incident occurred on IOL located >1km from Sheardown Lake tributary, the nearest fish bearing waters and did not migrate from vicinity of release. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9(b) and section 31 of the Metal and Diamond Mining Effluent Regulations under the Fisheries Act.				
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 416-364-8820	TELEPHONE ext. 6016
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of HSES	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION 416-364-8820	ALTERNATE TELEPHONE ext. 6006
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					



Attachment 4

Water Quality Results



Table 1. CP-SEEPAGE-03 Water Quality Results

Analyte	Sample ID			CP-SEEPAGE-03	CP-SEEPAGE-04-EXPLORE
	ALS Laboratory Sample ID			L2469886-1	L2470089-1
	Sample Date & Time			4-Jul-2020 22:25	4-Jul-2020 21:45
	Units	LOR	Limits		
pH	pH units	0.10	6.0 - 9.5	7.67	7.55
Total Suspended Solids	mg/L	1.0	30.0	63.8	15.4
Total Dissolved Solids	mg/L	20	-	3560	5550
Arsenic	mg/L	0.00020/0.0010	0.50	0.0005	<0.0010
Copper	mg/L	0.0010/0.0050	0.30	0.0063	<0.0050
Lead	mg/L	0.00010/0.00050	0.20	0.00224	<0.00050
Nickel	mg/L	0.0010/0.0050	0.50	0.0252	0.0772
Zinc	mg/L	0.0060/0.030	0.50	0.0394	<0.030
Internal Field Results					
Temperature	°C	-	-	7.4	4
Dissolved Oxygen	%	-	-	109.5	94.9
Dissolved Oxygen	mg/L	-	-	12.39	12.21
pH	pH units	-	6.0 - 9.5	7.56	7.14
Specific Conductivity		-	-	3657	5185

Attachment 5

Laboratory Certificates of Analysis (COAs)



Baffinland Iron Mine's Corporation
(Oakville)
ATTN: Connor Devereaux
2275 Upper Middle Rd. E.
Suite #300
Oakville ON L6H 0C3

Date Received: 06-JUL-20
Report Date: 24-JUL-20 13:24 (MT)
Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2469886
Project P.O. #: 4500073372
Job Reference: CRUSHER SEEPAGE
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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469886-1	CP-SEEPAGE-03							
Sampled By:	RH/MR/CD on 04-JUL-20 @ 22:25							
Matrix:	WATER							
Physical Tests								
Conductivity		3610		2.0	uS/cm		08-JUL-20	R5146366
pH		7.67		0.10	pH		08-JUL-20	R5146366
Total Suspended Solids		63.8		1.0	mg/L		08-JUL-20	R5146672
Total Dissolved Solids		3560		20	mg/L		09-JUL-20	R5147712
Turbidity		56.8		0.10	NTU		07-JUL-20	R5145699
Anions and Nutrients								
Acidity (as CaCO3)		4.4		2.0	mg/L		08-JUL-20	R5146356
Alkalinity, Total (as CaCO3)		54.9		1.0	mg/L		08-JUL-20	R5146366
Ammonia, Total (as N)		2.21		0.13	mg/L		13-JUL-20	R5150857
Chloride (Cl)		61		10	mg/L		08-JUL-20	R5147148
Fluoride (F)		<0.40	DLDS	0.40	mg/L		08-JUL-20	R5147148
Nitrate (as N)		38.4		0.10	mg/L		08-JUL-20	R5147148
Total Kjeldahl Nitrogen		1.04	TKNI	0.050	mg/L	08-JUL-20	08-JUL-20	R5146488
Phosphorus (P)-Total		0.0394		0.0020	mg/L		08-JUL-20	R5146205
Sulfate (SO4)		2230		6.0	mg/L		08-JUL-20	R5147148
Organic / Inorganic Carbon								
Total Organic Carbon		3.52		0.50	mg/L		07-JUL-20	R5144760
Total Metals								
Aluminum (Al)-Total		1.73		0.0060	mg/L		09-JUL-20	R5147285
Antimony (Sb)-Total		<0.00020	DLA	0.00020	mg/L		09-JUL-20	R5147285
Arsenic (As)-Total		0.00050		0.00020	mg/L		09-JUL-20	R5147285
Barium (Ba)-Total		0.0401		0.00020	mg/L		09-JUL-20	R5147285
Beryllium (Be)-Total		0.00029		0.00020	mg/L		09-JUL-20	R5147285
Bismuth (Bi)-Total		<0.00010	DLA	0.00010	mg/L		09-JUL-20	R5147285
Boron (B)-Total		0.115		0.020	mg/L		09-JUL-20	R5147285
Cadmium (Cd)-Total		0.000985		0.000010	mg/L		09-JUL-20	R5147285
Calcium (Ca)-Total		251		0.10	mg/L		09-JUL-20	R5147285
Cesium (Cs)-Total		0.000117		0.000020	mg/L		09-JUL-20	R5147285
Chromium (Cr)-Total		0.00321		0.00020	mg/L		09-JUL-20	R5147285
Cobalt (Co)-Total		0.0190		0.00020	mg/L		09-JUL-20	R5147285
Copper (Cu)-Total		0.0063		0.0010	mg/L		09-JUL-20	R5147285
Iron (Fe)-Total		3.62		0.020	mg/L		09-JUL-20	R5147285
Lead (Pb)-Total		0.00224		0.00010	mg/L		09-JUL-20	R5147285
Lithium (Li)-Total		0.0490		0.0020	mg/L		09-JUL-20	R5147285
Magnesium (Mg)-Total		441		0.010	mg/L		09-JUL-20	R5147285
Manganese (Mn)-Total		9.30		0.00020	mg/L		09-JUL-20	R5147285
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		10-JUL-20	R5147432
Molybdenum (Mo)-Total		0.00732		0.00010	mg/L		09-JUL-20	R5147285
Nickel (Ni)-Total		0.0252		0.0010	mg/L		09-JUL-20	R5147285
Phosphorus (P)-Total		<0.10	DLA	0.10	mg/L		09-JUL-20	R5147285
Potassium (K)-Total		28.6		0.10	mg/L		09-JUL-20	R5147285
Rubidium (Rb)-Total		0.0121		0.00040	mg/L		09-JUL-20	R5147285

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469886-1	CP-SEEPAGE-03							
Sampled By:	RH/MR/CD on 04-JUL-20 @ 22:25							
Matrix:	WATER							
Total Metals								
Selenium (Se)-Total		0.00697		0.00010	mg/L		09-JUL-20	R5147285
Silicon (Si)-Total		5.70		0.20	mg/L		09-JUL-20	R5147285
Silver (Ag)-Total		0.000028		0.000020	mg/L		09-JUL-20	R5147285
Sodium (Na)-Total		48.5		0.10	mg/L		09-JUL-20	R5147285
Strontium (Sr)-Total		0.425		0.00040	mg/L		09-JUL-20	R5147285
Sulfur (S)-Total		784		1.0	mg/L		09-JUL-20	R5147285
Tellurium (Te)-Total		<0.00040	DLA	0.00040	mg/L		09-JUL-20	R5147285
Thallium (Tl)-Total		0.000051		0.000020	mg/L		09-JUL-20	R5147285
Thorium (Th)-Total		0.00210		0.00020	mg/L		09-JUL-20	R5147285
Tin (Sn)-Total		<0.00020	DLA	0.00020	mg/L		09-JUL-20	R5147285
Titanium (Ti)-Total		0.0568		0.00060	mg/L		09-JUL-20	R5147285
Tungsten (W)-Total		<0.00020	DLA	0.00020	mg/L		09-JUL-20	R5147285
Uranium (U)-Total		0.116		0.000020	mg/L		09-JUL-20	R5147285
Vanadium (V)-Total		0.0075		0.0010	mg/L		09-JUL-20	R5147285
Zinc (Zn)-Total		0.0394		0.0060	mg/L		09-JUL-20	R5147285
Zirconium (Zr)-Total		0.00414		0.00040	mg/L		09-JUL-20	R5147285
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					09-JUL-20	R5146543
Dissolved Metals Filtration Location		FIELD					11-JUL-20	R5148423
Aluminum (Al)-Dissolved		0.0100		0.0020	mg/L	11-JUL-20	11-JUL-20	R5148990
Antimony (Sb)-Dissolved		<0.00020	DLA	0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Arsenic (As)-Dissolved		<0.00020	DLA	0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Barium (Ba)-Dissolved		0.0350		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Beryllium (Be)-Dissolved		<0.00020	DLA	0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Bismuth (Bi)-Dissolved		<0.00010	DLA	0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Boron (B)-Dissolved		0.095		0.020	mg/L	11-JUL-20	11-JUL-20	R5148990
Cadmium (Cd)-Dissolved		0.000921		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Calcium (Ca)-Dissolved		246		0.10	mg/L	11-JUL-20	11-JUL-20	R5148990
Cesium (Cs)-Dissolved		<0.000020	DLA	0.000020	mg/L	11-JUL-20	11-JUL-20	R5148990
Chromium (Cr)-Dissolved		<0.00020	DLA	0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Cobalt (Co)-Dissolved		0.0165		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Copper (Cu)-Dissolved		0.00132		0.00040	mg/L	11-JUL-20	11-JUL-20	R5148990
Iron (Fe)-Dissolved		<0.020	DLA	0.020	mg/L	11-JUL-20	11-JUL-20	R5148990
Lead (Pb)-Dissolved		<0.00010	DLA	0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Lithium (Li)-Dissolved		0.0441		0.0020	mg/L	11-JUL-20	11-JUL-20	R5148990
Magnesium (Mg)-Dissolved		405		0.010	mg/L	11-JUL-20	11-JUL-20	R5148990
Manganese (Mn)-Dissolved		9.19		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	09-JUL-20	09-JUL-20	R5146555
Molybdenum (Mo)-Dissolved		0.00816		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Nickel (Ni)-Dissolved		0.0218		0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Phosphorus (P)-Dissolved		<0.10	DLA	0.10	mg/L	11-JUL-20	11-JUL-20	R5148990

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469886-1	CP-SEEPAGE-03							
Sampled By:	RH/MR/CD on 04-JUL-20 @ 22:25							
Matrix:	WATER							
Dissolved Metals								
Potassium (K)-Dissolved		27.1		0.10	mg/L	11-JUL-20	11-JUL-20	R5148990
Rubidium (Rb)-Dissolved		0.00846		0.00040	mg/L	11-JUL-20	11-JUL-20	R5148990
Selenium (Se)-Dissolved		0.00666		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Silicon (Si)-Dissolved		2.86		0.10	mg/L	11-JUL-20	11-JUL-20	R5148990
Silver (Ag)-Dissolved		<0.000020	DLA	0.000020	mg/L	11-JUL-20	11-JUL-20	R5148990
Sodium (Na)-Dissolved		47.2		0.10	mg/L	11-JUL-20	11-JUL-20	R5148990
Strontium (Sr)-Dissolved		0.417		0.00040	mg/L	11-JUL-20	11-JUL-20	R5148990
Sulfur (S)-Dissolved		737		1.0	mg/L	11-JUL-20	11-JUL-20	R5148990
Tellurium (Te)-Dissolved		<0.00040	DLA	0.00040	mg/L	11-JUL-20	11-JUL-20	R5148990
Thallium (Tl)-Dissolved		0.000030		0.000020	mg/L	11-JUL-20	11-JUL-20	R5148990
Thorium (Th)-Dissolved		<0.00020	DLA	0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Tin (Sn)-Dissolved		<0.00020	DLA	0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Titanium (Ti)-Dissolved		<0.00060	DLA	0.00060	mg/L	11-JUL-20	11-JUL-20	R5148990
Tungsten (W)-Dissolved		<0.00020	DLA	0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Uranium (U)-Dissolved		0.112		0.000020	mg/L	11-JUL-20	11-JUL-20	R5148990
Vanadium (V)-Dissolved		<0.0010	DLA	0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Zinc (Zn)-Dissolved		0.0021		0.0020	mg/L	11-JUL-20	11-JUL-20	R5148990
Zirconium (Zr)-Dissolved		<0.00040	DLA	0.00040	mg/L	11-JUL-20	11-JUL-20	R5148990

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L2469886-1
Matrix Spike	Chloride (Cl)	MS-B	L2469886-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2469886-1
Matrix Spike	Nitrate (as N)	MS-B	L2469886-1

Sample Parameter Qualifier key listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
TKNI	TKN result may be biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO3)' have not been peroxide treated.			
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			

Reference Information

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
NO3-L-IC-N-VA	Water	Nitrate in Water by IC (Low Level)	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.			
Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode			
It is recommended that this analysis be conducted in the field.			
SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.			
TKN-F-VA	Water	TKN in Water by Fluorescence	APHA 4500-NORG D.
This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.			
TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

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 ww - 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.



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 3 of 17

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
HG-T-CVAA-VA		Water						
Batch	R5147432							
WG3359549-1 MB								
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	10-JUL-20
WG3359549-10 MS		L2471232-2						
Mercury (Hg)-Total			100.6		%		70-130	10-JUL-20
WG3359549-11 MS		L2470748-1						
Mercury (Hg)-Total			104.7		%		70-130	10-JUL-20
WG3359549-4 MS		L2470684-1						
Mercury (Hg)-Total			103.2		%		70-130	10-JUL-20
WG3359549-6 MS		L2470799-1						
Mercury (Hg)-Total			96.5		%		70-130	10-JUL-20
WG3359549-8 MS		L2469886-1						
Mercury (Hg)-Total			96.6		%		70-130	10-JUL-20
MET-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-3 DUP		L2469501-2						
Aluminum (Al)-Dissolved		0.0228	0.0227		mg/L	0.3	20	11-JUL-20
Antimony (Sb)-Dissolved		0.00021	0.00020		mg/L	4.2	20	11-JUL-20
Arsenic (As)-Dissolved		0.00098	0.00095		mg/L	3.0	20	11-JUL-20
Barium (Ba)-Dissolved		0.00110	0.00109		mg/L	0.8	20	11-JUL-20
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Boron (B)-Dissolved		0.130	0.134		mg/L	2.6	20	11-JUL-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Calcium (Ca)-Dissolved		11.5	11.7		mg/L	1.0	20	11-JUL-20
Cesium (Cs)-Dissolved		0.000072	0.000076		mg/L	5.0	20	11-JUL-20
Chromium (Cr)-Dissolved		0.00094	0.00097		mg/L	3.6	20	11-JUL-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Copper (Cu)-Dissolved		0.00581	0.00581		mg/L	0.0	20	11-JUL-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-JUL-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Lithium (Li)-Dissolved		0.0020	0.0021		mg/L	0.9	20	11-JUL-20
Magnesium (Mg)-Dissolved		1.81	1.79		mg/L	1.5	20	11-JUL-20
Manganese (Mn)-Dissolved		0.00089	0.00092		mg/L	3.3	20	11-JUL-20
Molybdenum (Mo)-Dissolved		0.000721	0.000740		mg/L	2.5	20	11-JUL-20
Nickel (Ni)-Dissolved		0.00085	0.00081		mg/L	5.2	20	11-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 4 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-3	DUP	L2469501-2						
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-JUL-20
Potassium (K)-Dissolved		1.09	1.09		mg/L	0.4	20	11-JUL-20
Rubidium (Rb)-Dissolved		0.00163	0.00178		mg/L	8.8	20	11-JUL-20
Selenium (Se)-Dissolved		0.000342	0.000357		mg/L	4.4	20	11-JUL-20
Silicon (Si)-Dissolved		1.16	1.17		mg/L	1.2	20	11-JUL-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUL-20
Sodium (Na)-Dissolved		23.5	23.5		mg/L	0.1	20	11-JUL-20
Strontium (Sr)-Dissolved		0.0252	0.0256		mg/L	1.4	20	11-JUL-20
Sulfur (S)-Dissolved		1.86	1.94		mg/L	4.2	20	11-JUL-20
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-JUL-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUL-20
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Tin (Sn)-Dissolved		0.00013	0.00013		mg/L	1.6	20	11-JUL-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	11-JUL-20
Tungsten (W)-Dissolved		0.00016	0.00015		mg/L	4.0	20	11-JUL-20
Uranium (U)-Dissolved		0.000011	0.000011		mg/L	3.8	20	11-JUL-20
Vanadium (V)-Dissolved		0.00272	0.00275		mg/L	1.1	20	11-JUL-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-JUL-20
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	11-JUL-20
WG3360565-2	LCS							
Aluminum (Al)-Dissolved			101.2		%		80-120	11-JUL-20
Antimony (Sb)-Dissolved			102.7		%		80-120	11-JUL-20
Arsenic (As)-Dissolved			99.4		%		80-120	11-JUL-20
Barium (Ba)-Dissolved			104.1		%		80-120	11-JUL-20
Beryllium (Be)-Dissolved			99.1		%		80-120	11-JUL-20
Bismuth (Bi)-Dissolved			102.8		%		80-120	11-JUL-20
Boron (B)-Dissolved			96.9		%		80-120	11-JUL-20
Cadmium (Cd)-Dissolved			99.3		%		80-120	11-JUL-20
Calcium (Ca)-Dissolved			107.4		%		80-120	11-JUL-20
Cesium (Cs)-Dissolved			98.6		%		80-120	11-JUL-20
Chromium (Cr)-Dissolved			97.5		%		80-120	11-JUL-20
Cobalt (Co)-Dissolved			98.1		%		80-120	11-JUL-20
Copper (Cu)-Dissolved			94.7		%		80-120	11-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 5 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-2	LCS							
Iron (Fe)-Dissolved			101.4		%		80-120	11-JUL-20
Lead (Pb)-Dissolved			100.2		%		80-120	11-JUL-20
Lithium (Li)-Dissolved			98.5		%		80-120	11-JUL-20
Magnesium (Mg)-Dissolved			102.2		%		80-120	11-JUL-20
Manganese (Mn)-Dissolved			119.6		%		80-120	11-JUL-20
Molybdenum (Mo)-Dissolved			99.8		%		80-120	11-JUL-20
Nickel (Ni)-Dissolved			99.6		%		80-120	11-JUL-20
Phosphorus (P)-Dissolved			98.2		%		70-130	11-JUL-20
Potassium (K)-Dissolved			105.2		%		80-120	11-JUL-20
Rubidium (Rb)-Dissolved			102.8		%		80-120	11-JUL-20
Selenium (Se)-Dissolved			101.5		%		80-120	11-JUL-20
Silicon (Si)-Dissolved			104.0		%		60-140	11-JUL-20
Silver (Ag)-Dissolved			94.5		%		80-120	11-JUL-20
Sodium (Na)-Dissolved			107.1		%		80-120	11-JUL-20
Strontium (Sr)-Dissolved			100.6		%		80-120	11-JUL-20
Sulfur (S)-Dissolved			105.0		%		80-120	11-JUL-20
Tellurium (Te)-Dissolved			101.4		%		80-120	11-JUL-20
Thallium (Tl)-Dissolved			102.8		%		80-120	11-JUL-20
Thorium (Th)-Dissolved			92.7		%		80-120	11-JUL-20
Tin (Sn)-Dissolved			99.2		%		80-120	11-JUL-20
Titanium (Ti)-Dissolved			97.6		%		80-120	11-JUL-20
Tungsten (W)-Dissolved			102.2		%		80-120	11-JUL-20
Uranium (U)-Dissolved			108.8		%		80-120	11-JUL-20
Vanadium (V)-Dissolved			100.1		%		80-120	11-JUL-20
Zinc (Zn)-Dissolved			95.8		%		80-120	11-JUL-20
Zirconium (Zr)-Dissolved			97.3		%		80-120	11-JUL-20
WG3360565-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 6 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-1 MB								
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-JUL-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	11-JUL-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-JUL-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
WG3360565-4 MS		L2469501-4						
Aluminum (Al)-Dissolved			97.8		%		70-130	11-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 7 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-4	MS	L2469501-4						
Antimony (Sb)-Dissolved			100.5		%		70-130	11-JUL-20
Arsenic (As)-Dissolved			97.2		%		70-130	11-JUL-20
Barium (Ba)-Dissolved			104.7		%		70-130	11-JUL-20
Beryllium (Be)-Dissolved			95.0		%		70-130	11-JUL-20
Bismuth (Bi)-Dissolved			98.6		%		70-130	11-JUL-20
Boron (B)-Dissolved			96.1		%		70-130	11-JUL-20
Cadmium (Cd)-Dissolved			96.3		%		70-130	11-JUL-20
Calcium (Ca)-Dissolved			97.7		%		70-130	11-JUL-20
Cesium (Cs)-Dissolved			99.98		%		70-130	11-JUL-20
Chromium (Cr)-Dissolved			98.6		%		70-130	11-JUL-20
Cobalt (Co)-Dissolved			97.1		%		70-130	11-JUL-20
Copper (Cu)-Dissolved			95.0		%		70-130	11-JUL-20
Iron (Fe)-Dissolved			98.0		%		70-130	11-JUL-20
Lead (Pb)-Dissolved			99.4		%		70-130	11-JUL-20
Lithium (Li)-Dissolved			97.4		%		70-130	11-JUL-20
Magnesium (Mg)-Dissolved			95.4		%		70-130	11-JUL-20
Manganese (Mn)-Dissolved			101.3		%		70-130	11-JUL-20
Molybdenum (Mo)-Dissolved			97.4		%		70-130	11-JUL-20
Nickel (Ni)-Dissolved			99.4		%		70-130	11-JUL-20
Phosphorus (P)-Dissolved			86.8		%		70-130	11-JUL-20
Potassium (K)-Dissolved			101.6		%		70-130	11-JUL-20
Rubidium (Rb)-Dissolved			99.3		%		70-130	11-JUL-20
Selenium (Se)-Dissolved			96.6		%		70-130	11-JUL-20
Silicon (Si)-Dissolved			92.5		%		70-130	11-JUL-20
Silver (Ag)-Dissolved			99.1		%		70-130	11-JUL-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	11-JUL-20
Strontium (Sr)-Dissolved			102.5		%		70-130	11-JUL-20
Sulfur (S)-Dissolved			95.3		%		70-130	11-JUL-20
Tellurium (Te)-Dissolved			101.3		%		70-130	11-JUL-20
Thallium (Tl)-Dissolved			98.3		%		70-130	11-JUL-20
Thorium (Th)-Dissolved			103.5		%		70-130	11-JUL-20
Tin (Sn)-Dissolved			96.4		%		70-130	11-JUL-20
Titanium (Ti)-Dissolved			99.4		%		70-130	11-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 8 of 17

