

APPENDIX E.8.4

Initial and Follow-up Spill Reports



Feb 2, 2019

Water Resources Officer
Nunavut Field Operations
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 #18-492
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On January 03, 2019 at approximately 15:15 hrs, while conducting inspections of the MSC lift stations, housing maintenance observed liquid behind the AB wing south lift station. After investigation, it was determined the Fernco coupler had separated from the 4" gravity drain directly behind the lift station. Repairs were made to replace the Fernco coupler arresting the release. Approximately 0.2m3 of sewage was released and confined to the adjacent camp pad ground surface, impacting an approximate area of 12 m2. This spill is >100 m to the nearest water course which is currently frozen.

Immediate and Follow-Up Action:

The sewage release was immediately arrested, and the lift station holding tank pumped down to prevent further release. The contaminated snow was collected and deposited in an engineered lined containment facility. The Fernco coupling was repaired and the gravity line was subsequently reconnected.

Recommendations:

Continue daily inspections of lift stations and snow/ice removal from lines to mitigate potential releases.

Current Status:

The coupler has been repaired and the lift station is back in operation and inspected regularly.

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:

William Bowden

Environmental Superintendent

Reviewed by:

Jeff Bush

Surface Works Superintendent

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Connor Devereaux, Gerald Rogers, Francois Gaudreau

(Baffinland), Fai Ndofor, Sean Joseph (QIA), Justin Hack, Jeremy Fraser (CIRNAC).

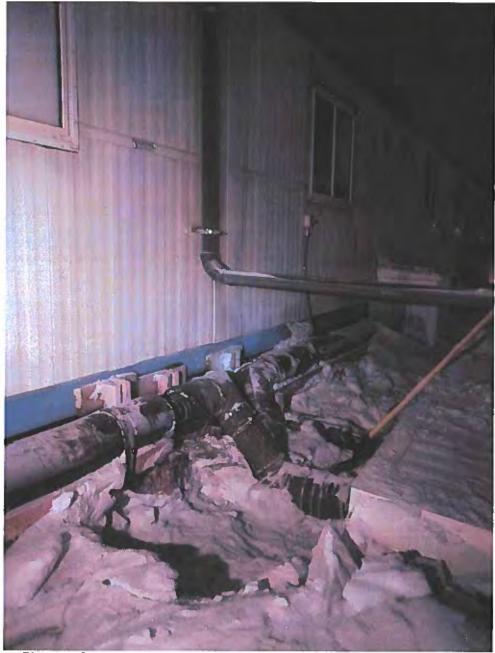


Photo 1. Sewage release on camp pad adjacent to AB South lift station.



Photo 2. Contaminated snow removed from camp pad adjacent to AB South lift station.







NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spilis@gov.nt.ca

-									REPORT LINE USE ONLY
Α	REPORT DATE MONTH - DAY - YEAR 01-04-2019 OCCUPRENCE DATE MONTH - DAY - YEAR		9:00		OR	RIGINAL SPILL REP	ORI	REPORT NUMBER	
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	SECOND PRODUCT SPILLED (IF	APPLICABLE)	N/A	RES, KILC	OGRAMS OR CUBIC MET	ŀ	UN NUMBER		
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PAGE 1 OF __1

Figure 2. Baffinland NT NU spill report



February 07, 2019

Resource Management Officer
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Crown-Indigenous Relations and Northern Affairs Canada
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Jonathan.mesher@aandc-aadnc.gc.ca

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

Re: Follow-up to Spill #19-007, Reported on January 09, 2019
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On January 08, 2019 at approximately 13:30 hrs, the Site Services supervisor was notified of a sewage release that had been discovered at the Mine Site weather haven. Upon further investigation, it was determined that while clearing snow, a loader had made contact with a sewage pipe that was covered underneath snow, damaging the pipe. Approximately 2 m3 of sewage was released and confined to the adjacent camp pad ground surface, impacting an approximate area of 40 m2. The impacted material was collected and deposited in a lined engineered containment facility at the Mine Site. This spill is >100 m to the nearest water course which is currently frozen.

Immediate and Follow-Up Action:

Upon discovering the release, workers exposed the damaged pipe and preformed necessary repairs to arrest the release. The contaminated material was removed and properly disposed. New material was placed and leveled on the pad. Delineators were placed over buried utilities to help identify their location at the Mine Site weatherhaven.

Recommendations:

Before operators begin snow removal, discuss with supervisor to identify areas where buried utilities and other high risk areas. Reference piping schematics prior to working in their area.