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-4 MS		L2469501-4						
Tungsten (W)-Dissolved			101.9		%		70-130	11-JUL-20
Uranium (U)-Dissolved			99.9		%		70-130	11-JUL-20
Vanadium (V)-Dissolved			98.4		%		70-130	11-JUL-20
Zinc (Zn)-Dissolved			94.8		%		70-130	11-JUL-20
Zirconium (Zr)-Dissolved			101.6		%		70-130	11-JUL-20
MET-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-3 DUP		L2468657-2						
Aluminum (Al)-Total		0.736	0.686		mg/L	6.9	20	09-JUL-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Arsenic (As)-Total		0.00017	0.00016		mg/L	6.4	20	09-JUL-20
Barium (Ba)-Total		0.0206	0.0228		mg/L	10	20	09-JUL-20
Beryllium (Be)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUL-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUL-20
Boron (B)-Total		0.292	0.297		mg/L	1.8	20	09-JUL-20
Cadmium (Cd)-Total		0.0000185	0.0000146	J	mg/L	0.0000039	0.00001	09-JUL-20
Calcium (Ca)-Total		52.7	54.0		mg/L	2.3	20	09-JUL-20
Cesium (Cs)-Total		0.000071	0.000076		mg/L	7.0	20	09-JUL-20
Chromium (Cr)-Total		0.00159	0.00185		mg/L	15	20	09-JUL-20
Cobalt (Co)-Total		0.00114	0.00116		mg/L	1.8	20	09-JUL-20
Copper (Cu)-Total		0.00184	0.00184		mg/L	0.0	20	09-JUL-20
Iron (Fe)-Total		0.559	0.596		mg/L	6.4	20	09-JUL-20
Lead (Pb)-Total		0.000351	0.000363		mg/L	3.5	20	09-JUL-20
Lithium (Li)-Total		0.0049	0.0050		mg/L	1.6	20	09-JUL-20
Magnesium (Mg)-Total		30.3	30.3		mg/L	0.0	20	09-JUL-20
Manganese (Mn)-Total		0.0591	0.0600		mg/L	1.7	20	09-JUL-20
Molybdenum (Mo)-Total		0.0111	0.0111		mg/L	0.5	20	09-JUL-20
Nickel (Ni)-Total		0.0226	0.0225		mg/L	0.4	20	09-JUL-20
Phosphorus (P)-Total		<0.30	<0.30	RPD-NA	mg/L	N/A	20	09-JUL-20
Potassium (K)-Total		6.38	6.47		mg/L	1.3	20	09-JUL-20
Rubidium (Rb)-Total		0.00763	0.00778		mg/L	1.9	20	09-JUL-20
Selenium (Se)-Total		0.00022	0.00017	J	mg/L	0.00004	0.0002	09-JUL-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 9 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-3	DUP	L2468657-2						
Sodium (Na)-Total		24.3	24.2		mg/L	0.4	20	09-JUL-20
Strontium (Sr)-Total		0.494	0.494		mg/L	0.1	20	09-JUL-20
Sulfur (S)-Total		55.2	55.5		mg/L	0.5	20	09-JUL-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUL-20
Thallium (Tl)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUL-20
Thorium (Th)-Total		0.00015	0.00017		mg/L	9.1	20	09-JUL-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Titanium (Ti)-Total		0.016	0.029	J	mg/L	0.012	0.02	09-JUL-20
Tungsten (W)-Total		0.00014	0.00014		mg/L	0.2	20	09-JUL-20
Uranium (U)-Total		0.00354	0.00360		mg/L	1.7	20	09-JUL-20
Vanadium (V)-Total		0.0014	0.0017		mg/L	14	20	09-JUL-20
Zinc (Zn)-Total		0.0042	0.0043		mg/L	3.0	20	09-JUL-20
Zirconium (Zr)-Total		0.00037	0.00061	J	mg/L	0.00024	0.0004	09-JUL-20
WG3358010-2	LCS							
Aluminum (Al)-Total			100.9		%		80-120	09-JUL-20
Antimony (Sb)-Total			105.3		%		80-120	09-JUL-20
Arsenic (As)-Total			97.8		%		80-120	09-JUL-20
Barium (Ba)-Total			99.3		%		80-120	09-JUL-20
Beryllium (Be)-Total			101.0		%		80-120	09-JUL-20
Bismuth (Bi)-Total			101.1		%		80-120	09-JUL-20
Boron (B)-Total			104.4		%		80-120	09-JUL-20
Cadmium (Cd)-Total			94.7		%		80-120	09-JUL-20
Calcium (Ca)-Total			97.5		%		80-120	09-JUL-20
Cesium (Cs)-Total			99.3		%		80-120	09-JUL-20
Chromium (Cr)-Total			99.8		%		80-120	09-JUL-20
Cobalt (Co)-Total			98.5		%		80-120	09-JUL-20
Copper (Cu)-Total			99.9		%		80-120	09-JUL-20
Iron (Fe)-Total			99.1		%		80-120	09-JUL-20
Lead (Pb)-Total			99.9		%		80-120	09-JUL-20
Lithium (Li)-Total			99.9		%		80-120	09-JUL-20
Magnesium (Mg)-Total			99.8		%		80-120	09-JUL-20
Manganese (Mn)-Total			100.8		%		80-120	09-JUL-20
Molybdenum (Mo)-Total			98.6		%		80-120	09-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 10 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-2	LCS							
Nickel (Ni)-Total			98.0		%		80-120	09-JUL-20
Phosphorus (P)-Total			97.4		%		80-120	09-JUL-20
Potassium (K)-Total			101.8		%		80-120	09-JUL-20
Rubidium (Rb)-Total			103.5		%		80-120	09-JUL-20
Selenium (Se)-Total			99.6		%		80-120	09-JUL-20
Silicon (Si)-Total			98.6		%		80-120	09-JUL-20
Silver (Ag)-Total			96.5		%		80-120	09-JUL-20
Sodium (Na)-Total			100.5		%		80-120	09-JUL-20
Strontium (Sr)-Total			99.4		%		80-120	09-JUL-20
Sulfur (S)-Total			99.4		%		80-120	09-JUL-20
Tellurium (Te)-Total			100.6		%		80-120	09-JUL-20
Thallium (Tl)-Total			99.9		%		80-120	09-JUL-20
Thorium (Th)-Total			92.6		%		80-120	09-JUL-20
Tin (Sn)-Total			99.8		%		80-120	09-JUL-20
Titanium (Ti)-Total			96.8		%		80-120	09-JUL-20
Tungsten (W)-Total			97.3		%		80-120	09-JUL-20
Uranium (U)-Total			102.0		%		80-120	09-JUL-20
Vanadium (V)-Total			100.9		%		80-120	09-JUL-20
Zinc (Zn)-Total			97.3		%		80-120	09-JUL-20
Zirconium (Zr)-Total			95.0		%		80-120	09-JUL-20
WG3358010-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-JUL-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Boron (B)-Total			<0.010		mg/L		0.01	09-JUL-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-JUL-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 11 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-1 MB								
Iron (Fe)-Total			<0.010		mg/L		0.01	09-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	09-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	09-JUL-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Silicon (Si)-Total			<0.10		mg/L		0.1	09-JUL-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	09-JUL-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Sulfur (S)-Total			<0.50		mg/L		0.5	09-JUL-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-JUL-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-JUL-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
WG3358010-4 MS		L2468657-3						
Aluminum (Al)-Total			96.5		%		70-130	09-JUL-20
Antimony (Sb)-Total			100.7		%		70-130	09-JUL-20
Arsenic (As)-Total			95.3		%		70-130	09-JUL-20
Barium (Ba)-Total			96.8		%		70-130	09-JUL-20
Beryllium (Be)-Total			101.4		%		70-130	09-JUL-20
Bismuth (Bi)-Total			99.0		%		70-130	09-JUL-20
Boron (B)-Total			106.7		%		70-130	09-JUL-20



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 12 of 17

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-4 MS		L2468657-3						
Cadmium (Cd)-Total			98.0		%		70-130	09-JUL-20
Calcium (Ca)-Total			96.6		%		70-130	09-JUL-20
Cesium (Cs)-Total			98.4		%		70-130	09-JUL-20
Chromium (Cr)-Total			98.2		%		70-130	09-JUL-20
Cobalt (Co)-Total			98.9		%		70-130	09-JUL-20
Copper (Cu)-Total			99.7		%		70-130	09-JUL-20
Iron (Fe)-Total			97.5		%		70-130	09-JUL-20
Lead (Pb)-Total			99.4		%		70-130	09-JUL-20
Lithium (Li)-Total			104.0		%		70-130	09-JUL-20
Magnesium (Mg)-Total			98.2		%		70-130	09-JUL-20
Manganese (Mn)-Total			98.5		%		70-130	09-JUL-20
Molybdenum (Mo)-Total			97.2		%		70-130	09-JUL-20
Nickel (Ni)-Total			97.7		%		70-130	09-JUL-20
Phosphorus (P)-Total			94.3		%		70-130	09-JUL-20
Potassium (K)-Total			97.7		%		70-130	09-JUL-20
Rubidium (Rb)-Total			101.5		%		70-130	09-JUL-20
Selenium (Se)-Total			99.3		%		70-130	09-JUL-20
Silicon (Si)-Total			93.9		%		70-130	09-JUL-20
Silver (Ag)-Total			99.7		%		70-130	09-JUL-20
Sodium (Na)-Total			95.1		%		70-130	09-JUL-20
Strontium (Sr)-Total			101.0		%		70-130	09-JUL-20
Sulfur (S)-Total			95.4		%		70-130	09-JUL-20
Tellurium (Te)-Total			101.5		%		70-130	09-JUL-20
Thallium (Tl)-Total			96.6		%		70-130	09-JUL-20
Thorium (Th)-Total			105.5		%		70-130	09-JUL-20
Tin (Sn)-Total			99.1		%		70-130	09-JUL-20
Titanium (Ti)-Total			94.5		%		70-130	09-JUL-20
Tungsten (W)-Total			96.7		%		70-130	09-JUL-20
Uranium (U)-Total			98.2		%		70-130	09-JUL-20
Vanadium (V)-Total			98.4		%		70-130	09-JUL-20
Zinc (Zn)-Total			99.9		%		70-130	09-JUL-20
Zirconium (Zr)-Total			99.9		%		70-130	09-JUL-20

NH3-F-VA **Water**



Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Page 15 of 17

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
TURBIDITY-VA	Water							
Batch	R5145699							
WG3357502-1 MB								
Turbidity			<0.10		NTU		0.1	07-JUL-20

Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 16 of 17

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
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
J	Duplicate results and limits are expressed in terms of absolute difference.
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.

Quality Control Report

Workorder: L2469886

Report Date: 24-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 17 of 17

Contact: Connor Devereaux

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)	1	04-JUL-20 22:25	08-JUL-20 15:30	0.25	89	hours	EHTR-FM

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 L2469886 were received on 06-JUL-20 10:00.

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 pre-determined 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.



Acute Toxicity Test Results

Sample collected July 4, 2020

Final Report

July 22, 2020

Submitted to: **ALS Environmental**
Yellowknife, NWT

SAMPLE INFORMATION

Sample ID/ Internal ID	Dates		<i>Daphnia magna</i> test initiation	Receipt temperature
	Collected	Received		
L2469886-1 CP- SEEPAGE-03/ 1920-1594	4-Jul-20	7-Jul-20 at 1230h	8-Jul-20 at 1530h	11.6°C

TEST TYPES

- *Daphnia magna* 48-h LC50, EC50 test

RESULTS

Toxicity test results

Sample ID	<i>Daphnia magna</i> LC50/EC50 (% v/v)	
	LC50	EC50
L2469886-1 CP-SEEPAGE-03	> 100	> 100

QA/QC

QA/QC summary	<i>Daphnia magna</i>
Reference toxicant LC50 (95% CL)	6.5 (6.0-6.9) g/L NaCl ¹
Reference toxicant historical mean (2 SD Range)	6.0 (5.1-7.0) g/L NaCl
Reference toxicant CV	5.2%
Organism health history	Acceptable
Protocol deviations	None
Water quality range deviations	None
Control performance	Acceptable
Test performance	Valid

¹ Test date, July 6, 2020

LC = Lethal Concentration; CL = Confidence Limit



Report By:
Courtney Bogstie, BSc
Biologist



Reviewed By:
Jacklyn Poole, BSc
Laboratory Supervisor

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 48-h *Daphnia magna* survival test.

Test species	<i>Daphnia magna</i>
Organism source	In-house culture
Organism age	<24 hours
Test type	Static
Test duration	48 hours
Test vessel	385 mL plastic vessels
Test volume	150 mL
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water amended with 4 mg/L KCl and with B12 (2 µg/L) and Na ₂ SeO ₄ (2 µg Se/L)
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light/8 hours dark
Aeration	None
Test measurements	pH, conductivity, dissolved oxygen and temperature measured at test initiation and completion; salinity and hardness measured at test initiation in undiluted sample; evaluated daily for survival
Test protocol	Environment Canada (2000), EPS 1/RM/14
Statistical software	None
Test endpoints	48-h LC50
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Daphnia Bench Sheet

 Method DAD

 Client ALSIOU

 Reference 1920-1594
Test Log

Day	Date	Time	Technician	Chem. Cart	Daily Data Review	Initial pH:	Initial EC (µS/cm):	Initial DO (mg/L):	Initial Temp (°C):	Salinity (ppt):
0	2020/07/08	1530	ME/KK	3	PC	7.3	3820	9.9	18	4
1	2020/07/09	0915	KK	-	PC					
2	2020/07/10	0955	MW	3	SC					
Lab Code	CTL	6	12	25	50	100				

Sample Information

day	pH (units) (range: 6.0-8.5)									
0	8.1	8.1	8.1	8.1	8.0	7.7				
2	8.3	8.2	8.2	8.1	8.1	7.8				

The pH of the sample was not adjusted prior to test setting, unless noted in the comments below

	EC (uS/cm) <u>2180</u>									
0	417	666	917	1351	MF	3800	3800			
2	422	674	899	1339	MF	2080	3870			

	DO (mg/L) (40-100% saturation at test temp.)									
0	7.9	7.8	7.8	7.8	7.8	7.8				
2	7.8	7.8	7.8	7.8	7.8	7.8				

	Temperature (°C) (range: 18-22 °C)									
0	20	20	20	20	20	20				
2	20	20	20	20	20	20				

	Number Alive (F, floating; I, immobile; B, stuck on bubble; D, caught in debris)									
0	10	10	10	10	10	10				
1	10	10	10	10	10	10				
2	10	10	10	10	10	10				

Validity Criteria: must be ≤ 10% mortality and/or abnormal behavior in the control

Notes: Immobile; daphnid can't swim after 60 sec. even if antenna still move

Unless otherwise noted, behaviour is considered to be normal

Culture		Young jar <u>D5</u>		Jar(s) mortality 7 days prior to test (must be ≤25%) <u>0/</u>	
QA (previous month)		Days to first brood (≤12 days) <u>7</u>		Control Validity Criteria	
Average number of young produced (≥15 young)		<u>26</u>		Mean % mortality at 48 hours - (must be ≤10%) <u>0</u>	
Were test treatments randomized on test tray?		Yes / No <u>Yes</u>			
Sample		DO % of sample prior to aeration: <u>98</u>		Is aeration required (<40% or >100%)? Yes or No <u>No</u>	
Duration of aeration (37.5 +/- 12.5 mL/min/L): <u>-</u>		Filtered with 110µm screen prior to testing		Yes or No <u>No</u>	
Hardness (mg CaCO ₃ /L) of 100%: <u>2283</u>		Is hardness adjustment required (<25 mg CaCO ₃ /L)?		Yes or No <u>No</u>	
Hardness of sample after adjustment (must be between 25 - 30 mg CaCO ₃ /L)		<u>-</u>			
Dilution Water		DO Levels (40-100% saturation) - corrected for altitude -			
Pail label / preparation date <u>1.06/29</u>		3.3 to 8.2 mg/L at 18°C 3.1 to 7.7 mg/L at 21°C			
Hardness of dilution water (mg/L) <u>176</u>		3.2 to 8.1 mg/L at 19°C 3.0 to 7.6 mg/L at 22°C			
		3.2 to 7.9 mg/L at 20°C			
Comments:					

 Reviewed By: JP

 Date Reviewed: 2020/07/10

APPENDIX C – Chain-of-custody form

**L2469886**

WATERLOO

Subcontract Request Form**Subcontract To:****NAUTILUS ENVIRONMENTAL**8664 COMMERCE COURT
BURNABY, BC V5A 4N7**NOTES:** Please reference on final report and invoice: PO# L2469886
ALS requires QC data to be provided with your final results.Please see enclosed 1 sample(s) in 1 Container(s)**SAMPLE
NUMBER****ANALYTICAL REQUIRED****DATE SAMPLED****DUE DATE****Priority
Flag****L2469886-1 CP-SEEPAGE-03**

7/ 4/ 2020

Daphnia Magna LC50 (48 Hour) - Nautilus (DAPHNIA-
LC50-48HR-NL 1)

7/15/2020

Subcontract Info Contact:

Mary-Lynn Pike (519) 886-6910

Analysis and reporting info contact:

Rick Hawthorne
60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8

Phone: (519) 886-6910

Email: Rick.Hawthorne@alsglobal.com

Please email confirmation of receipt to:**Rick.Hawthorne@alsglobal.com**

Shipped By: _____

Date Shipped: _____

Received By: _____

Date Received: _____

Verified By: _____

Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

1920-1594 AC
2020/07/07 1x10L
12:30 good
Jazac cond
yes/
11.6°C yes!

COC 1/2

**L2469886**

WATERLOO

Subcontract Request Form**Subcontract To:****ALS ENVIRONMENTAL -YELLOWKNIFE, NORTHWEST TERRITORIES CANADA**

314 OLD AIRPORT ROAD
Unit 116
YELLOWKNIFE, NT X1A 3T3

NOTES: Please reference on final report and invoice: PO# L2469886
ALS requires QC data to be provided with your final results.

Please see enclosed 1 sample(s) in 1 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
		DUE DATE	
L2469886-1 CP-SEEPAGE-03		7/ 4/ 2020	
	Subsidized shipping charge (per cooler) (SHIPPING-LG-YL 14)	7/15/2020	

Subcontract Info Contact: Mary-Lynn Pike (519) 886-6910

Analysis and reporting info contact: Rick Hawthorne
60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910 Email: Rick.Hawthorne@alsglobal.com

Please email confirmation of receipt to: **Rick.Hawthorne@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

1920-1594

COC 2/2

END OF REPORT

[illegible]

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 white - report copy.

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

8:30am



Baffinland Iron Mine's Corporation
(Oakville)
ATTN: Connor Devereaux
2275 Upper Middle Rd. E.
Suite #300
Oakville ON L6H 0C3

Date Received: 06-JUL-20
Report Date: 15-JUL-20 15:14 (MT)
Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2470089
Project P.O. #: 4500073372
Job Reference: CRUSHER SEEPAGE
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: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2470089-1	CP-SEEPAGE-04-EXPLORE							
Sampled By:	RH/MR/CD on 04-JUL-20 @ 21:45							
Matrix:	WATER							
Physical Tests								
Conductivity		5050		2.0	uS/cm		08-JUL-20	R5146356
pH		7.55		0.10	pH		08-JUL-20	R5146356
Total Suspended Solids		15.4		1.0	mg/L		08-JUL-20	R5146672
Total Dissolved Solids		5550		20	mg/L		09-JUL-20	R5147712
Turbidity		14.6		0.10	NTU		08-JUL-20	R5145910
Anions and Nutrients								
Ammonia, Total (as N)		10.5		0.13	mg/L		14-JUL-20	R5152900
Total Metals								
Aluminum (Al)-Total		0.196		0.030	mg/L		09-JUL-20	R5148007
Antimony (Sb)-Total		<0.0010	DLA	0.0010	mg/L		09-JUL-20	R5148007
Arsenic (As)-Total		<0.0010	DLA	0.0010	mg/L		09-JUL-20	R5148007
Barium (Ba)-Total		0.0342		0.0010	mg/L		09-JUL-20	R5148007
Beryllium (Be)-Total		<0.0010	DLA	0.0010	mg/L		09-JUL-20	R5148007
Bismuth (Bi)-Total		<0.00050	DLA	0.00050	mg/L		09-JUL-20	R5148007
Boron (B)-Total		<0.10	DLA	0.10	mg/L		09-JUL-20	R5148007
Cadmium (Cd)-Total		0.000761		0.000050	mg/L		09-JUL-20	R5148007
Calcium (Ca)-Total		235		0.50	mg/L		09-JUL-20	R5148007
Cesium (Cs)-Total		<0.00010	DLA	0.00010	mg/L		09-JUL-20	R5148007
Chromium (Cr)-Total		<0.0010	DLA	0.0010	mg/L		09-JUL-20	R5148007
Cobalt (Co)-Total		0.0938		0.0010	mg/L		09-JUL-20	R5148007
Copper (Cu)-Total		<0.0050	DLA	0.0050	mg/L		09-JUL-20	R5148007
Iron (Fe)-Total		0.51		0.10	mg/L		09-JUL-20	R5148007
Lead (Pb)-Total		<0.00050	DLA	0.00050	mg/L		09-JUL-20	R5148007
Lithium (Li)-Total		0.051		0.010	mg/L		09-JUL-20	R5148007
Magnesium (Mg)-Total		817		0.050	mg/L		09-JUL-20	R5148007
Manganese (Mn)-Total		37.0		0.0010	mg/L		09-JUL-20	R5148007
Molybdenum (Mo)-Total		0.00656		0.00050	mg/L		09-JUL-20	R5148007
Nickel (Ni)-Total		0.0772		0.0050	mg/L		09-JUL-20	R5148007
Phosphorus (P)-Total		<0.50	DLA	0.50	mg/L		09-JUL-20	R5148007
Potassium (K)-Total		21.2		0.50	mg/L		09-JUL-20	R5148007
Rubidium (Rb)-Total		0.0198		0.0020	mg/L		09-JUL-20	R5148007
Selenium (Se)-Total		0.0113		0.00050	mg/L		09-JUL-20	R5148007
Silicon (Si)-Total		2.6		1.0	mg/L		09-JUL-20	R5148007
Silver (Ag)-Total		<0.00010	DLA	0.00010	mg/L		09-JUL-20	R5148007
Sodium (Na)-Total		18.0		0.50	mg/L		09-JUL-20	R5148007
Strontium (Sr)-Total		0.437		0.0020	mg/L		09-JUL-20	R5148007
Sulfur (S)-Total		1320		5.0	mg/L		09-JUL-20	R5148007
Tellurium (Te)-Total		<0.0020	DLA	0.0020	mg/L		09-JUL-20	R5148007
Thallium (Tl)-Total		<0.00010	DLA	0.00010	mg/L		09-JUL-20	R5148007
Thorium (Th)-Total		<0.0010	DLA	0.0010	mg/L		09-JUL-20	R5148007
Tin (Sn)-Total		<0.0010	DLA	0.0010	mg/L		09-JUL-20	R5148007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2470089-1	CP-SEEPAGE-04-EXPLORE							
Sampled By:	RH/MR/CD on 04-JUL-20 @ 21:45							
Matrix:	WATER							
Total Metals								
Titanium (Ti)-Total		0.0052		0.0030	mg/L		09-JUL-20	R5148007
Tungsten (W)-Total		<0.0010	DLA	0.0010	mg/L		09-JUL-20	R5148007
Uranium (U)-Total		0.0698		0.00010	mg/L		09-JUL-20	R5148007
Vanadium (V)-Total		<0.0050		0.0050	mg/L		09-JUL-20	R5148007
Zinc (Zn)-Total		<0.030	DLA	0.030	mg/L		09-JUL-20	R5148007
Zirconium (Zr)-Total		<0.0020	DLA	0.0020	mg/L		09-JUL-20	R5148007

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Total	MS-B	L2470089-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2470089-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2470089-1
Matrix Spike	Potassium (K)-Total	MS-B	L2470089-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2470089-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2470089-1
Matrix Spike	Sulfur (S)-Total	MS-B	L2470089-1

Sample Parameter Qualifier key listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
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**
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC ICPMS	EPA 200.2/6020A (mod)
Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.			
PH-PCT-VA	Water	pH by Meter (Automated)	APHA 4500-H pH Value
This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode			
It is recommended that this analysis be conducted in the field.			
TDS-VA	Water	Total Dissolved Solids by Gravimetric	APHA 2540 C - GRAVIMETRIC
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius.			
TSS-LOW-VA	Water	Total Suspended Solids by Grav. (1 mg/L)	APHA 2540D
This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.			
TURBIDITY-VA	Water	Turbidity by Meter	APHA 2130 Turbidity
This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.			

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

Chain of Custody Numbers:

Reference Information

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 ww - 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.



Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Page 1 of 8

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
EC-PCT-VA		Water						
Batch	R5146356							
WG3357683-3	LCS							
Conductivity			100.6		%		90-110	08-JUL-20
WG3357683-1	MB							
Conductivity			<2.0		uS/cm		2	08-JUL-20
MET-T-CCMS-VA		Water						
Batch	R5148007							
WG3358925-3	DUP	L2469875-1						
Aluminum (Al)-Total		0.223	0.222		mg/L	0.7	20	09-JUL-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Barium (Ba)-Total		0.0144	0.0141		mg/L	2.3	20	09-JUL-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUL-20
Boron (B)-Total		0.017	0.017		mg/L	2.2	20	09-JUL-20
Cadmium (Cd)-Total		0.0000432	0.0000452		mg/L	4.4	20	09-JUL-20
Calcium (Ca)-Total		28.3	28.0		mg/L	0.8	20	09-JUL-20
Cesium (Cs)-Total		0.000027	0.000026		mg/L	4.7	20	09-JUL-20
Chromium (Cr)-Total		0.00054	0.00051		mg/L	5.3	20	09-JUL-20
Cobalt (Co)-Total		0.0187	0.0186		mg/L	0.3	20	09-JUL-20
Copper (Cu)-Total		0.00184	0.00190		mg/L	3.2	20	09-JUL-20
Iron (Fe)-Total		0.628	0.633		mg/L	0.9	20	09-JUL-20
Lead (Pb)-Total		0.000255	0.000255		mg/L	0.1	20	09-JUL-20
Lithium (Li)-Total		0.0091	0.0089		mg/L	2.3	20	09-JUL-20
Magnesium (Mg)-Total		70.9	69.7		mg/L	1.7	20	09-JUL-20
Manganese (Mn)-Total		1.46	1.44		mg/L	1.2	20	09-JUL-20
Molybdenum (Mo)-Total		0.00173	0.00172		mg/L	0.4	20	09-JUL-20
Nickel (Ni)-Total		0.0245	0.0245		mg/L	0.2	20	09-JUL-20
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	09-JUL-20
Potassium (K)-Total		4.18	4.10		mg/L	1.9	20	09-JUL-20
Rubidium (Rb)-Total		0.00417	0.00410		mg/L	1.7	20	09-JUL-20
Selenium (Se)-Total		0.00141	0.00147		mg/L	4.7	20	09-JUL-20
Silicon (Si)-Total		1.29	1.27		mg/L	1.1	20	09-JUL-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUL-20
Sodium (Na)-Total		2.21	2.14		mg/L	3.3	20	09-JUL-20



Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Page 2 of 8

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-T-CCMS-VA		Water						
Batch	R5148007							
WG3358925-3	DUP	L2469875-1						
Strontium (Sr)-Total		0.0492	0.0462		mg/L	6.3	20	09-JUL-20
Sulfur (S)-Total		116	118		mg/L	1.9	20	09-JUL-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUL-20
Thallium (Tl)-Total		0.000022	0.000021		mg/L	7.8	20	09-JUL-20
Thorium (Th)-Total		0.00015	0.00016		mg/L	5.7	20	09-JUL-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Titanium (Ti)-Total		0.0102	0.00952		mg/L	6.6	20	09-JUL-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Uranium (U)-Total		0.00132	0.00134		mg/L	1.3	20	09-JUL-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	09-JUL-20
Zinc (Zn)-Total		0.0034	<0.0030	RPD-NA	mg/L	N/A	20	09-JUL-20
Zirconium (Zr)-Total		0.00030	0.00030		mg/L	1.5	20	09-JUL-20
WG3358925-2	LCS							
Aluminum (Al)-Total			102.1		%		80-120	09-JUL-20
Antimony (Sb)-Total			112.9		%		80-120	09-JUL-20
Arsenic (As)-Total			100.4		%		80-120	09-JUL-20
Barium (Ba)-Total			100.3		%		80-120	09-JUL-20
Beryllium (Be)-Total			102.7		%		80-120	09-JUL-20
Bismuth (Bi)-Total			97.5		%		80-120	09-JUL-20
Boron (B)-Total			97.0		%		80-120	09-JUL-20
Cadmium (Cd)-Total			103.6		%		80-120	09-JUL-20
Calcium (Ca)-Total			102.1		%		80-120	09-JUL-20
Cesium (Cs)-Total			111.2		%		80-120	09-JUL-20
Chromium (Cr)-Total			100.3		%		80-120	09-JUL-20
Cobalt (Co)-Total			100.7		%		80-120	09-JUL-20
Copper (Cu)-Total			100.4		%		80-120	09-JUL-20
Iron (Fe)-Total			100.8		%		80-120	09-JUL-20
Lead (Pb)-Total			102.1		%		80-120	09-JUL-20
Lithium (Li)-Total			103.7		%		80-120	09-JUL-20
Magnesium (Mg)-Total			97.5		%		80-120	09-JUL-20
Manganese (Mn)-Total			106.9		%		80-120	09-JUL-20
Molybdenum (Mo)-Total			105.3		%		80-120	09-JUL-20
Nickel (Ni)-Total			101.0		%		80-120	09-JUL-20



Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Page 3 of 8

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-T-CCMS-VA		Water						
Batch	R5148007							
WG3358925-2	LCS							
Phosphorus (P)-Total			101.1		%		80-120	09-JUL-20
Potassium (K)-Total			100.6		%		80-120	09-JUL-20
Rubidium (Rb)-Total			106.4		%		80-120	09-JUL-20
Selenium (Se)-Total			96.9		%		80-120	09-JUL-20
Silicon (Si)-Total			97.7		%		80-120	09-JUL-20
Silver (Ag)-Total			104.6		%		80-120	09-JUL-20
Sodium (Na)-Total			99.5		%		80-120	09-JUL-20
Strontium (Sr)-Total			107.1		%		80-120	09-JUL-20
Sulfur (S)-Total			93.3		%		80-120	09-JUL-20
Tellurium (Te)-Total			107.4		%		80-120	09-JUL-20
Thallium (Tl)-Total			100.5		%		80-120	09-JUL-20
Thorium (Th)-Total			99.6		%		80-120	09-JUL-20
Tin (Sn)-Total			100.7		%		80-120	09-JUL-20
Titanium (Ti)-Total			98.6		%		80-120	09-JUL-20
Tungsten (W)-Total			107.0		%		80-120	09-JUL-20
Uranium (U)-Total			104.0		%		80-120	09-JUL-20
Vanadium (V)-Total			99.9		%		80-120	09-JUL-20
Zinc (Zn)-Total			102.3		%		80-120	09-JUL-20
Zirconium (Zr)-Total			106.1		%		80-120	09-JUL-20
WG3358925-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-JUL-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Boron (B)-Total			<0.010		mg/L		0.01	09-JUL-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-JUL-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	09-JUL-20



Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Page 4 of 8

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-T-CCMS-VA		Water						
Batch	R5148007							
WG3358925-1 MB								
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	09-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	09-JUL-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Silicon (Si)-Total			<0.10		mg/L		0.1	09-JUL-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	09-JUL-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Sulfur (S)-Total			<0.50		mg/L		0.5	09-JUL-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-JUL-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-JUL-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
WG3358925-4 MS		L2469875-2						
Aluminum (Al)-Total			86.6		%		70-130	09-JUL-20
Antimony (Sb)-Total			106.6		%		70-130	09-JUL-20
Arsenic (As)-Total			99.7		%		70-130	09-JUL-20
Barium (Ba)-Total			96.8		%		70-130	09-JUL-20
Beryllium (Be)-Total			107.2		%		70-130	09-JUL-20
Bismuth (Bi)-Total			99.8		%		70-130	09-JUL-20
Boron (B)-Total			99.5		%		70-130	09-JUL-20
Cadmium (Cd)-Total			101.4		%		70-130	09-JUL-20



Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Page 5 of 8

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-T-CCMS-VA		Water						
Batch	R5148007							
WG3358925-4 MS		L2469875-2						
Calcium (Ca)-Total			N/A	MS-B	%		-	09-JUL-20
Cesium (Cs)-Total			107.6		%		70-130	09-JUL-20
Chromium (Cr)-Total			96.7		%		70-130	09-JUL-20
Cobalt (Co)-Total			97.6		%		70-130	09-JUL-20
Copper (Cu)-Total			96.4		%		70-130	09-JUL-20
Iron (Fe)-Total			93.1		%		70-130	09-JUL-20
Lead (Pb)-Total			94.7		%		70-130	09-JUL-20
Lithium (Li)-Total			107.9		%		70-130	09-JUL-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	09-JUL-20
Manganese (Mn)-Total			N/A	MS-B	%		-	09-JUL-20
Molybdenum (Mo)-Total			104.1		%		70-130	09-JUL-20
Nickel (Ni)-Total			97.8		%		70-130	09-JUL-20
Phosphorus (P)-Total			102.0		%		70-130	09-JUL-20
Potassium (K)-Total			N/A	MS-B	%		-	09-JUL-20
Rubidium (Rb)-Total			100.8		%		70-130	09-JUL-20
Selenium (Se)-Total			101.7		%		70-130	09-JUL-20
Silicon (Si)-Total			97.3		%		70-130	09-JUL-20
Silver (Ag)-Total			102.3		%		70-130	09-JUL-20
Sodium (Na)-Total			N/A	MS-B	%		-	09-JUL-20
Strontium (Sr)-Total			N/A	MS-B	%		-	09-JUL-20
Sulfur (S)-Total			N/A	MS-B	%		-	09-JUL-20
Tellurium (Te)-Total			101.4		%		70-130	09-JUL-20
Thallium (Tl)-Total			95.0		%		70-130	09-JUL-20
Thorium (Th)-Total			99.1		%		70-130	09-JUL-20
Tin (Sn)-Total			100.3		%		70-130	09-JUL-20
Titanium (Ti)-Total			97.9		%		70-130	09-JUL-20
Tungsten (W)-Total			105.2		%		70-130	09-JUL-20
Uranium (U)-Total			102.0		%		70-130	09-JUL-20
Vanadium (V)-Total			100.2		%		70-130	09-JUL-20
Zinc (Zn)-Total			95.0		%		70-130	09-JUL-20
Zirconium (Zr)-Total			101.5		%		70-130	09-JUL-20

NH3-F-VA **Water**



Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Page 6 of 8

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
NH3-F-VA		Water						
Batch	R5150857							
WG3357649-3	DUP	L2469875-1						
Ammonia, Total (as N)		0.917	0.915		mg/L	0.2	20	13-JUL-20
WG3357649-2	LCS							
Ammonia, Total (as N)			98.7		%		85-115	13-JUL-20
WG3357649-1	MB							
Ammonia, Total (as N)			<0.0050		mg/L		0.005	13-JUL-20
PH-PCT-VA		Water						
Batch	R5146356							
WG3357683-2	CRM	VA-PH7-BUF						
pH			6.99		pH		6.9-7.1	08-JUL-20
TDS-VA		Water						
Batch	R5147712							
WG3358597-3	DUP	L2469515-1						
Total Dissolved Solids		38100	36800		mg/L	3.7	20	09-JUL-20
WG3358597-2	LCS							
Total Dissolved Solids			103.4		%		85-115	09-JUL-20
WG3358597-1	MB							
Total Dissolved Solids			<10		mg/L		10	09-JUL-20
TSS-LOW-VA		Water						
Batch	R5146672							
WG3358289-2	LCS							
Total Suspended Solids			95.2		%		85-115	08-JUL-20
WG3358289-1	MB							
Total Suspended Solids			<1.0		mg/L		1	08-JUL-20
TURBIDITY-VA		Water						
Batch	R5145910							
WG3357798-2	CRM	VA-FORM-40						
Turbidity			103.5		%		85-115	08-JUL-20
WG3357798-3	DUP	L2469748-1						
Turbidity		0.12	0.12		NTU	1.6	15	08-JUL-20
WG3357798-1	MB							
Turbidity			<0.10		NTU		0.1	08-JUL-20

Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 7 of 8

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
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.

Quality Control Report

Workorder: L2470089

Report Date: 15-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 8 of 8

Contact: Connor Devereaux

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
pH by Meter (Automated)	1	04-JUL-20 21:45	08-JUL-20 15:16	0.25	90	hours	EHTR-FM

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 L2470089 were received on 06-JUL-20 10:00.

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 pre-determined 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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Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here
(lab use only)

COC Number: 17 -
Page 1 of 1

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all EAP TATs (surcharges may apply)	
Company:	Bathland Iron Mines Corp.	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	Regular (R)	☒ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Connot Devereaux	Quality Control (QC) Report with Report	☐ YES ☐ NO	1 Business day (E - 100%)	☐
Phone:	647-253-0596	Company address below will appear on the final report	☐ Compare Results to Criteria on Report - provide details below if box checked	3 day (P3-25%)	☐
Street:	2275 Upper Middle Rd. E., Suite #200	Select Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	2 day (P2-50%)	☐
City/Province:	Oakville, ON	Email 1 or Fax:	bimcore@alsglobal.com	Date and Time Required for all EAP TATs: dd-mm-yy hh:mm	
Postal Code:	L8H 0C3	Email 2:		For tests that can not be performed according to the service level selected, you will be contacted.	
Invoice To:	Same as Report To	☐ YES ☐ NO	Invoice Distribution	Analysis Request	
Copy of Invoice with Report	☐ YES ☒ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX		
Company:	Bathland Iron Mines Corp.	Email 1 or Fax:	ap@bathland.com		
Contact:	Accounts Payable	Email 2:	commercial@bathland.com		
Project Information		Oil and Gas Required Fields (client use)			
ALS Account # / Quote #:	23642, Q42455	AFE/Coast Center:	PO#		
Job #:	Crusher Seepage	MagNet/Coast Center:	Routing Code		
PO / AFE:	4500073372	Requestioner:			
LSD:		Location:			
ALS Lab Work Order # (lab use only):	L2470089	ALS Contact:			
Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)	Time (hh:mm)	SAMPLES ON HOLD	
CP-SEEPAGE-04 - EXPLORE		4-Jul-20	21:45	SUSPECTED HAZARD (see Special Instructions)	
Drinking Water (DW) Samples ¹ (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)				
Are samples taken from a Regulated DW System?	☐ YES ☒ NO				
Are samples for human consumption/ use?	☐ YES ☒ NO				
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		WHITE - LABORATORY COPY	
Released by: Megan LaCerte	Date: July 6, 2020	Time: 12:55	Received by:	Date:	YELLOW - CLIENT COPY
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION		Time:		Received by:	Time:
SAMPLE CONDITION AS RECEIVED (lab use only)		INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
Frozen ☐ Ice Packs ☐ Ice Cubes ☐ Custody seal intact ☐ Yes ☐ No ☐		Cooling Initiated ☐		Cooling Initiated ☐	
SIF Observations: Yes ☐ No ☐		SIF Observations: Yes ☐ No ☐		SIF Observations: Yes ☐ No ☐	

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



L2470089-COFC



Baffinland Iron Mine's Corporation
(Oakville)
ATTN: Connor Devereaux
2275 Upper Middle Rd. E.
Suite #300
Oakville ON L6H 0C3

Date Received: 06-JUL-20
Report Date: 30-JUL-20 07:51 (MT)
Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2469881
Project P.O. #: 4500073372
Job Reference: MS-C-E
C of C Numbers:
Legal Site Desc:

Comments: Unable to report Radium re: insufficient volume received.

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469881-1	MS-C-E							
Sampled By:	RH/ML on 05-JUL-20 @ 10:40							
Matrix:	WATER							
Physical Tests								
Conductivity		843		2.0	uS/cm		08-JUL-20	R5146366
pH		8.03		0.10	pH units		06-JUL-20	R5143058
Total Suspended Solids		<2.0		2.0	mg/L		06-JUL-20	R5144545
Total Dissolved Solids		650		10	mg/L		05-JUL-20	R5145517
Turbidity		1.13		0.10	NTU		05-JUL-20	R5143100
Anions and Nutrients								
Acidity (as CaCO3)		<2.0		2.0	mg/L		08-JUL-20	R5146356
Alkalinity, Total (as CaCO3)		134		1.0	mg/L		08-JUL-20	R5146366
Ammonia, Total (as N)		0.0090		0.0050	mg/L		13-JUL-20	R5150857
Chloride (Cl)		25.2		2.5	mg/L		08-JUL-20	R5147148
Fluoride (F)		<0.10	DLDS	0.10	mg/L		08-JUL-20	R5147148
Nitrate (as N)		3.61		0.025	mg/L		08-JUL-20	R5147148
Total Kjeldahl Nitrogen		0.441		0.050	mg/L	08-JUL-20	08-JUL-20	R5146488
Phosphorus (P)-Total		0.0061		0.0020	mg/L		08-JUL-20	R5146205
Sulfate (SO4)		267		1.5	mg/L		08-JUL-20	R5147148
Organic / Inorganic Carbon								
Dissolved Organic Carbon		3.24		0.50	mg/L		28-JUL-20	R5169058
Total Organic Carbon		2.82		0.50	mg/L		28-JUL-20	R5169058
Total Metals								
Aluminum (Al)-Total		0.0175		0.0030	mg/L		09-JUL-20	R5147285
Antimony (Sb)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Arsenic (As)-Total		0.00011		0.00010	mg/L		09-JUL-20	R5147285
Barium (Ba)-Total		0.0263		0.00010	mg/L		09-JUL-20	R5147285
Beryllium (Be)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L		09-JUL-20	R5147285
Boron (B)-Total		0.024		0.010	mg/L		09-JUL-20	R5147285
Cadmium (Cd)-Total		0.0000084		0.0000050	mg/L		09-JUL-20	R5147285
Calcium (Ca)-Total		67.2		0.050	mg/L		09-JUL-20	R5147285
Cesium (Cs)-Total		0.000012		0.000010	mg/L		09-JUL-20	R5147285
Chromium (Cr)-Total		0.00022		0.00010	mg/L		09-JUL-20	R5147285
Cobalt (Co)-Total		0.00028		0.00010	mg/L		09-JUL-20	R5147285
Copper (Cu)-Total		0.00122		0.00050	mg/L		09-JUL-20	R5147285
Iron (Fe)-Total		0.047		0.010	mg/L		09-JUL-20	R5147285
Lead (Pb)-Total		0.000055		0.000050	mg/L		09-JUL-20	R5147285
Lithium (Li)-Total		0.0052		0.0010	mg/L		09-JUL-20	R5147285
Magnesium (Mg)-Total		58.4		0.0050	mg/L		09-JUL-20	R5147285
Manganese (Mn)-Total		0.0117		0.00010	mg/L		09-JUL-20	R5147285
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		10-JUL-20	R5147432
Molybdenum (Mo)-Total		0.00283		0.000050	mg/L		09-JUL-20	R5147285
Nickel (Ni)-Total		0.00174		0.00050	mg/L		09-JUL-20	R5147285
Phosphorus (P)-Total		<0.050		0.050	mg/L		09-JUL-20	R5147285
Potassium (K)-Total		4.86		0.050	mg/L		09-JUL-20	R5147285

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469881-1	MS-C-E							
Sampled By:	RH/ML on 05-JUL-20 @ 10:40							
Matrix:	WATER							
Total Metals								
Rubidium (Rb)-Total		0.00776		0.00020	mg/L		09-JUL-20	R5147285
Selenium (Se)-Total		0.000948		0.000050	mg/L		09-JUL-20	R5147285
Silicon (Si)-Total		1.72		0.10	mg/L		09-JUL-20	R5147285
Silver (Ag)-Total		<0.000010		0.000010	mg/L		09-JUL-20	R5147285
Sodium (Na)-Total		14.1		0.050	mg/L		09-JUL-20	R5147285
Strontium (Sr)-Total		0.0418		0.00020	mg/L		09-JUL-20	R5147285
Sulfur (S)-Total		92.7		0.50	mg/L		09-JUL-20	R5147285
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		09-JUL-20	R5147285
Thallium (Tl)-Total		0.000014		0.000010	mg/L		09-JUL-20	R5147285
Thorium (Th)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Tin (Sn)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Titanium (Ti)-Total		0.00069		0.00030	mg/L		09-JUL-20	R5147285
Tungsten (W)-Total		<0.00010		0.00010	mg/L		09-JUL-20	R5147285
Uranium (U)-Total		0.0136		0.000010	mg/L		09-JUL-20	R5147285
Vanadium (V)-Total		<0.00050		0.00050	mg/L		09-JUL-20	R5147285
Zinc (Zn)-Total		<0.0030		0.0030	mg/L		09-JUL-20	R5147285
Zirconium (Zr)-Total		<0.00020		0.00020	mg/L		09-JUL-20	R5147285
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					09-JUL-20	R5146543
Dissolved Metals Filtration Location		FIELD					11-JUL-20	R5148423
Aluminum (Al)-Dissolved		0.0039		0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Arsenic (As)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Barium (Ba)-Dissolved		0.0266		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Boron (B)-Dissolved		0.021		0.010	mg/L	11-JUL-20	11-JUL-20	R5148990
Cadmium (Cd)-Dissolved		0.0000073		0.0000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Calcium (Ca)-Dissolved		64.3		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Cesium (Cs)-Dissolved		0.000011		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Chromium (Cr)-Dissolved		0.00014		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Cobalt (Co)-Dissolved		0.00025		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Copper (Cu)-Dissolved		0.00114		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Iron (Fe)-Dissolved		0.019		0.010	mg/L	11-JUL-20	11-JUL-20	R5148990
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Lithium (Li)-Dissolved		0.0049		0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Magnesium (Mg)-Dissolved		55.9		0.0050	mg/L	11-JUL-20	11-JUL-20	R5148990
Manganese (Mn)-Dissolved		0.0111		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	09-JUL-20	09-JUL-20	R5146555
Molybdenum (Mo)-Dissolved		0.00269		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Nickel (Ni)-Dissolved		0.00164		0.00050	mg/L	11-JUL-20	11-JUL-20	R5148990

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2469881-1	MS-C-E							
Sampled By:	RH/ML on 05-JUL-20 @ 10:40							
Matrix:	WATER							
Dissolved Metals								
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Potassium (K)-Dissolved		4.75		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Rubidium (Rb)-Dissolved		0.00720		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Selenium (Se)-Dissolved		0.000277		0.000050	mg/L	11-JUL-20	11-JUL-20	R5148990
Silicon (Si)-Dissolved		1.63		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Silver (Ag)-Dissolved		<0.000010		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Sodium (Na)-Dissolved		14.1		0.050	mg/L	11-JUL-20	11-JUL-20	R5148990
Strontium (Sr)-Dissolved		0.0398		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Sulfur (S)-Dissolved		89.9		0.50	mg/L	11-JUL-20	11-JUL-20	R5148990
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990
Thallium (Tl)-Dissolved		0.000013		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Titanium (Ti)-Dissolved		<0.00030		0.00030	mg/L	11-JUL-20	11-JUL-20	R5148990
Tungsten (W)-Dissolved		<0.00010		0.00010	mg/L	11-JUL-20	11-JUL-20	R5148990
Uranium (U)-Dissolved		0.0130		0.000010	mg/L	11-JUL-20	11-JUL-20	R5148990
Vanadium (V)-Dissolved		<0.00050		0.00050	mg/L	11-JUL-20	11-JUL-20	R5148990
Zinc (Zn)-Dissolved		<0.0010		0.0010	mg/L	11-JUL-20	11-JUL-20	R5148990
Zirconium (Zr)-Dissolved		<0.00020		0.00020	mg/L	11-JUL-20	11-JUL-20	R5148990

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Method Blank	Alkalinity, Total (as CaCO3)	B	L2469881-1
Matrix Spike	Dissolved Organic Carbon	MS-B	L2469881-1
Matrix Spike	Total Organic Carbon	MS-B	L2469881-1
Matrix Spike	Chloride (Cl)	MS-B	L2469881-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2469881-1
Matrix Spike	Nitrate (as N)	MS-B	L2469881-1

Sample Parameter Qualifier key listed:

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
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**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO3)' have not been peroxide treated.			
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.			
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC)
This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".			
CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.			
EC-SCREEN-VA	Water	Conductivity Screen (Internal Use Only)	APHA 2510
Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc.			
F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod)
Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.			
HG-D-CVAA-VA	Water	Diss. Mercury in Water by CVAAS or CVAFS	APHA 3030B/EPA 1631E (mod)
Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
HG-T-CVAA-VA	Water	Total Mercury in Water by CVAAS or CVAFS	EPA 1631E (mod)
Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS.			
MET-D-CCMS-VA	Water	Dissolved Metals in Water by CRC ICPMS	APHA 3030B/6020A (mod)
Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.			
Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.			
MET-T-CCMS-VA	Water	Total Metals in Water by CRC	EPA 200.2/6020A (mod)

ICPMS

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

NH3-F-VA Water Ammonia in Water by Fluorescence J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

NO3-L-IC-N-VA Water Nitrate in Water by IC (Low Level) EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

P-T-PRES-COL-VA Water Total P in Water by Colour APHA 4500-P Phosphorus

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.
Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.

Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.

PH-BF Water pH APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

SO4-IC-N-VA Water Sulfate in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-BF Water Total Dissolved Solids APHA 2540C

A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 180 +/- 2C for 1hr.

SOLIDS-TSS-BF Water Suspended solids APHA 2540 D-Gravimetric

A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104 +/- 1C for a minimum of four hours or until a constant weight is achieved.

TKN-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TURBIDITY-BF Water Turbidity APHA 2130 B

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, CANADA

Chain of Custody Numbers:

Reference Information

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 wwwt - 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.



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 2 of 16

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
CARBONS-TOC-VA								
Batch R5169058								
WG3371540-2 LCS								
Total Organic Carbon			100.6		%		80-120	28-JUL-20
WG3371540-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	28-JUL-20
WG3371540-4 MS		L2479058-2						
Total Organic Carbon			N/A	MS-B	%		-	28-JUL-20
CL-IC-N-VA								
Batch R5147148								
WG3357675-3 DUP		L2469119-1						
Chloride (Cl)		1040	1040		mg/L	0.1	20	08-JUL-20
WG3357675-2 LCS								
Chloride (Cl)			101.2		%		90-110	08-JUL-20
WG3357675-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	08-JUL-20
WG3357675-4 MS		L2469121-1						
Chloride (Cl)			N/A	MS-B	%		-	08-JUL-20
EC-PCT-VA								
Batch R5146366								
WG3357680-4 DUP		L2469119-1						
Conductivity		3940	3930		uS/cm	0.3	10	08-JUL-20
WG3357680-3 LCS								
Conductivity			101.2		%		90-110	08-JUL-20
WG3357680-1 MB								
Conductivity			<2.0		uS/cm		2	08-JUL-20
F-IC-N-VA								
Batch R5147148								
WG3357675-3 DUP		L2469119-1						
Fluoride (F)		<0.40	<0.40	RPD-NA	mg/L	N/A	20	08-JUL-20
WG3357675-2 LCS								
Fluoride (F)			100.7		%		90-110	08-JUL-20
WG3357675-1 MB								
Fluoride (F)			<0.020		mg/L		0.02	08-JUL-20
HG-D-CVAA-VA								
Batch R5146555								
WG3358710-3 DUP		L2469914-7						
Mercury (Hg)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	09-JUL-20
WG3358710-2 LCS								



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 3 of 16

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
HG-D-CVAA-VA		Water						
Batch	R5146555							
WG3358710-2	LCS							
Mercury (Hg)-Dissolved			103.4		%		80-120	09-JUL-20
WG3358710-1	MB							
Mercury (Hg)-Dissolved			<0.0000050		mg/L		0.000005	09-JUL-20
WG3358710-4	MS	L2469914-8						
Mercury (Hg)-Dissolved			91.7		%		70-130	09-JUL-20
HG-T-CVAA-VA		Water						
Batch	R5147432							
WG3359549-3	DUP	L2471433-3						
Mercury (Hg)-Total		0.0000063	0.0000061		mg/L	3.1	20	10-JUL-20
WG3359549-5	DUP	L2470763-1						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-JUL-20
WG3359549-7	DUP	L2469881-1						
Mercury (Hg)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-JUL-20
WG3359549-9	DUP	L2471232-1						
Mercury (Hg)-Total		0.0000288	0.0000295		mg/L	2.3	20	10-JUL-20
WG3359549-2	LCS							
Mercury (Hg)-Total			101.0		%		80-120	10-JUL-20
WG3359549-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	10-JUL-20
WG3359549-10	MS	L2471232-2						
Mercury (Hg)-Total			100.6		%		70-130	10-JUL-20
WG3359549-11	MS	L2470748-1						
Mercury (Hg)-Total			104.7		%		70-130	10-JUL-20
WG3359549-4	MS	L2470684-1						
Mercury (Hg)-Total			103.2		%		70-130	10-JUL-20
WG3359549-6	MS	L2470799-1						
Mercury (Hg)-Total			96.5		%		70-130	10-JUL-20
WG3359549-8	MS	L2469886-1						
Mercury (Hg)-Total			96.6		%		70-130	10-JUL-20
MET-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-3	DUP	L2469501-2						
Aluminum (Al)-Dissolved		0.0228	0.0227		mg/L	0.3	20	11-JUL-20
Antimony (Sb)-Dissolved		0.00021	0.00020		mg/L	4.2	20	11-JUL-20
Arsenic (As)-Dissolved		0.00098	0.00095		mg/L	3.0	20	11-JUL-20
Barium (Ba)-Dissolved		0.00110	0.00109		mg/L	0.8	20	11-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 4 of 16

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-3	DUP	L2469501-2						
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Boron (B)-Dissolved		0.130	0.134		mg/L	2.6	20	11-JUL-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Calcium (Ca)-Dissolved		11.5	11.7		mg/L	1.0	20	11-JUL-20
Cesium (Cs)-Dissolved		0.000072	0.000076		mg/L	5.0	20	11-JUL-20
Chromium (Cr)-Dissolved		0.00094	0.00097		mg/L	3.6	20	11-JUL-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Copper (Cu)-Dissolved		0.00581	0.00581		mg/L	0.0	20	11-JUL-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	11-JUL-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-JUL-20
Lithium (Li)-Dissolved		0.0020	0.0021		mg/L	0.9	20	11-JUL-20
Magnesium (Mg)-Dissolved		1.81	1.79		mg/L	1.5	20	11-JUL-20
Manganese (Mn)-Dissolved		0.00089	0.00092		mg/L	3.3	20	11-JUL-20
Molybdenum (Mo)-Dissolved		0.000721	0.000740		mg/L	2.5	20	11-JUL-20
Nickel (Ni)-Dissolved		0.00085	0.00081		mg/L	5.2	20	11-JUL-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	11-JUL-20
Potassium (K)-Dissolved		1.09	1.09		mg/L	0.4	20	11-JUL-20
Rubidium (Rb)-Dissolved		0.00163	0.00178		mg/L	8.8	20	11-JUL-20
Selenium (Se)-Dissolved		0.000342	0.000357		mg/L	4.4	20	11-JUL-20
Silicon (Si)-Dissolved		1.16	1.17		mg/L	1.2	20	11-JUL-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUL-20
Sodium (Na)-Dissolved		23.5	23.5		mg/L	0.1	20	11-JUL-20
Strontium (Sr)-Dissolved		0.0252	0.0256		mg/L	1.4	20	11-JUL-20
Sulfur (S)-Dissolved		1.86	1.94		mg/L	4.2	20	11-JUL-20
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	11-JUL-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	11-JUL-20
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-JUL-20
Tin (Sn)-Dissolved		0.00013	0.00013		mg/L	1.6	20	11-JUL-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	11-JUL-20
Tungsten (W)-Dissolved		0.00016	0.00015		mg/L	4.0	20	11-JUL-20
Uranium (U)-Dissolved		0.000011	0.000011		mg/L	3.8	20	11-JUL-20
Vanadium (V)-Dissolved		0.00272	0.00275		mg/L			11-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 5 of 16

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-3	DUP	L2469501-2						
Vanadium (V)-Dissolved		0.00272	0.00275		mg/L	1.1	20	11-JUL-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	11-JUL-20
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	11-JUL-20
WG3360565-2	LCS							
Aluminum (Al)-Dissolved			101.2		%		80-120	11-JUL-20
Antimony (Sb)-Dissolved			102.7		%		80-120	11-JUL-20
Arsenic (As)-Dissolved			99.4		%		80-120	11-JUL-20
Barium (Ba)-Dissolved			104.1		%		80-120	11-JUL-20
Beryllium (Be)-Dissolved			99.1		%		80-120	11-JUL-20
Bismuth (Bi)-Dissolved			102.8		%		80-120	11-JUL-20
Boron (B)-Dissolved			96.9		%		80-120	11-JUL-20
Cadmium (Cd)-Dissolved			99.3		%		80-120	11-JUL-20
Calcium (Ca)-Dissolved			107.4		%		80-120	11-JUL-20
Cesium (Cs)-Dissolved			98.6		%		80-120	11-JUL-20
Chromium (Cr)-Dissolved			97.5		%		80-120	11-JUL-20
Cobalt (Co)-Dissolved			98.1		%		80-120	11-JUL-20
Copper (Cu)-Dissolved			94.7		%		80-120	11-JUL-20
Iron (Fe)-Dissolved			101.4		%		80-120	11-JUL-20
Lead (Pb)-Dissolved			100.2		%		80-120	11-JUL-20
Lithium (Li)-Dissolved			98.5		%		80-120	11-JUL-20
Magnesium (Mg)-Dissolved			102.2		%		80-120	11-JUL-20
Manganese (Mn)-Dissolved			119.6		%		80-120	11-JUL-20
Molybdenum (Mo)-Dissolved			99.8		%		80-120	11-JUL-20
Nickel (Ni)-Dissolved			99.6		%		80-120	11-JUL-20
Phosphorus (P)-Dissolved			98.2		%		70-130	11-JUL-20
Potassium (K)-Dissolved			105.2		%		80-120	11-JUL-20
Rubidium (Rb)-Dissolved			102.8		%		80-120	11-JUL-20
Selenium (Se)-Dissolved			101.5		%		80-120	11-JUL-20
Silicon (Si)-Dissolved			104.0		%		60-140	11-JUL-20
Silver (Ag)-Dissolved			94.5		%		80-120	11-JUL-20
Sodium (Na)-Dissolved			107.1		%		80-120	11-JUL-20
Strontium (Sr)-Dissolved			100.6		%		80-120	11-JUL-20
Sulfur (S)-Dissolved			105.0		%		80-120	11-JUL-20
Tellurium (Te)-Dissolved			101.4				80-120	



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 6 of 16

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-2	LCS							
Tellurium (Te)-Dissolved			101.4		%		80-120	11-JUL-20
Thallium (Tl)-Dissolved			102.8		%		80-120	11-JUL-20
Thorium (Th)-Dissolved			92.7		%		80-120	11-JUL-20
Tin (Sn)-Dissolved			99.2		%		80-120	11-JUL-20
Titanium (Ti)-Dissolved			97.6		%		80-120	11-JUL-20
Tungsten (W)-Dissolved			102.2		%		80-120	11-JUL-20
Uranium (U)-Dissolved			108.8		%		80-120	11-JUL-20
Vanadium (V)-Dissolved			100.1		%		80-120	11-JUL-20
Zinc (Zn)-Dissolved			95.8		%		80-120	11-JUL-20
Zirconium (Zr)-Dissolved			97.3		%		80-120	11-JUL-20
WG3360565-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	11-JUL-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	11-JUL-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	11-JUL-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	11-JUL-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	11-JUL-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 7 of 16

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-1 MB		L2469501-4						
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	11-JUL-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	11-JUL-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	11-JUL-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-JUL-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	11-JUL-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	11-JUL-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	11-JUL-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-JUL-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	11-JUL-20
WG3360565-4 MS								
Aluminum (Al)-Dissolved			97.8		%		70-130	11-JUL-20
Antimony (Sb)-Dissolved			100.5		%		70-130	11-JUL-20
Arsenic (As)-Dissolved			97.2		%		70-130	11-JUL-20
Barium (Ba)-Dissolved			104.7		%		70-130	11-JUL-20
Beryllium (Be)-Dissolved			95.0		%		70-130	11-JUL-20
Bismuth (Bi)-Dissolved			98.6		%		70-130	11-JUL-20
Boron (B)-Dissolved			96.1		%		70-130	11-JUL-20
Cadmium (Cd)-Dissolved			96.3		%		70-130	11-JUL-20
Calcium (Ca)-Dissolved			97.7		%		70-130	11-JUL-20
Cesium (Cs)-Dissolved			99.98		%		70-130	11-JUL-20
Chromium (Cr)-Dissolved			98.6		%		70-130	11-JUL-20
Cobalt (Co)-Dissolved			97.1		%		70-130	11-JUL-20
Copper (Cu)-Dissolved			95.0		%		70-130	11-JUL-20
Iron (Fe)-Dissolved			98.0		%		70-130	11-JUL-20
Lead (Pb)-Dissolved			99.4		%		70-130	11-JUL-20
Lithium (Li)-Dissolved			97.4		%		70-130	11-JUL-20
Magnesium (Mg)-Dissolved			95.4		%		70-130	11-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 8 of 16

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-D-CCMS-VA		Water						
Batch	R5148990							
WG3360565-4	MS	L2469501-4						
Manganese (Mn)-Dissolved			101.3		%		70-130	11-JUL-20
Molybdenum (Mo)-Dissolved			97.4		%		70-130	11-JUL-20
Nickel (Ni)-Dissolved			99.4		%		70-130	11-JUL-20
Phosphorus (P)-Dissolved			86.8		%		70-130	11-JUL-20
Potassium (K)-Dissolved			101.6		%		70-130	11-JUL-20
Rubidium (Rb)-Dissolved			99.3		%		70-130	11-JUL-20
Selenium (Se)-Dissolved			96.6		%		70-130	11-JUL-20
Silicon (Si)-Dissolved			92.5		%		70-130	11-JUL-20
Silver (Ag)-Dissolved			99.1		%		70-130	11-JUL-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	11-JUL-20
Strontium (Sr)-Dissolved			102.5		%		70-130	11-JUL-20
Sulfur (S)-Dissolved			95.3		%		70-130	11-JUL-20
Tellurium (Te)-Dissolved			101.3		%		70-130	11-JUL-20
Thallium (Tl)-Dissolved			98.3		%		70-130	11-JUL-20
Thorium (Th)-Dissolved			103.5		%		70-130	11-JUL-20
Tin (Sn)-Dissolved			96.4		%		70-130	11-JUL-20
Titanium (Ti)-Dissolved			99.4		%		70-130	11-JUL-20
Tungsten (W)-Dissolved			101.9		%		70-130	11-JUL-20
Uranium (U)-Dissolved			99.9		%		70-130	11-JUL-20
Vanadium (V)-Dissolved			98.4		%		70-130	11-JUL-20
Zinc (Zn)-Dissolved			94.8		%		70-130	11-JUL-20
Zirconium (Zr)-Dissolved			101.6		%		70-130	11-JUL-20
MET-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-3	DUP	L2468657-2						
Aluminum (Al)-Total		0.736	0.686		mg/L	6.9	20	09-JUL-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Arsenic (As)-Total		0.00017	0.00016		mg/L	6.4	20	09-JUL-20
Barium (Ba)-Total		0.0206	0.0228		mg/L	10	20	09-JUL-20
Beryllium (Be)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUL-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUL-20
Boron (B)-Total		0.292	0.297		mg/L	1.8	20	09-JUL-20
Cadmium (Cd)-Total		0.0000185	0.0000146	J	mg/L	0.0000039	0.00001	09-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 9 of 16

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-3	DUP	L2468657-2						
Calcium (Ca)-Total		52.7	54.0		mg/L	2.3	20	09-JUL-20
Cesium (Cs)-Total		0.000071	0.000076		mg/L	7.0	20	09-JUL-20
Chromium (Cr)-Total		0.00159	0.00185		mg/L	15	20	09-JUL-20
Cobalt (Co)-Total		0.00114	0.00116		mg/L	1.8	20	09-JUL-20
Copper (Cu)-Total		0.00184	0.00184		mg/L	0.0	20	09-JUL-20
Iron (Fe)-Total		0.559	0.596		mg/L	6.4	20	09-JUL-20
Lead (Pb)-Total		0.000351	0.000363		mg/L	3.5	20	09-JUL-20
Lithium (Li)-Total		0.0049	0.0050		mg/L	1.6	20	09-JUL-20
Magnesium (Mg)-Total		30.3	30.3		mg/L	0.0	20	09-JUL-20
Manganese (Mn)-Total		0.0591	0.0600		mg/L	1.7	20	09-JUL-20
Molybdenum (Mo)-Total		0.0111	0.0111		mg/L	0.5	20	09-JUL-20
Nickel (Ni)-Total		0.0226	0.0225		mg/L	0.4	20	09-JUL-20
Phosphorus (P)-Total		<0.30	<0.30	RPD-NA	mg/L	N/A	20	09-JUL-20
Potassium (K)-Total		6.38	6.47		mg/L	1.3	20	09-JUL-20
Rubidium (Rb)-Total		0.00763	0.00778		mg/L	1.9	20	09-JUL-20
Selenium (Se)-Total		0.00022	0.00017	J	mg/L	0.00004	0.0002	09-JUL-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	09-JUL-20
Sodium (Na)-Total		24.3	24.2		mg/L	0.4	20	09-JUL-20
Strontium (Sr)-Total		0.494	0.494		mg/L	0.1	20	09-JUL-20
Sulfur (S)-Total		55.2	55.5		mg/L	0.5	20	09-JUL-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	09-JUL-20
Thallium (Tl)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	09-JUL-20
Thorium (Th)-Total		0.00015	0.00017		mg/L	9.1	20	09-JUL-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	09-JUL-20
Titanium (Ti)-Total		0.016	0.029	J	mg/L	0.012	0.02	09-JUL-20
Tungsten (W)-Total		0.00014	0.00014		mg/L	0.2	20	09-JUL-20
Uranium (U)-Total		0.00354	0.00360		mg/L	1.7	20	09-JUL-20
Vanadium (V)-Total		0.0014	0.0017		mg/L	14	20	09-JUL-20
Zinc (Zn)-Total		0.0042	0.0043		mg/L	3.0	20	09-JUL-20
Zirconium (Zr)-Total		0.00037	0.00061	J	mg/L	0.00024	0.0004	09-JUL-20
WG3358010-2	LCS							
Aluminum (Al)-Total			100.9		%		80-120	09-JUL-20
Antimony (Sb)-Total			105.3		%		80-120	09-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 10 of 16