Current Status:

The sewage pipe has been repaired and delineators are now in place marking the buried utilities.

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

Prepared By: Reviewed by:

William Bowden

Bell Bouder

Environmental Superintendent

Dean Moffett
Projects Construction Superintendent

Attach: Photos, Map, NT-NU Spill Report

cc. Tim Sewell, Grant Goddard, Sylvain Proulx, Gerald Rogers, Francois Gaudreau, William Bowden (Baffinland), Fai Ndofor (QIA), Justin Hack, Jeremy Fraser (INAC)



Photo 1. Spill location before clean-up



Photo 2. Spill location following clean-up



Figure 1 - Map of spill location



NT-NU SPILL REPORT

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca

PAGE 1 OF 1

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G	ANY CONTRACTOR INVOLVED CONTRACTO			R ADDRESS	OR OFFICE LOCATION	ON				
	PRODUCT SPILLED Raw Sewage	J	Approx		OGRAMS OR CUBIC	METRES	U.N. NUMBER N/A			
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M	ANY ALTERNATE CONTACT Tim Sewell	POSITION Head of HSI		EMPLOY	E 21 100 1000	ALTE	RNATE CONTACT	1	LTERNATE TELEPHONE ext. 6016	
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THIE	RD SUPPORT AGENCY									

Figure 2 - NT-NU Spill report



March 4, 2019

Resource Management Officer Nunavut Field Operations Indigenous and Northern Affairs Canada Box 100 Igaluit, NU X0A 0H0 Jonathan.Mesher@aandc-aadnc.gc.ca

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

Re: Follow-up to Spill #19-034 Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

During night shift on February 02, 2019, an operator was disposing of a tote of sump water from maintenance shops at the Mine Site. The operator brought the tote to an engineered lined containment berm to drain the sump water. Upon release it was determined that approximately 0.4M3 of waste oil had also been present in the tote impacting an approximate area of 96 m2. The waste oil free product was cleaned up from inside the berm and properly disposed of. This spill is >100 m to the nearest water course which is currently frozen and occurred in a lined engineered containment facility.

Immediate and Follow-Up Action:

Upon discovery of the spill, crews cleaned up waste oil using absorbent pads and the contaminated berm cover material was removed. Clean material was then placed in the influenced areas to return the berm back to its original condition. The damaged tote was pumped out and packed for backhaul disposal,

Recommendations:

Standard Operating Procedures (SOP) have been reviewed by operators working within containment facilities.

Current Status:

The containment berm has been cleaned of all oil and contaminated material. Influenced area has been replaced with clean cover material.

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

Prepared by:

Reviewed by:

William Bowden

Environmental Superintendent

Jeff Bush

Digitally signed by Jeff Bush Date: 2019.03.02 14:46:58

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

Connor Devereaux, Gerald Rogers, Francois Gaudreau (Baffinland), Stephen Bathory (QIA), Ian Parsons,

Jeremy Fraser (INAC).