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-2	LCS							
Arsenic (As)-Total			97.8		%		80-120	09-JUL-20
Barium (Ba)-Total			99.3		%		80-120	09-JUL-20
Beryllium (Be)-Total			101.0		%		80-120	09-JUL-20
Bismuth (Bi)-Total			101.1		%		80-120	09-JUL-20
Boron (B)-Total			104.4		%		80-120	09-JUL-20
Cadmium (Cd)-Total			94.7		%		80-120	09-JUL-20
Calcium (Ca)-Total			97.5		%		80-120	09-JUL-20
Cesium (Cs)-Total			99.3		%		80-120	09-JUL-20
Chromium (Cr)-Total			99.8		%		80-120	09-JUL-20
Cobalt (Co)-Total			98.5		%		80-120	09-JUL-20
Copper (Cu)-Total			99.9		%		80-120	09-JUL-20
Iron (Fe)-Total			99.1		%		80-120	09-JUL-20
Lead (Pb)-Total			99.9		%		80-120	09-JUL-20
Lithium (Li)-Total			99.9		%		80-120	09-JUL-20
Magnesium (Mg)-Total			99.8		%		80-120	09-JUL-20
Manganese (Mn)-Total			100.8		%		80-120	09-JUL-20
Molybdenum (Mo)-Total			98.6		%		80-120	09-JUL-20
Nickel (Ni)-Total			98.0		%		80-120	09-JUL-20
Phosphorus (P)-Total			97.4		%		80-120	09-JUL-20
Potassium (K)-Total			101.8		%		80-120	09-JUL-20
Rubidium (Rb)-Total			103.5		%		80-120	09-JUL-20
Selenium (Se)-Total			99.6		%		80-120	09-JUL-20
Silicon (Si)-Total			98.6		%		80-120	09-JUL-20
Silver (Ag)-Total			96.5		%		80-120	09-JUL-20
Sodium (Na)-Total			100.5		%		80-120	09-JUL-20
Strontium (Sr)-Total			99.4		%		80-120	09-JUL-20
Sulfur (S)-Total			99.4		%		80-120	09-JUL-20
Tellurium (Te)-Total			100.6		%		80-120	09-JUL-20
Thallium (Tl)-Total			99.9		%		80-120	09-JUL-20
Thorium (Th)-Total			92.6		%		80-120	09-JUL-20
Tin (Sn)-Total			99.8		%		80-120	09-JUL-20
Titanium (Ti)-Total			96.8		%		80-120	09-JUL-20
Tungsten (W)-Total			97.3		%		80-120	09-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 11 of 16

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-T-CCMS-VA		Water						
Batch	R5147285							
WG3358010-2	LCS							
Uranium (U)-Total			102.0		%		80-120	09-JUL-20
Vanadium (V)-Total			100.9		%		80-120	09-JUL-20
Zinc (Zn)-Total			97.3		%		80-120	09-JUL-20
Zirconium (Zr)-Total			95.0		%		80-120	09-JUL-20
WG3358010-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	09-JUL-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Boron (B)-Total			<0.010		mg/L		0.01	09-JUL-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	09-JUL-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	09-JUL-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Iron (Fe)-Total			<0.010		mg/L		0.01	09-JUL-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	09-JUL-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	09-JUL-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	09-JUL-20
Potassium (K)-Total			<0.050		mg/L		0.05	09-JUL-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	09-JUL-20
Silicon (Si)-Total			<0.10		mg/L		0.1	09-JUL-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Sodium (Na)-Total			<0.050		mg/L		0.05	09-JUL-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Sulfur (S)-Total			<0.50		mg/L		0.5	09-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 12 of 16

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-T-CCMS-VA								
Water								
Batch	R5147285							
WG3358010-1 MB								
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	09-JUL-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	09-JUL-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	09-JUL-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	09-JUL-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	09-JUL-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	09-JUL-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	09-JUL-20
WG3358010-4 MS		L2468657-3						
Aluminum (Al)-Total			96.5		%		70-130	09-JUL-20
Antimony (Sb)-Total			100.7		%		70-130	09-JUL-20
Arsenic (As)-Total			95.3		%		70-130	09-JUL-20
Barium (Ba)-Total			96.8		%		70-130	09-JUL-20
Beryllium (Be)-Total			101.4		%		70-130	09-JUL-20
Bismuth (Bi)-Total			99.0		%		70-130	09-JUL-20
Boron (B)-Total			106.7		%		70-130	09-JUL-20
Cadmium (Cd)-Total			98.0		%		70-130	09-JUL-20
Calcium (Ca)-Total			96.6		%		70-130	09-JUL-20
Cesium (Cs)-Total			98.4		%		70-130	09-JUL-20
Chromium (Cr)-Total			98.2		%		70-130	09-JUL-20
Cobalt (Co)-Total			98.9		%		70-130	09-JUL-20
Copper (Cu)-Total			99.7		%		70-130	09-JUL-20
Iron (Fe)-Total			97.5		%		70-130	09-JUL-20
Lead (Pb)-Total			99.4		%		70-130	09-JUL-20
Lithium (Li)-Total			104.0		%		70-130	09-JUL-20
Magnesium (Mg)-Total			98.2		%		70-130	09-JUL-20
Manganese (Mn)-Total			98.5		%		70-130	09-JUL-20
Molybdenum (Mo)-Total			97.2		%		70-130	09-JUL-20
Nickel (Ni)-Total			97.7		%		70-130	09-JUL-20
Phosphorus (P)-Total			94.3		%		70-130	09-JUL-20
Potassium (K)-Total			97.7		%		70-130	09-JUL-20
Rubidium (Rb)-Total			101.5		%		70-130	09-JUL-20



Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Page 15 of 16

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
SOLIDS-TSS-BF	Water							
Batch R5144545								
WG3357189-1 MB								
Total Suspended Solids			<2.0		mg/L		2	06-JUL-20
TKN-F-VA	Water							
Batch R5146488								
WG3357662-3 DUP		L2469875-1						
Total Kjeldahl Nitrogen		1.37	1.32		mg/L	3.9	20	08-JUL-20
WG3357662-2 LCS								
Total Kjeldahl Nitrogen			118.8		%		75-125	08-JUL-20
WG3357662-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	08-JUL-20
WG3357662-4 MS		L2469875-2						
Total Kjeldahl Nitrogen			105.0		%		70-130	08-JUL-20
TURBIDITY-BF	Water							
Batch R5143036								
WG3356435-2 LCS								
Turbidity			93.6		%		85-115	05-JUL-20
WG3356435-1 MB								
Turbidity			<0.10		NTU		0.1	05-JUL-20
Batch R5143100								
WG3356481-3 DUP		L2469881-1						
Turbidity		1.13	1.12		NTU	0.9	15	05-JUL-20
WG3356481-2 LCS								
Turbidity			93.6		%		85-115	05-JUL-20
WG3356481-1 MB								
Turbidity			<0.10		NTU		0.1	05-JUL-20

Quality Control Report

Workorder: L2469881

Report Date: 30-JUL-20

Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Page 16 of 16

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
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
J	Duplicate results and limits are expressed in terms of absolute difference.
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 pre-determined 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.



Acute Toxicity Test Results

Sample collected July 5, 2020

Final Report

July 22, 2020

Submitted to: **ALS Environmental**
Yellowknife, NT

SAMPLE INFORMATION

Sample ID/ Internal ID	Collected	Received	Dates		Receipt temperature
			Rainbow trout test initiation	<i>Daphnia magna</i> test initiation	
L2469881-1 MS-C-E / 1920-1593	5-Jul-20	7-Jul-20 at 1230h	8-Jul-20 at 1430h	8-Jul-20 at 1510h	8.4°C

TEST TYPES

- *Daphnia magna* 48-h LC50, EC50 test
- Rainbow trout 96-h single concentration screening test

RESULTS

Toxicity test results

Sample ID	Percent survival in 100% (v/v) sample	
	Rainbow trout	
L2469881-1 MS-C-E	100	

Sample ID	<i>Daphnia magna</i> LC50/EC50 (% v/v)	
	LC50	EC50
L2469881-1 MS-C-E	>100	>100

EC = Effect Concentration, LC = Lethal Concentration

QA/QC

QA/QC summary	Rainbow trout	<i>Daphnia magna</i>
Reference toxicant LC50 (95% CL)	2.9 (2.6-3.3) g/L KCl ¹	6.5 (6.0-6.9) g/L NaCl ²
Reference toxicant historical mean (2 SD Range)	3.4 (2.4-4.7) g/L KCl	6.0 (5.1-7.0) g/L NaCl
Reference toxicant CV	11.0%	5.2%
Organism health history	Acceptable	Acceptable
Protocol deviations	None	None
Water quality range deviations	None	None
Control performance	Acceptable	Acceptable
Test performance	Valid	Valid

¹ Test date, July 3, 2020; ² Test Date July 6, 2020

LC = Lethal Concentration; CL = Confidence Limit



Report By:
Adam Wilson, BSc
Biologist



Reviewed By:
Kayla Knol, BSc
Biologist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

APPENDIX A – Summary of test conditions

Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) survival test.

Test species	<i>Oncorhynchus mykiss</i>
Organism source	Fish hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	5 gallon glass aquariums
Test volume	10 - 20 L, depending on size of fish
Test solution depth	Minimum 15 cm
Test concentrations	100% (undiluted) sample plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light/8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test Measurements	pH, conductivity, dissolved oxygen and temperature were measured at test initiation and test completion; salinity measured at test initiation; evaluated for survival daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Statistical software	None
Test endpoints	Percent survival
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Potassium chloride (KCl)

Table 2. Summary of test conditions: 48-h *Daphnia magna* survival test.

Test species	<i>Daphnia magna</i>
Organism source	In-house culture
Organism age	<24 hours
Test type	Static
Test duration	48 hours
Test vessel	385 mL plastic vessels
Test volume	150 mL
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water amended with 4 mg/L KCl and with B12 (2 µg/L) and Na ₂ SeO ₄ (2 µg Se/L)
Test solution renewal	None
Test temperature	20 ± 2°C
Feeding	None
Light intensity	400 to 800 lux
Photoperiod	16 hours light/8 hours dark
Aeration	None
Test measurements	pH, conductivity, dissolved oxygen and temperature measured at test initiation and completion; salinity and hardness measured at test initiation in undiluted sample; evaluated daily for survival
Test protocol	Environment Canada (2000), EPS 1/RM/14
Statistical software	None
Test endpoints	48-h LC50
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Sodium chloride (NaCl)

APPENDIX B – Toxicity test data

Trout Bench Sheet

Method TRS Client ALS106 Reference 1920-1593 Chamber 9

Test Log

Day	Date	Time	Initial	Chem. Cart	Daily Data Review	Sample Information
0	2020/07/08	1430 *	CB / AV	1	MF	Initial pH: <u>7.7</u>
1	2020/07/09	0900	SC	-	XL	Initial EC (µS/cm): <u>878</u>
2	2020/07/10	0845	MF	-	SC	Initial DO (mg/L): <u>9.7</u>
3	2020/07/11	0840	MW	-	MF	Initial Temp (°C): <u>18</u>
4	2020/07/12	1130	AWLC	1	XL	Salinity (ppt): <u>1</u>

Note: * ; time when the test was loaded with fish

Sample Pre-Aeration

Aeration rate adjusted to 6.5 +/- 1 mL/min/L

Preaeration time

DO(mg/L) of 100%

yes/no	0.5 hours	1 hour	1.5 hours	2 hours
<u>yes</u>	<u>8.8</u>			

DO in mg/L (70% - 100% saturation)**

6.2 mg/L - 8.9 mg/L at 14°C

6.1 mg/L - 8.8 mg/L at 15°C

6.0 mg/L - 8.6 mg/L at 16°C

**corrected for altitude

Test Chemistry and Biology

Conc.	CTL	100					
-------	-----	-----	--	--	--	--	--

pH (units) (range: 5.5-8.5)

Day 0	<u>7.2</u>	<u>7.6</u>					
Day 4	<u>7.6</u>	<u>7.7</u>					

EC (µS/cm)

Day 0	<u>420</u>	<u>843</u>					
Day 4	<u>431</u>	<u>839</u>					

DO (mg/L) (70-100% saturation at test temp.)

Day 0	<u>8.1</u>	<u>8.8</u>					
Day 4	<u>8.8</u>	<u>8.9</u>					

Temperature (°C) (range: 14-16°C)

Day 0	<u>15</u>	<u>15</u>					
Day 4	<u>15</u>	<u>14</u>					

Number Alive (In brackets number stressed)

Day 0	10	10					
Day 1	<u>10</u>	<u>10</u>					
Day 2	<u>10</u>	<u>10</u>					
Day 3	<u>10</u>	<u>10</u>					
Day 4	<u>10</u>	<u>10</u>					

Validity Criteria: must be ≤ 10% mortality and/or stressed behavior in the control

Unless otherwise noted, behavior is considered to be normal

Control Organism Data			Test Organism Information	
Control Fish	Length (cm)	Weight (g)	Batch	20200521TR
1	3.1	0.3	Source	Troutlodge
2	2.5	0.3	Tank #	8
3	2.8	0.3	Days Held at 15 ± 2°C	19
4	3.6	0.5	(must be ≥14 days)	
5	3.0	0.3	Percent stock mortality	0.19
6	3.1	0.3	(7 days prior to test, must be ≤2%)	
7	2.9	0.3	Test Volume (L)	18
8	3.3	0.4		
9	3.1	0.3		
10	3.0	0.3		
Loading Density (g/L):			0.2	
(must be ≤0.5 g/L)				
Mean Length (cm):			3.0	
Length Range (cm):			2.5-3.6	
Mean Weight (g):			0.3	
(Must be ≥0.3g)				
Weight Range (g):			0.3-0.5	
Comments :				

Reviewed By: ML

Date Reviewed: 2020/07/14

Method DAD

 Client ALS106

 Reference 1920-1593
Test Log

Day	Date	Time	Technician	Chem. Cart	Daily Data Review	Initial pH:	Initial EC (µS/cm):	Initial DO (mg/L):	Initial Temp (°C):	Salinity (ppt):
0	2020/07/08	1510	MFK	3	Sc	7.7	878	9.7	18	1
1	2020/07/09	0925	KL	-	Sc					
2	2020/07/10	0900	SC	3	CB					

Sample Information

Lab Code	CTL	6	12	25	50	100				
----------	-----	---	----	----	----	-----	--	--	--	--

day	pH (units) (range: 6.0-8.5)									
0	8.3	8.2	8.2	8.1	8.1	8.0				
2	8.2	8.2	8.2	8.1	8.1	8.2				

The pH of the sample was not adjusted prior to test setting, unless noted in the comments below

	EC (µS/cm)									
0	481	465	491	549	604	890				
2	463	472	497	624	682	891				

	DO (mg/L) (40-100% saturation at test temp.)									
0	7.9	7.8	7.8	7.8	7.8	7.9				
2	7.9	7.9	7.9	7.9	7.9	7.9				

	Temperature (°C) (range: 18-22 °C)									
0	20	20	20	20	20	20				
2	20	20	20	20	20	20				

	Number Alive (l, immobile)									
0	10	10	10	10	10	10				
1	10	10	10	10	10	10				
2	10	10	10	10	10	10				

Validity Criteria: must be ≤ 10% mortality and/or abnormal behavior in the control

Notes: Immobile; daphnid can't swim after 60 sec. even if antenna still move

Unless otherwise noted, behaviour is considered to be normal

Culture

 Young jar C5

 Jar(s) mortality 7 days prior to test (must be ≤25%) 0
QA (previous month)

 Days to first brood (≤12 days) 7

 Average number of young produced (≥15 young) 30

 Were test treatments randomized on test tray? ☒ Yes / ☐ No

Control Validity Criteria

 Mean % mortality at 48 hours - 0
 (must be ≤10%)

Sample

 DO % of sample prior to aeration: 100

 Is aeration required (<40% or >100%)? ☒ Yes or ☒ No

 Duration of aeration (37.5 +/- 12.5 mL/min/L): -

 Filtered with 110µm screen prior to testing ☒ Yes or ☒ No

 Hardness (mg CaCO₃/L) of 100%: 374

 Is hardness adjustment required (<25 mg CaCO₃/L)? ☒ Yes or ☒ No

 Hardness of sample after adjustment (must be between 25 - 30 mg CaCO₃/L) -

 Alkalinity of 100% sample (mg CaCO₃/L): -
Dilution Water

 Pail label / preparation date 1:06/29

 Hardness of dilution water (mg/L) 18 Aw 176
DO Levels (40-100% saturation) - corrected for altitude -

3.3 to 8.2 mg/L at 18°C

3.1 to 7.7 mg/L at 21°C

3.2 to 8.1 mg/L at 19°C

3.0 to 7.6 mg/L at 22°C

3.2 to 7.9 mg/L at 20°C

Comments/Observations:

 Reviewed By: MG

 Date Reviewed: 2020/07/14

APPENDIX C – Chain-of-custody form

**L2469881**

WATERLOO

Subcontract Request Form**Subcontract To:****NAUTILUS ENVIRONMENTAL**8664 COMMERCE COURT
BURNABY, BC V5A 4N7**NOTES:** Please reference on final report and invoice: PO# L2469881
ALS requires QC data to be provided with your final results.Please see enclosed 1 sample(s) in 4 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
		DUE DATE	
L2469881-1 MS-C-E		7/ 5/ 2020	
	Daphnia Magna LC50 (48 Hour) - Nautilus (DAPHNIA-LC50-48HR-NL 1)	7/20/2020	
	Trout Bioassay Pass/Fail CO2 Stabilized (TROUT-P/F-CO2-NL 1)	7/20/2020	

Subcontract Info Contact: Mary-Lynn Pike (519) 886-6910

Analysis and reporting info contact: Rick Hawthorne
60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8

Phone: (519) 886-6910

Email: Rick.Hawthorne@alsglobal.com

Please email confirmation of receipt to:

Rick.Hawthorne@alsglobal.com

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

1920-1593 2x10
2020/07/07 Carp
12:30 good
AE Cond
Tazoo yes
COC 1/2 yes

8.4

Subcontract Request Form

Subcontract To:
ALS ENVIRONMENTAL -YELLOWKNIFE, NORTHWEST TERRITORIES CANADA

314 OLD AIRPORT ROAD
Unit 116
YELLOWKNIFE, NT X1A 3T3

NOTES: Please reference on final report and invoice: PO# L2469881
ALS requires QC data to be provided with your final results.

Please see enclosed 1 sample(s) in 0 Container(s)

SAMPLE NUMBER	ANALYTICAL REQUIRED	DATE SAMPLED	Priority Flag
		DUE DATE	
L2469881-1 MS-C-E		7/ 5/ 2020	
	Subsidized shipping charge (per cooler) (SHIPPING-LG-YL 14)	7/20/2020	

Subcontract Info Contact: Mary-Lynn Pike (519) 886-6910
Analysis and reporting info contact: Rick Hawthorne
60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910

Email: Rick.Hawthorne@alsglobal.com

COC 212
1920-1593

Please email confirmation of receipt to: **Rick.Hawthorne@alsglobal.com**

Shipped By: _____ Date Shipped: _____

Received By: _____ Date Received: _____

Verified By: _____ Date Verified: _____

Temperature: _____

Sample Integrity Issues: _____

END OF REPORT



www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical
Request Form

Affix ALS barcode label here
(lab use only)

COC Number: 17 -

Page 1 of 1

Report To Contact and company name below will appear on the final report		Report Format / Distribution Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL) Quality Control (QC) Report with Report ☐ YES ☐ NO ☐ Compare Results to Criteria on Report - provide details below if box checked Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX	
Company: Baffinland Iron Mines Corp. Contact: Connor Devereaux Phone: 647-253-0596 Company address below will appear on the final report Street: 2275 Upper Middle Rd. E., Suite #300 City/Province: Oakville, ON Postal Code: L6H 6C3		Email 1 or Fax: dmcconn@alsglobal.com Email 2: Email 3:	
Invoice To Same as Report To ☒ YES ☐ NO Copy of Invoice with Report ☐ YES ☒ NO Company: Baffinland Iron Mines Corp. Contact: Accounts Payable Project Information		Invoice Distribution Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax: ap@baffinland.com Email 2: commercial@baffinland.com Oil and Gas Required Fields (client use)	
ALS Account # / Quote #: 23642, Q42455 Job #: MS-C-E PO / AFE: 4500073372 Location:		AFE/Cost Center: PO# Map/Name Code: Routing Code ☐ FAX Requisitioner:	
ALS Lab Work Order # (lab use only): L2469881		ALS Contact:	
ALS Sample # (lab use only) MS-C-E		Sample Identification and/or Coordinates (This description will appear on the report) Date: 5-Jul-20 Time: 10:40 Sample Type: Water	
Drinking Water (DW) Samples¹ (client use) Are samples taken from a Regulated DW System? ☐ YES ☒ NO Are samples for human consumption use? ☐ YES ☒ NO		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)	
SHIPMENT RELEASE (client use) Released by: Megan LaCerte Date: July 6, 2020 Time: 13:00		INITIAL SHIPMENT RECEPTION (lab use only) Received by: Date: Time:	
NUMBER OF CONTAINERS F/P MODER.FDP Group 3		Select Service Level Below - Contact your AM to confirm all EAP TATs (surcharges may apply) Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply 4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐ 1 Business day [E - 100%] Same Day, Weekend or Statutory holiday [E2 - 200%] (laboratory opening fees may apply) ☐ Date and Time Required for all EAP TATs: dd-mm-yy hh:mm	
ANALYSIS REQUEST Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below		SAMPLES ON HOLD	
SUSPECTED HAZARD (see Special Instructions)			
SAMPLE CONDITION AS RECEIVED (lab use only) Frozen ☐ Ice Packs ☐ Ice Cubes ☐ Custody seal intact ☐ Yes ☐ No ☐ Cooling Initiated ☐ INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C:			

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

Spill Report Number:

20-261



September 6th, 2020

Water Resources Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0
Jonathan.Mesher@aandc-aadnc.gc.ca

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-261
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On August 6, 2020 at 14:00 hrs, the waste water treatment plant (WWTP) operator identified sewage exiting the spill containment in the screen room. Upon investigation, it was determined that the pumps malfunctioned due to an electrical issue with the PLC system and subsequently caused the holding tank to overflow. The spill originated in the pump room of the WWTP and flowed out the access door to the adjacent WWTP pad. Approximately 500L of sewage was released. This location is >100 m to the nearest fish bearing watercourse.

Immediate and Follow-Up Action:

The pumps were immediately set to manual mode to arrest the release. An excavator was dispatched to remove the contaminated material, which was then properly disposed of. The WWTP operator will monitor the area at an increased frequency while a programming specialist reviews the occurrence.

Recommendations:

Routine inspections of system and routine checks for system alarms.
The PLC in the WWTP needs to be inspected and any deficiencies in the programming addressed.

Current Status:

The wastewater treatment plant is currently operational.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux or Aaron MacDonell at (647) 253-0596 x6016.

Prepared by:

A handwritten signature in black ink, appearing to read "A. MacDonell", written over the printed name.

Aaron MacDonell
Environmental Superintendent

Reviewed by:

A handwritten signature in black ink, appearing to read "Shawn Perry", written over the printed name.

Shawn Perry
Site Services Manager

Attach: Photos, Map, Baffinland NT-NU Spill Report

cc. Tim Sewell, Tayfun Eldum, Megan Lord-Hoyle, Francois Gaudreau, Brian Marshall, Christopher Murray, Shawn Stevens, Connor Devereaux (Baffinland), Chris Spencer (QIA), Justin Hack, Jeremy Fraser (CIRNAC)



Photo 1. Spill location.

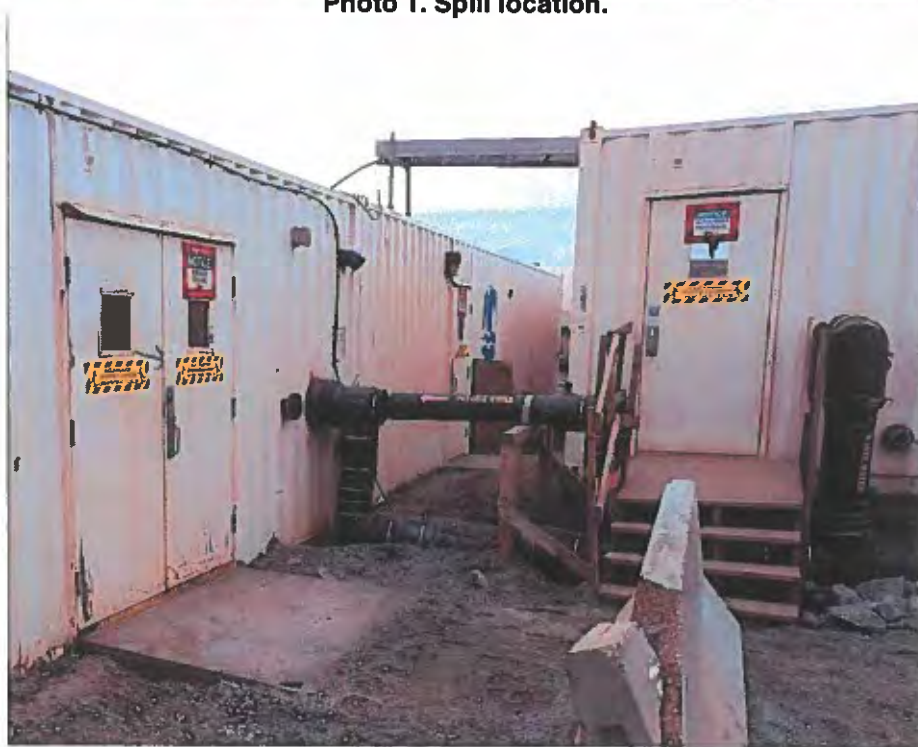


Photo 2. Spill after clean up.



Figure 1. Map of spill location



Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130

FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE MONTH - DAY - YEAR 08-07-2020	REPORT TIME 20:00	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT		REPORT NUMBER 20 281
B	OCCURRENCE DATE MONTH - DAY - YEAR 08-08-2020		OCCURRENCE TIME 14:00		
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301		WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 18 SECONDS 51		LONGITUDE DEGREES 79 MINUTES 17 SECONDS 59		
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3			
G	ANY CONTRACTOR INVOLVED Horizon North	CONTRACTOR ADDRESS OR OFFICE LOCATION N/A			
H	PRODUCT SPILLED Sewage	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Approx. 500L	U.N. NUMBER N/A		
	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A	U.N. NUMBER N/A		
I	SPILL SOURCE Sewage Pump	SPILL CAUSE PLC error	AREA OF CONTAMINATION IN SQUARE METRES 4 m2		
J	FACTORS AFFECTING SPILL OR RECOVERY Congested area, pipes and elect.	DESCRIBE ANY ASSISTANCE REQUIRED N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A		
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On August 6, 2020 at 14:00 HRS, the waste water treatment plant (WWTP) operator identified sewage exiting the spill containment in the screen room. The pumps were immediately put into manual mode to arrest the release. Upon investigation, it was determined that the pumps malfunctioned due to an electrical issue with the PLC system and subsequently caused the holding tank to overflow. The spill originated in the pump room of the WWTP and flowed out the access door to the adjacent WWTP pad. Approximately 500L of sewage was released. This location is >100 m to the nearest fish bearing water course. The investigation of the incident and clean up is ongoing and further details will be provided in the follow-up report. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).				
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 416-364-8820	TELEPHONE ext. 6016
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of HSES	EMPLOYER Baffinland	ALTERNATE CONTACT 416-364-8820	ALTERNATE TELEPHONE ext. 6006
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

PAGE 1 OF 1

Figure 2. Baffinland NT NU spill report

2275 Upper Middle Road East, Suite 300 | Oakville, ON, Canada L6H 0C3
Main: 416.364.8820 | Fax: 416.364.0193 | www.baffinland.com

Spill Report Number:

20-332



Sept 18, 2020

Water Resources Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-332
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On Sept 11, 2020 at approximately 23:15 hrs, a skid steer punctured a tote containing diesel exhaust fluid (DEF), resulting in the release of approximately 100L of DEF.

Immediate and Follow-Up Action:

Free product was collected using absorbent pads which were disposed of in a lined Quatrex bag. A loader and shovels were used to excavate the contaminated aggregate from the laydown pad. All contaminated fill was packaged into lined Quatrex bags and stored in a hazardous waste containment berm. The excavated cleanup area was backfilled with clean fill. The spill was contained on the laydown pad and occurred >100m from the nearest water source. This spill is being reported as required by the conditions of NWB Water License No. 2AM-MRY1325, Part H, Item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act.

Current Status:

The impacted area is clean and has been returned to normal operation.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux or William Bowden at (647) 253- 0596 x6016.

Prepared by:

A handwritten signature in black ink, appearing to read "A. MacDonell".

Aaron MacDonell
Environmental Superintendent

Reviewed by:

A handwritten signature in blue ink, appearing to read "Dave Burt".

Dave Burt
Night Shift Superintendent

Attach: Photos, Map, Baffinland NT-NU Spill Report

cc. Tim Sewell, Tayfun Eldem, Megan Lord-Hoyle, Francois Gaudreau, Brian Marshall, Christopher Murray, Shawn Stevens, Connor Devereaux, Chris Spencer (QIA), Justin Hack, Jeremy Fraser (CIRNAC)

Photo 1. DEF Fluid Spill after Clean Up on Sept 12, 2020



Figure 1. Map of spill location



Figure 3. Baffinland NT NU spill report

  		NT-NU SPILL REPORT OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS		NT-NU 24-HOUR SPILL REPORT LINE TEL: (867) 920-8150 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca	
REPORT LINE USE ONLY					
A	REPORT DATE: MONTH - DAY - YEAR 12/09/20	REPORT TIME 1:20 PM	☒ ORIGINAL SPILL REPORT OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT		REPORT NUMBER
B	OCCURRENCE DATE: MONTH - DAY - YEAR 11/09/20	OCCURRENCE TIME 11:15 PM			
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301		WATER LICENSE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Milne Inlet Site, Baffin Island, NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 52 SECONDS 47		LONGITUDE DEGREES 80 MINUTES 53 SECONDS 23		
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED NO		CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED DEF		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES: Approx. 100		U.N. NUMBER
	SECOND PRODUCT SPILLED (IF APPLICABLE)		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES:		U.N. NUMBER
I	SPILL SOURCE 1000 L TOTE		SPILL CAUSE TOTE PUNCTURE		AREA OF CONTAMINATION IN SQUARE METRES 8
J	FACTORS AFFECTING SPILL OR RECOVERY		DESCRIBE ANY ASSISTANCE REQUIRED Site Services and loader		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT no
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On Sept 11, 2020 at approximately 23:15 hrs, a skid steer punctured a tote of diesel exhaust fluid (DEF), resulting in the release of approximately 100L of DEF. Absorbent pads were used to collect any free product and disposed of in a lined quatrex bag. A loader and shovels were used to excavate the contaminated aggregate on the lay-down pad. All contaminated fill was packaged into lined quatrex bags and stored in a hazardous waste containment berm. Clean fill was brought in to replace the material that was removed during clean up. The spill was contained on the lay down pad and occurred >100m from the nearest water source. This spill is being reported as required by the conditions of NWB Water License no. 2AM-MRY1325, Part H, item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act.				
L	REPORTED TO SPILL LINE BY Aaron MacDonell	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 416-364-8820	TELEPHONE ext 6016
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of HSES	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION 416-364-8820	ALTERNATE TELEPHONE ext 6006
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8150
LEAD AGENCY ☐ EC ☐ DCC ☐ BNWT ☐ GN ☐ I.A. ☐ IMAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

Spill Report Number:

20-367



October 28, 2020

Water Resources Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-367
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On September 29, 2020 at 15:00 hrs, a release of 600 liters of sewage wastewater occurred to the ground due to the separation of a joint between the main sewage pipeline and inlet pipe to the Milne Port Wastewater Treatment Plant (MP WWTP). The spill location was in a contained area 8m south of the MP WWTP that is >100m from the nearest water source.

Immediate and Follow-Up Action:

The Operator for the MP WWTP immediately shutoff the lift station pump feeding the main sewage line to prevent additional sewage release. All affected fill and gravel was excavated and collected using a skid steer loader and hand shovels and placed into lined Quatrex bags that are stored in a hazardous waste containment berm. The excavated cleanup area was backfilled with clean fill and covered with compacted gravel on September 29, 2020.

Upon inspection of the separated joint, it was identified that the glue used to seal the joint between the polyvinyl chloride (PVC) main sewage pipeline and inlet pipe to the MP WWTP had failed. The joint was reconnected and sealed using glue specified for PVC pipe joints in cold climates. The sealed joint was left isolated for 14 hours to provide the recommended curing time for the glue and the main sewage pipeline was returned to normal operation at 08:00 hrs on September 30, 2020.

Current Status:

All affected soil was collected for disposal and the affected area was backfilled with clean fill and covered with compacted gravel. The main sewage pipeline and inlet pipe to the MP WWTP was reconnected and sealed on September 29, 2020. After allowing the joint seal to cure for 14 hours, the main sewage pipeline was returned to normal operation at 08:00 hrs on September 30, 2020.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux or Aaron MacDonnell at (647) 253-0596 x6016.

Prepared by:

A handwritten signature in blue ink, appearing to read "A. MacDonnell".