Photo 1. MS-HWB-07 oil spill



Photo 2. MS-HWB-07 after clean up

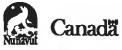




Figure 1. Map of spill location







NT-NU SPILL REPORT

DIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIAL

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY REPORT DATE MONTH - DAY - YEAR REPORT TIME XORIGINAL SPILL REPORT 02-03-2019 06:00 REPORT NUMBER OCCURRENCE DATE, MONTH - DAY - YEAR OCCURRENCE TIME TO THE ORIGINAL SPILL REPORT 19 034 02-02-2019 06:00 LAND USE PERMIT NUMBER (IF APPLICABLE) WATER LICENCE NUMBER (IF APPLICABLE) C IOL - Commercial Lease: Q13C301 2AM-MRY1325 Type "A" GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION REGION D | Mary River Mine Site, Baffin Island, NU DINWI DIADJACENT JURISDICTION OR OCEAN LATITUDE LONGITUDE E MINUTES 19 DEGREES 71 SECONDS 32 DEGREES 79 SECONDS 05 MINUTES 22 RESPONSIBLE PARTY OR VESSEL NAME RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION Baffinland Iron Mines Corp. 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3 ANY CONTRACTOR INVOLVED CONTRACTOR ADDRESS OR OFFICE LOCATION G N/A N/A PRODUCT SPILLED QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES U.N. NUMBER Waste Oil Approx. 0.4m3 N/A H SECOND PRODUCT SPILLED (IF APPLICABLE) QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES U.N. NUMBER N/A N/A SPILL SOLIBOR SPILL CAUSE AREA OF CONTAMINATION IN SQUARE METRES L **Plastic Tote** waste oil release Approx. 96 m2 FACTORS AFFECTING SPILL OR RECOVERY DESCRIPE ANY ASSISTANCE REQUIRED HAZARDS TO PERSONS, PROPERTY OF EQUIPMENT Frozen ground conditions N/A N/A ADDITIONAL INFORMATION COMMENTS ACTIONS PROPOSED OR TAKEN TO CONTAIN RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAININATED MATERIALS During night shift on February 02, 2019, an operator was disposing of a tote of sump water from maintenance shops at the Mine Site. The operator brought the tote to an engineered lined containment berm to drain the sump water. Upon release it was determined that approximately 0.4M3 of waste oil had also been present in the tote impacting an approximate area of 96 m2. The waste oil free product was cleaned up from inside the berm and disposed of in quatrex bags. This spill is >100 K m to the nearest water course which is currently frozen and occurred in a lined engineered containment facility. 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). REPORTED TO SPILL LINE BY POSITION EMPLOYER LOCATION CALLING FROM TELEPHONE William Bowden **Env. Superintendent Baffinland** Mary River 416 364 8820 ANY ALTERNATE CONTACT POSITION EMPLOYER ALTERNATE CONTACT ALTERNATE TELEPHONE **Head of HSE** ext. 6016 Tim Sewell **Baffinland** LOCATION REPORT LINE USE ONLY POSITION **EMPLOYER** LOCATION CALLED RECEIVED AT SPILL LINE BY REPORTLINE NUMBER STATION OPERATOR YELLOWKNIEF NT (867) 920-8130 LEAD AGENCY DEC DCCG DGNWT DGN DILA DINAC DNEB DTC SIGNIFICANCE IMINOR IMAJOR IMINOWN FILE STATUS OPEN OCLOSED 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



March 7, 2019

Resource Management Officer
Nunavut Field Operations
Indigenous and Northern Affairs Canada
Box 100
Iqaluit, NU X0A 0H0
Jonathan.mesher@aandc-aadnc.gc.ca

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

Re: Follow-up to Spill #19-045, Reported on February 07, 2019
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On February 07, 2019 at approximately 05:40 hrs, a loader made contact with a piece of oversized ore on the Crusher Pad while tramming material from the stockpile to the crusher hopper, which damaged the fuel tank causing a subsequent fuel release. The operator immediately shut off the loader, deployed spill sorbent supplies and contained the release. Approximately 0.2M3 of diesel fuel was released to the pad, impacting an approximate area of 20m2. The remaining fuel in the loader fuel tank was drained and captured in containment drums. The contaminated material was collected and deposited in a lined engineered containment facility at the Mine Site. The spill occurred >100 m to the nearest water course which is currently frozen.

Immediate and Follow-Up Action:

The operator immediately shut off the loader, deployed spill sorbent supplies and contained the release. The contaminated material was removed and properly disposed. New material was put down and leveled to return the area back to its original state.

Recommendations:

Standard Operating Procedures (SOP) to be reviewed by operators working within crusher stockpile areas. During daily toolbox meetings, supervisors reiterating staying alert to possible contact hazards in their work area.

Current Status:

The loader's fuel tank has been repaired and loader is back in operation.

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

Prepared By:

William Bowden

Environmental Superintendent

Reviewed by: Charc Giller

Chase Gilson

Crushing Superintendent

Attach: Photos, Map, NT-NU Spill Report

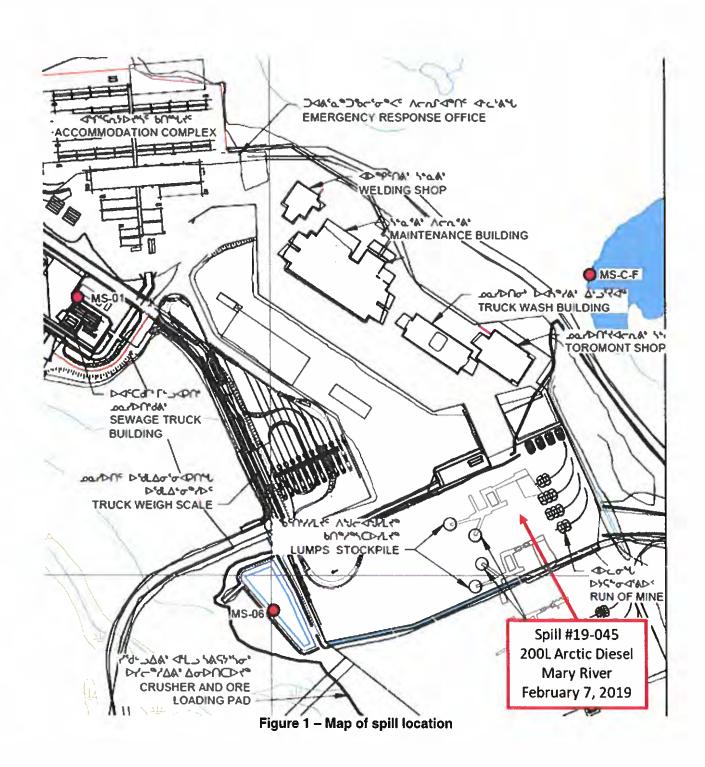
cc. cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Connor Devereaux, Gerald Rogers, Francois Gaudreau (Baffinland), Fai Ndofor, Sean Joseph (QIA), Justin Hack, Jeremy Fraser (CIRNAC).



Photo 1. Spill location before clean-up



Photo 2. Spill location following clean-up





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

PAGE 1 OF ___1

Α	REPORT DATE: MONTH - DAY - YEAR 02-07-2019				XORIGINAL SPILL REPORT,		REPORT NUMBER		
	OCCURRENCE DATE MONTH - DAY - YEAR				ENCE TIME	OR UPDATE #			
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L			1	TO CONTAI	N. RECOVER OR DISPOSE	1	FAND CONTAMINATED MATERIALS		
K	On February 07, 2019 at approximately 05:40 hrs, a loader made contact with a piece of oversized ore on the Crusher Pad while tramming material from the stockpile to the crusher hopper, which damaged the fuel tank causing a subsequent fuel release. The operator immediately shut off the loader, deployed spill sorbent supplies and contained the release. Approximately 0.2M3 of diesel fuel was released to the pad, impacting an approximate area of 20m2. The remaining fuel in the loader fuel tank was drained and captured in containment drums. The contaminated material was collected and deposited in a lined engineered containment facility at the Mine Site. 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.								
L	REPORTED TO SPILL LINE BY William Bowden	POSITION Env. Superint	tendent	EMPLOY	en nland	LOCATION CALLING FR		TELEPHONE 416 364 8820	
-	ANY ALTERNATE CONTACT	POSITION POSITION		EMPLOY		ALTERNATE CONTACT		ALTERNATE TELEPHONE	
M	Tim Sewell	Head of HSE		Baffi	nland	LOCATION		ext. 6016	
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ĺΝ	RECEIVED AT SPILL LINE BY	POSITION		EMPLOY	ER	LOCATION CALLED	Ι.	REPORT LINE NUMBER	
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SEC	COND SUPPORT AGENCY								
1	RD SUPPORT AGENCY								

Figure 2 - NT-NU Spill report



March 28, 2019

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 #19-079

Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On February 26, 2019 at approximately 05:30 hrs the WWTP operator observed an alarm at the WWTP. The operator noted the EQ storage tank was above capacity, and had resulted in sewage spilling over into the exhaust fan line and leaking out the vent to the adjacent WWTP pad. The operator proceeded to contact the vacuum truck and arrest the overflow. Approximately 280L of sewage was released to the WWTP pad, impacting an area of approximately 15.6m². The location is >100m to the nearest water course which is currently frozen.

Immediate and Follow-Up Action:

On arrival the operator placed a bucket under the vent line to prevent any further spillage and notified the supervisor. A vacuum truck was then used to pump down the level of waste in the EQ tank. The contaminated material was removed and properly disposed of.

Recommendations:

Continued routine inspections of system and routine checks for system alarms.

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 William Bowden at (647) 253- 0596 x6016.

Prepared by:

Connor Devereaux

Environmental Superintendent

Reviewed by:

Jeff Bush

Site Services Superintendent

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, William Bowden, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).





Photo 1. Overflow spill on camp pad surrounding WWTP.



Photo 2. Camp pad surrounding WWTP after spill clean up.