Aaron MacDonnell
Environmental Superintendent

Reviewed by:

A handwritten signature in blue ink, appearing to read "James Martin".
James Martin
Site Services Superintendent

Attach: Photos, Map, Baffinland NT-NU Spill Report

cc. Tim Sewell, Sylvain Proulx, Megan Lord-Hoyle, Francois Gaudreau, Brian Marshall, Christopher Murray, Shawn Stevens, Connor Devereaux (Baffinland), Chris Spencer (QIA), Justin Hack, Jeremy Fraser (CIRNAC)

Photo 1. Sewage Spill Location before Clean Up on Sept 29, 2020



Photo 2. Sewage Spill Location after Clean Up on Sept 29, 2020



Figure 1. Map of spill location

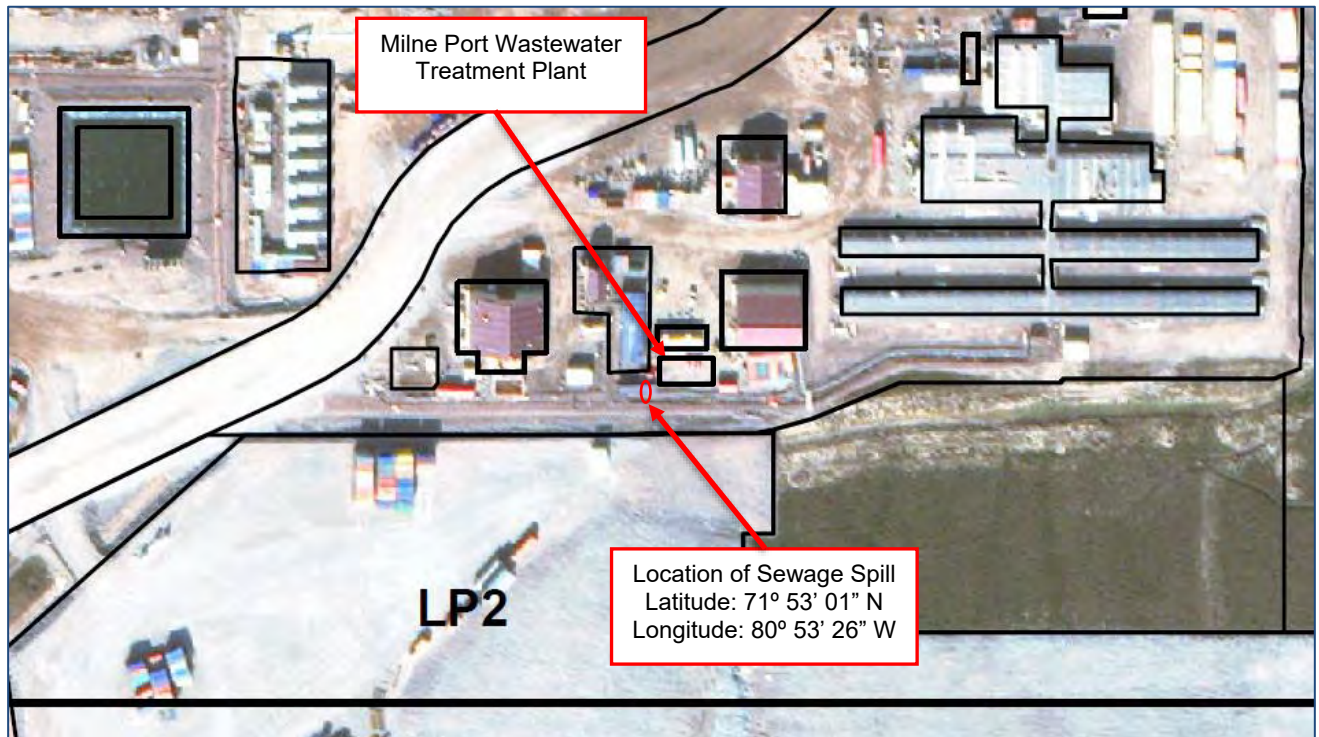


Figure 2. Baffinland NT NU spill report

Northwest Territories		Nunavut		Canada		NT-NU SPILL REPORT		NT-NU 24-HOUR SPILL REPORT LINE	
						OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS		TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca	
								REPORT LINE USE ONLY	
A	REPORT DATE: MONTH - DAY - YEAR	09-30-2020		REPORT TIME	09:30		☒ ORIGINAL SPILL REPORT, OR		REPORT NUMBER
B	OCCURRENCE DATE: MONTH - DAY - YEAR	09-29-2020		OCCURRENCE TIME	15:00		☐ UPDATE # TO THE ORIGINAL SPILL REPORT		
C	LAND USE PERMIT NUMBER (IF APPLICABLE)	IOL - Commercial Lease: Q13C301		WATER LICENSE NUMBER (IF APPLICABLE)	2AM-MRY1325 Type "A"				
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	Mary River Milne Inlet Site, Baffin Island NU				REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN			
E	LATITUDE	DEGREES 71 MINUTES 53 SECONDS 01			LONGITUDE DEGREES 80 MINUTES 53 SECONDS 26				
F	RESPONSIBLE PARTY OR VESSEL NAME	Baffinland Iron Mines Corp.		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3					
G	ANY CONTRACTOR INVOLVED	NO		CONTRACTOR ADDRESS OR OFFICE LOCATION					
H	PRODUCT SPILLED	Sewage		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	600		U.N. NUMBER	N/A	
H	SECOND PRODUCT SPILLED (IF APPLICABLE)	N/A		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	N/A		U.N. NUMBER	N/A	
I	SPILL SOURCE	Sewage pipeline		SPILL CAUSE	Pipe failure		AREA OF CONTAMINATION IN SQUARE METRES 3		
J	FACTORS AFFECTING SPILL OR RECOVERY	Excavation of affected soil		DESCRIBE ANY ASSISTANCE REQUIRED	Skidsteer loader		HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT N/A		
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On September 29, 2020 at 15:00 HRS, the Operator for the Milne Porte Wastewater Treatment Plant identified a release of sewage from the main sewage pipeline in a location 8 m south of the Wastewater Treatment Plant building. The Operator immediately shut off and locked out the main lift station pumps to prevent additional sewage release. An estimated volume of 600 liters was released onto the ground before the flow was stopped. A skidsteer loader was used to excavate and collect 2 cubic meters of affected soil and place it in Quatrex bags for disposal. The location of the sewage release was >100 m from the nearest water body. The investigation of the incident and clean up is ongoing and further details will be provided in the follow-up report. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).								
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM	TELEPHONE				
	Aaron MacDonell	ENV. Superintendent	Baffinland	647-253-0596	ext. 6016				
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION	ALTERNATE TELEPHONE				
	Shawn Stevens	Manager of HSES	Baffinland	416-364-8820	ext. 6006				
REPORT LINE USE ONLY									
N	RECEIVED AT SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLED	REPORT LINE NUMBER				
		STATION OPERATOR		YELLOWKNIFE, NT	(867) 920-8130				
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ ETC				SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN			FILE STATUS ☐ OPEN ☐ CLOSED		
AGENCY		CONTACT NAME		CONTACT TIME		REMARKS			
LEAD AGENCY									
FIRST SUPPORT AGENCY									
SECOND SUPPORT AGENCY									
THIRD SUPPORT AGENCY									

Spill Report Number:

20-374



October 29, 2020

Water Resources Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Enforcement Officer
Environment and Climate Change Canada
933 Mivvik Street
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-374
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On October 1, 2020 at 15:00 hrs, a release of 0.25 liters of gasoline occurred on the water surface in Milne Inlet from the exhaust port of the portside motor on the Linesman Boat at the Milne Port Site. The spill location was at the stern and starboard side of the Linesman Boat between Ore Dock #1 and an ore carrier ship that was moored to the Ship Loader. The spilled product was completely contained with a boom sock and collected using absorbent pads. This spill is being reported as required by subsections 38(5) and 38(7) of the Fisheries Act and as required by the Crown surface land lease authorization 47H/16-1-2 covenants.

Immediate and Follow-Up Action:

Upon identifying the release of gasoline from the exhaust port of the portside motor, by one of the Ship Loader tower operators who immediately reported the incident to the Ship Loader Supervisor who coordinated the spill response. The area affected by dispersion of spilled product was contained to 9 m² using a boom sock and the product was collected using absorbent pads. Contaminated spill cleanup materials were placed in a sealed plastic container in the hazardous waste berm for disposal. Upon inspection of the faulty motor, it was identified that one cylinder had a faulty spark plug resulting in failure to ignite gasoline. When the motor was running with the faulty spark plug, unburned gasoline accumulated in the exhaust port and then drained to the water after the motor was shut off and the boat was docked. The faulty spark plug was replaced and the motor was tested to check that no gasoline was released from the exhaust port before the Linesman Boat was returned to service.

Current Status:

All of the spilled product was contained using a boom sock, collected from the water surface using absorbent pads, and placed into a sealed container in the hazardous waste berm for disposal. The faulty spark plug was replaced in the motor and the Linesman Boat was returned to service after the motor was checked to confirm that no additional gasoline was released from the exhaust port.

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux at (647) 253-0596 Ext. 6016 or Aaron MacDonnell at (647) 253-0596 Ext. 6735.

Prepared by:

A handwritten signature in blue ink, appearing to read "A. MacDonnell".

Aaron MacDonnell
Environmental Superintendent

Reviewed by:

A handwritten signature in blue ink, appearing to read "R. Poulin".

Raymond Poulin
Ship Loader Superintendent



Attach: Photos, Map, Baffinland NT-NU Spill Report

cc. Tim Sewell, Sylvain Proulx, Megan Lord-Hoyle, Francois Gaudreau, Christopher Murray, Shawn Stevens, Connor Devereaux (Baffinland), Chris Spencer (QIA), Justin Hack, Jeremy Fraser (CIRNAC)

Photo 1. Gasoline Spill Location before Clean Up on October 1, 2020



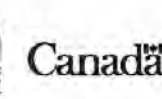
Photo 2. Gasoline Spill Location after Clean Up on October 1, 2020



Figure 1. Map of Spill Location



Figure 2 Baffinland NT NU spill report

  		NT-NU SPILL REPORT OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS		NT-NU 24-HOUR SPILL REPORT LINE TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca	
REPORT LINE USE ONLY					
A	REPORT DATE: MONTH – DAY – YEAR 10-02-2020	REPORT TIME 9:30 hrs	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT		REPORT NUMBER _____
B	OCCURRENCE DATE: MONTH – DAY – YEAR 10-01-2020	OCCURRENCE TIME 15:00 hrs			
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301	WATER LICENSE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"			
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Milne Inlet Site, Baffin Island NU		REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES 71 MINUTES 53 SECONDS 23		LONGITUDE DEGREES 80 MINUTES 54 SECONDS 25		
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3			
G	ANY CONTRACTOR INVOLVED: No	CONTRACTOR ADDRESS OR OFFICE LOCATION N/A			
H	PRODUCT SPILLED Gasoline	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES 0.25 Litres	U.N. NUMBER 1203		
	SECOND PRODUCT SPILLED (IF APPLICABLE): N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES: N/A	U.N. NUMBER N/A		
I	SPILL SOURCE Boat motor	SPILL CAUSE Fuel from exhaust port	AREA OF CONTAMINATION IN SQUARE METRES 9		
J	FACTORS AFFECTING SPILL OR RECOVERY Skim ice on water surface	DESCRIBE ANY ASSISTANCE REQUIRED: N/A	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT N/A		
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On October 1, 2020 at 15:00 hrs, the Operator of the Linesman Boat at the Milne Port Ship Loader identified a spill of 0.25L of gasoline from the exhaust port of the boat motor onto the ocean surface. The spill occurred in Milne Inlet at the Milne Port Ship Loader. The gasoline dispersed into a 9m2 sheen. The Operator immediately shut off the motor to stop the release of gasoline and called the Ship Loader Supervisor for spill response assistance. The area of sheen was contained with a boom sock and spilled product was collected using absorbent pads. Spill cleanup materials were placed in a sealed container in the hazardous waste berm for disposal. The Linesman Boat was removed from service until the cause of the spill is corrected. The investigation of the incident is ongoing and further details will be provided in the follow-up report. This spill is being reported as required by the conditions of water license No. 2AM-MRY1325, Part H, item 10 pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).				
L	REPORTED TO SPILL LINE BY Aaron MacDonell	POSITION ENV. Superintendent	EMPLOYER Baffinland	LOCATION CALLED FROM 647-253-0596	TELEPHONE Ext. 6735
M	ANY ALTERNATE CONTACT Connor Devereaux	POSITION ENV. Superintendent	EMPLOYER Baffinland	ALTERNATE CONTACT LOCATION 647-253-0596	ALTERNATE TELEPHONE Ext. 6016
REPORT LINE USE ONLY					
N	RECEIVED AT SPILL LINE BY STATION OPERATOR	POSITION	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN		FILE STATUS ☐ OPEN ☐ CLOSED
AGENCY		CONTACT NAME	CONTACT TIME	REMARKS	
LEAD AGENCY					
FIRST SUPPORT AGENCY					
SECOND SUPPORT AGENCY					
THIRD SUPPORT AGENCY					

Spill Report Number:

20-436



December 11, 2020

Resource Management Officer
Nunavut Region
Crown Indigenous Relations and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0
Jonathan.Mesher@aandc-aadnc.gc.ca

Regulatory Manager
Qikiqtani Inuit Association
P.O. Box 219
Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #20-436
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On November 12, 2020 at 08:00hrs, approximately 1000 liters of sewage spilled onto the ground at the north end of the MS-01B Sallivik Wastewater Treatment Plant (WWTP) from the entry door to the WWTP. The source of the release was the view port cover on Membrane Bioreactor (MBR) Tank #2, which was not properly secured and consequently released due to elevated pressure in the tank. Elevated pressure in MBR Tank #2 was observed on November 11th and an overnight in situ cleaning process was ongoing when sewage feed to MBR Tank #2 was started at 06:00hrs on November 12th to process peak daily sewage volumes in the Equalization Tank. The programming system that controls the WWTP operating set points, responses and alarm notifications failed to trigger the WWTP alarm, which would have alerted the Operator to the high-pressure conditions within the tank. The spill location is >100 m to the nearest fish bearing water body.

Immediate and Follow-Up Action:

The WWTP Operator immediately shutoff the pump feeding MBR Tank #2 to prevent additional sewage release and requested services to cleanup the spill. Released sewage was collected from the ground using a vacuum truck and fed into the Polishing Waste Stabilization Pond (PWSP) and contaminated soil was collected and placed in Quatrex bags in the Hazardous Waste Berm for disposal. The observation cap on MBR Tank #2 was properly reinstalled and secured.

Recommendations:

To prevent a similar incident from occurring in the future, deficiencies in the programming system will be corrected and verified to ensure proper operation of alarm systems, and programming will be implemented to enable remote viewing of Sallivik WWTP process parameters and alarm notifications. Pumps have been installed in floor sumps of the Sallivik WWTP to collect and transfer water and sewage back to process tanks.

Current Status:

The Sallivik WWTP is currently operating as designed. Released sewage was collected and placed into the Polishing Waste Stabilization Pond (PWSP) and contaminated soil was collected and placed in Quatrex bags in the Hazardous Waste Berm for disposal.

Should you require further information or clarification on the above noted spill, please feel free to contact the undersigned or Aaron MacDonell at (647) 253-0596 x6016.

Prepared by:

A handwritten signature in black ink, appearing to read "Connor Devereaux".

Connor Devereaux
Environmental Superintendent

Reviewed by:

A handwritten signature in black ink, appearing to read "Shawn Farn".
Shawn Farn
Manager, Road Maintenance & Site Services

Attach: Photos, Map, Baffinland NT-NU Spill Report



cc. Tim Sewell, Tayfun Eldum, Megan Lord-Hoyle, Francois Gaudreau, Sylvain Proulx, Christopher Murray, Shawn Stevens, Aaron MacDonell (Baffinland), Chris Spencer (QIA), Justin Hack (CIRNAC)

Photo 1. Location of Sewage Spill (Before Cleanup) - November 12, 2020



Photo 2. Location of Sewage Spill (After Cleanup) – December 11, 2020



Figure 1. Map of Spill Location



Figure 2. Baffinland NT NU spill report

Northwest Territories		Nunavut		Canada		NT-NU SPILL REPORT		NT-NU 24-HOUR SPILL REPORT LINE	
						OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS		TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca	
								REPORT LINE USE ONLY	
A	REPORT DATE: MONTH - DAY - YEAR 11-12-2020	REPORT TIME 16:00		☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # TO THE ORIGINAL SPILL REPORT		REPORT NUMBER 20			
B	OCCURRENCE DATE: MONTH - DAY - YEAR 11-12-2020	OCCURRENCE TIME 08:00							
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301		WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"						
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Mine Site, Baffin Island, NU				REGION ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN				
E	LATITUDE DEGREES 71 MINUTES 18 SECONDS 51		LONGITUDE DEGREES 79 MINUTES 17 SECONDS 58						
F	RESPONSIBLE PARTY OR VESSEL NAME Baffinland Iron Mines Corp.		RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3						
G	ANY CONTRACTOR INVOLVED Horizon North		CONTRACTOR ADDRESS OR OFFICE LOCATION N/A						
H	PRODUCT SPILLED Raw Sewage		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES Approx. 1000L		U.N. NUMBER N/A				
	SECOND PRODUCT SPILLED (IF APPLICABLE) N/A		QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES N/A		U.N. NUMBER N/A				
I	SPILL SOURCE Sailiivik WWTP (MS-01B)		SPILL CAUSE Membrane Tank Overfilled		AREA OF CONTAMINATION IN SQUARE METRES 10 m2				
J	FACTORS AFFECTING SPILL OR RECOVERY Low daylight, snow and ice		DESCRIBE ANY ASSISTANCE REQUIRED N/A		HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A				
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On November 12, 2020 at 08:00hrs a spill of approximately 1000 liters of raw sewage occurred on the ground outside the east entry door to the Sailiivik WWTP (MS-01B). Released sewage was collected from the ground using a vacuum truck and placed into the WWTP Equalization Tank. The investigation of the incident is ongoing and further details will be provided in the follow-up report. The location of the spill is >100 m from the nearest fish bearing water body. This spill is being reported as required by the conditions of water license no. 2AM-MRY1325, Part H, item 9 (b) pursuant to subsection 12(3) of the Nunavut Waters and Nunavut Surface Rights Tribunal Act and the GN EPA paragraph 5.1(a).								
L	REPORTED TO SPILL LINE BY Aaron MacDonell	POSITION Env. Superintendent	EMPLOYER Baffinland	LOCATION CALLING FROM 647-253-0596	TELEPHONE ext. 6735				
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of HSES	EMPLOYER Baffinland	ALTERNATE CONTACT 647-253-0596	ALTERNATE TELEPHONE ext. 6006				
REPORT LINE USE ONLY									
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR	EMPLOYER	LOCATION CALLED YELLOWKNIFE, NT	REPORT LINE NUMBER (867) 920-8130				
LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ IIA ☐ INAC ☐ NEB ☐ TC			SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN			FILE STATUS ☐ OPEN ☐ CLOSED			
AGENCY		CONTACT NAME		CONTACT TIME		REMARKS			
LEAD AGENCY									
FIRST SUPPORT AGENCY									
SECOND SUPPORT AGENCY									
THIRD SUPPORT AGENCY									