Figure 1. Map of spill location



STATION OPERATOR

LEAD AGENCY DEC DCCG DGNWT DGN DILA DINAC DNEB DTC

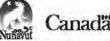
CONTACT NAME

MEENCY

EAD AGENCY

FIRST SUPPORT AGENCY
SECOND SUPPORT AGENCY
THIRD SUPPORT AGENCY





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

REPORT DATE: MONTH - DAY - YEAR REPORT TIME XORIGINAL SPILL REPORT 21:00 REPORT NUMBER 02-26-2019 OCCURRENCE DATE MONTH - DAY - YEAR OCCUBBENCE TIME UPDATE# 19 - 079 B 02-26-2019 TO THE ORIGINAL SPILL REPORT 00:20 LAND USE PERMIT NUMBER (IF APPLICABLE) WATER LICENCE NUMBER (IF APPLICABLE) IOL - Commercial Lease: Q13C301 2AM-MRY1325 Type "A" GEOGRAPHIC PLACE NAME OF DISTANCE AND DIRECTION FROM NAMED LOCATION Mary River Milne Inlet Site, Baffin Island, NU NWT III ADJACENT JURISDICTION OR OCEAN **X NUNAVUT** LONGITUDE DEGREES 79 SECONDS 49 MINUTES 17 DEGREES 71 MINDTES 18 SECONDS 06 RESPONSIBLE PARTY OR VESSEL NAME RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION Baffinland Iron Mines Corp. 2275 Middle Road East, Sutie 300, Oakville, ON L6H 0C3 ANY CONTRACTOR INVOLVED CONTRACTOR ADDRESS OR OFFICE LOCATION G N/A N/A PRODUCT SPILLED QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES HIN NUMBER Raw Sewage Approx. 280L N/A H SECOND PRODUCT SPILLED (IF APPLICABLE) QUANTITY IN LITRES KILOGRAMS OR CUBIC METRES UN NUMBER N/A N/A N/A SPILL SOURCE SPILL CAUSE AREA OF CONTAMINATION IN SQUARE METRES Wastewater Treatment Plant 15.6m2 EQ tank overflow HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT FACTORS AFFECTING SPILL OR RECOVERY DESCRIBE ANY ASSISTANCE REQUIRED. N/A ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS On February 26, 2019 at 05:30 Hrs an operator observed an alarm at the WWTP. The operator noted the EQ storage tank was above capacity, and had resulted in sewage spilling over into the exhaust fan line and leaking out the vent to the adjacent WWTP pad. The operator proceeded to contact the vacuum truck and arrest the overflow. Approximately 280L of sewage was released to the WWTP pad, impacting an area of approximately 15.6m2. The location is >100m to the nearest water course which is currently frozen. An investigation is underway to determine the cause and details of the cleanup 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. REPORTED TO SPILL LINE BY **FORDION** PMPL DVER LOCATION CALLING FROM TELEPHONE Env. Superintendent Connor Devereaux Baffinland Mary River 416 364 8820 ANY ALTERNATE CONTACT POSITION EMPLOYER ALTERNATE CONTACT ALTERNATE TELEPHONE Head of HSE 6016 Tim Sewell Baffinland LOCATION REPORT LINE USE ONLY REPORT LINE NUMBER EMPLOYER LOCATION CALLED RECEIVED AT SPILL LINE BY

PAGE 1 OF ____

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FILE STATUS ID OPEN ID CLOSED

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REMARKS

SIGNIFICANCE IN MINOR IN MAJOR IN UNKNOWN

Figure 2. Baffinland NT NU spill report

CONTACT TIME



April 2, 2019

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 #19-084

Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On March 2, 2019 at approximately 14:00 hrs, housing maintenance responded to a sewage line back up at the AC wing Mine Site Complex (MSC). A sewage release was discovered from the AC south wing lift station. After investigation, the spill was determined to be caused by both a discharge and gravity line failure from the sewage lift station. Approximately 3.2m³ of raw sewage was released impacting an area of 15m² during the initial spill and repairs of the lift station and lines. The final repairs of the system are still pending equipment and parts shipments to site.

Immediate and Follow-Up Action:

The lift station was immediately pumped down by vacuum truck to prevent any further release. Repairs were made to the gravity line; however, it was not possible to repair the discharge line with materials on site, which are on order. The contaminated material was removed and properly disposed of.

Recommendations:

Continued routine inspections of system. Final planned repairs to system pending material shipments to site.

Current Status:

The discharge line is not operational and it is required to empty this lift station using a vac truck twice per day.

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:

William Bowden

Bell Border

Environmental Superintendent

Reviewed by:

Jeff Rush

Site Services Superintendent

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, William Bowden, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).



Photo 1. Overflow spill on camp pad at AC wing.



Photo 2. Camp pad at AC wing after spill clean up.



Figure 1. Map of spill location







Canadä

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

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Figure 2. Baffinland NT NU spill report



May 3, 2019

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 #19-151

Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On April 3, 2019 at approximately 10:00 hrs, housing maintenance, during routine inspections, discovered a sewage release at the West AD Mine Site Complex Wing (MSC). Upon initial investigation, the release was determine to be caused by a discharge line failure on a pipe fitting. The pumps from the AD south lift station were turned off immediately to prevent further potential release and repairs began. Approximately 4.5m3 of sewage was released and confined to the adjacent camp pad ground surface, impacting an area of approximately 90m2.

Immediate and Follow-Up Action:

The pumps from AD south lift station were immediately shut off to prevent further potential release. Repairs were made to the discharge line pipe fitting.

Recommendations:

Continue daily inspections of lift stations and sewage lines.

Current Status:

The discharge line has been repaired and is operational and inspected regularly.

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:

William Bowden

Environmental Superintendent

Reviewed by:

Jeff Bush

Site Services Superintendent

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, William Bowden, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).



Photo 1. Separated Discharge Line under AD wing following insulation removal.



Photo 2. Repaired Discharge Line under AD wing prior to reinsulation.

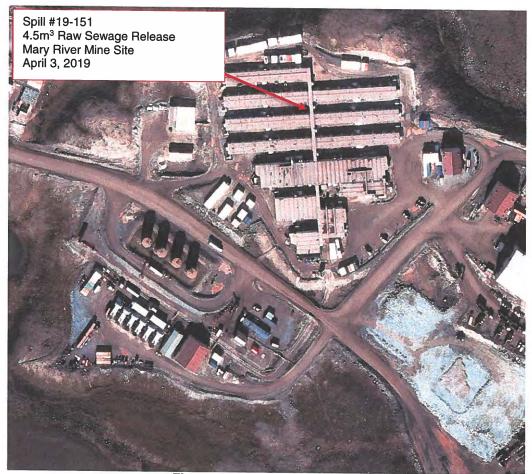


Figure 1. Map of spill location





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

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_	William Bowden	Env. Superint	tendent	Baffin			Mary River		416 364 8820
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PAGE 1 OF ____1

Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-162



May 18, 2019

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 #19-162
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On April 19, 2019 at approximately 15:00 Hrs while completing routine inspections, a housing maintainer observed sewage coming from the Port Site Complex BA Wing lift station. Upon investigation the release was determined to be caused by a holding tank failure. Following the release discovery, the housing maintainer shut off the water supply to the BA Wing to prevent any further release. Approximately 500L of sewage was released to the adjacent camp pad, impacting an area of approximately 40m2. The contaminated snow/ice was then removed and transported to the Polishing Waste Stabilization Pond.

Immediate and Follow-Up Action:

The water supply was shut off to the BA wing and the lift station was pumped down with a vacuum truck to prevent any further release. Repairs were made to the crack in the holding tank; however, the epoxy sealant used to repair the crack was not effective, so the float was lowered to below the damaged section. Attempts to repair the crack in the holding tank will be conducted during warmer conditions.

Recommendations:

Daily inspections of lift stations and sewage lines continue.

Current Status:

No further spills have occurred and the lift station is operational. Inspections continue on a daily frequency.

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:

Connor Devereaux

Environmental Superintendent

Reviewed by

Gordoh Mudryk

Site Services Manager

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, William Bowden, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).



Photo 1. Spill clean up in progress at BC wing.



Photo 2. Camp pad at BC wing after spill 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.nf.ca

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Ī	SPILL SOURCE SPILL CAU Lift station holding tank Holdin			tank fa	ailure	14	40m2	N SQUARE METRES	
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K	was determined to maintainer shut off 500L of sewage was The contaminated s Pond. The spill is > repairs, and cleanu being reported as repursuant to subsect the GN EPA paragramater.	the water sup is released to to snow/ice was to 100 m from the pare ongoing, equired by the tion 12(3) of the	ply to the E he adjacen hen remov e nearest w , further de conditions	A Wing t camp ed and rater bo tails wi s of war	g to prevent a pad, impacti transported ody which is a ill be provide ter license no	any fung an to the currend in the co. 2AM	rther release. App area of approxima Polishing Waste ! itly frozen. The inv e follow-up report I-MRY1325, Part H	roximately ately 40m2. Stabilization restigation, t. This spill is , item 9 (b)	
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superin	ntendent	Baffi	en nland	100	CATION CALLING FROM	TELEPHONE 416 364 8820	
M	ANY ALTERNATE CONTACT Tim Sewell	POSITION Director of H	7 7 7 7 7 7	EMPLOY	3330377	ALT	ERNATE CONTACT	ALTERNATE TELEPHONE ext. 6016	
			REPORT L	NE USE OF	NLY		erinen.		
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATOR		EMPLOY	ER	-	CATION CALLED	REPORT LINE NUMBER (867) 920-8130	
LEAD	AGENCY DEC DCCG DGNV		AC ONEB OTC	SIGN	IFICANCE I MINOR			TUS - OPEN - CLOSED	
AGE		NTACT NAME.			TACT TIME	-	REMARKS		
LEAD	AGENCY								
FIRS	T SUPPORT AGENCY			1					
SEC	OND SUPPORT AGENCY								
THIR	D SUPPORT AGENCY								

PAGE 1 OF _____

Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-198



June 06, 2019

Water Resources Officer Nunavut Region Crown Indigenous Relations and Northern Affairs Canada Box 100 Igaluit, 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 #19-198
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On May 07, 2019, warming temperatures resulted in snowmelt runoff at the Project. The runoff contained sediment-laden water, and was observed to be flowing at the following locations at the Mary River Site (SDLT, CLSP and CLT). The source of the sedimentation was snow melt from the surrounding Project infrastructure. The event resulted in sediment-laden water flowing onto and under the ice of Camp Lake and Sheardown Lake. Tables 1 to 3 outline water quality results from monitoring conducted from May 7-9th at each respective drainage.

Sample Location	Description	Coordinates (Lat/Long)
CLSP-OUT	Camp Lake Sedimentation Ponds Outlet	N 71°19'42.2", W 079°22'55.4"
CLT-OUT	Camp Lake Tributary 1 (100m upstream of Camp Lake Outfall)	N 71°19'47.2", W 079°23'07.0"
SDLT-OUT	Sheardown Lake Tributary 1 (100m upstream of Sheardown Lake Outfall)	N 71°18'58.8", W 079°18'44.5"

Immediate and Follow-Up Action:

Upon discovery of the elevated instream TSS conditions at these drainages, personnel worked to install sedimentation mitigation measures, including earth works, check dams, silt fences and spring berms, in accordance with the Surface Water Management Plan, in an attempt to slow flow and settle sediments prior to entering the streams.

On May 9th, 2019, additional water sampling for acute toxicity was conducted at CLT-OUT, CLSP-OUT and SDLT-OUT. The samples collected were determined to be acutely non-toxic.

In the days leading up to freshet, snow pack around the inlets and outlets of select culvert locations was excavated, including the SDLT and CLT crossings, to reduce the volume of snow melt and thus, the amount of overland flow present to mobilize sediment. Rip rap and check dams were also constructed at strategic locations. Water diversion and pumping strategies were implemented to reduce potential erosion and sedimentation.

Current Status:

Conditions at CLT, CLSP and SDLT, as well as other freshet monitoring locations, are currently being sampled and assessed as per Baffinland's Freshet Monitoring Program. A more comprehensive Freshet Report will be submitted 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 2019. Continued monitoring during freshet conditions and routine maintenance of check dams, silt fences and spring berms, where applicable.



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:

Connor Devereaux

Environmental Superintendent

Reviewed by:

Shawn Stevens

Manager of Health, Safety, Environment and Security

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Shawn Stevens, William Bowden, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC), Curtis Didham (ECCC).



CLT Drainage



Photo 1. Snow clearing at the outlet of BG-01 on May 6, 2019



Photo 2. CLT Outfall on May 7, 2019





Photo 3. CLT Outfall on May 9, 2019



Photo 4. Silt Fencing at the outlet of BG-01 on May 9, 2019





Photo 5. CLT Outfall on May 13, 2019



Photo 6. CLT Outfall on June 6, 2019



CLSP Drainage



Photo 1. Camp Lake Settling Ponds prior to construction on May 2, 2019



Photo 2. Armouring upstream of the CLSP drainage valley on May 2, 2019





Photo 3. Camp Lake Settling Ponds during construction on May 8, 2019



Photo 4. CLSP Outfall into silt curtain on May 9, 2019





Photo 5. ESC measures at the CLSP Outfall on May 10, 2019



Photo 6. CLSP Outfall into silt curtain on May 10, 2019



Photo 7. CLSP Outfall construction on May 13, 2019



Photo 8. CLSP Outfall on June 6, 2019



SDLT Drainage



Photo 1. SDLT Outfall on May 7, 2019



Photo 2. Check dam construction at the outlet of CV-186 on May 8, 2019



Photo 3. SDLT Outfall on May 9, 2019



Photo 4. Silt fence installation at the outlet of CV-186 on May 18, 2019



Photo 5. Check dam construction at the outlet of CV-186 on May 22, 2019



Photo 6. SDLT Outfall on June 6, 2019





Figure 1. Map of CLT and CLSP spill locations



Figure 2. Map of SDLT 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

							HEPOHI LINE USE UNL	
Α	REPORT DATE: MONTH - DAY 05-09-2019	-YEAR		PORT (IME 1:00	TX ORIGINAL SPILL HEI	ORI,	REPORT NUMBER	
В	OCCURRENCE DATE MONTH	- DAY -YEAR		CURRENCE TIME 4:00	TO THE ORIGINAL SPIL	L REPORT	19 198	
	IOL - Commercial	Lease No.: Q13	C-30m (100)	2AM-MRY	IUMBER (IL APPLICABLE)			
D	GEOGRAPHIC PLACE NAME OF Mary River Project			□NWT X	NUNAVUI 🗆 ALVACENT JUI	RISDICTION	OR OCEAN	
Ε	LATTUDE DEGREES	MONITES	SECONDS	LONGHUDE	MINUTES	SF	ECONDS	
F	RESPONSIBLE PARTY OR VES Baffinland Iron M	SSEL NAME	RESPONSIBLE PAR	TY ADDRESS OR OFFICE	1904.00000	7/7/7	15.50	
G	ANY CONTRACTOR INVOLVED N/A	Y	CONTRACTOR ADD	RESS OR OFFICE LOCAT	TION			
	PRODUCT SPILLED Sediment-laden w		Unquantific		N/A			
H	SECOND PRODUCT SPILLED (IF APPLICABLE) OUANTITY IN LIT			S. KILOGRAMS OR CUBI	CMETRES UN NUMBER N/A			
ŀ	SPILL SOURCE SPILL CAUSE Melting snow, overland flow Rapid m				N/A	AFIEA OF CONTAMINATION IN SQUARE METRES N/A		
J	Snow covered area, high flow N/A			SISTANCE REQUIRED	N/A	HAZARDS TO PERSONS, PROPERTY OR FOURMENT N/A SPILLED PRODUCT AND CONTAMINATED MATERIALS		
K	Lake. In accordar were implemented sediments prior to ongoing; initial w being reported as	nce with the Sur d including; che o discharge. Wit ater quality sam required by the ection 12(3) of tl	face Water Mai eck dams, silt f th freshet cond ple results we conditions of he Nunavut Wa	nagement Plan, ences and spri ditions present, re submitted to Water License aters and Nuna	r the ice of Camp La , sedimentation mit ng berms in an atte daily monitoring o ALS lab for analys no. 2AM-MRY1325 vut Surface Rights	igation mpt to f the wa is. This , Part H	measures settle ater quality is s spill is , item 9 (b)	
L	REPORTED TO SPILL LINE BY			PLOYER affinland	LOCATION CALLING FR 647.253.0596	22.22	TELEPHONE Ext. 6016	
М	ANY ALTERNATE CONTACT Tim Sewell	POSITION Director of I		PLOYER affinland	ALTERNATE CONTACT 647,253.0596		LTERNATE TELEPHONE Ext. 6054	
		- Ja	REPORT LINE U	ISE ONLY				
N	DECEIVED AT SOUL LINE BY POSITION		EM	IPLOYER	LOCATION CALLED	B	EPORT LINE NUMBER	
		STATION OPERATOR			YELLOWKNIFE, NT	12	867) 920-8130	
LEAD	DAGENCY DEC DCCG DC	GNWT □GN □ILA □IN	IAC □NEB □TC	SIGNIFICANCE MINO	R □ MAJOR □ UNKNOWN	FILE STATU	IS □ OPEN □ CLOSED	
AGE	NCY	CONTACT NAME		CONTACT TIME	REMARKS			
LEAD	D AGENCY							
FIRS	ST SUPPORT AGENCY							
SEC	OND SUPPORT AGENCY							
THIR	RD SUPPORT AGENCY							

PAGE 1 OF _ 1

Figure 3. Baffinland NT NU spill report



Table 1. CLT Outfall Water Quality Results

	Sa	ample ID		CLT-OUT	CLT-OUT	CLT-OUT
Analuta	ALS Labor	ratory S	ample ID	L2269130-5	L2270047-2	L2270800-1
Analyte	Sample Date & Time			2019-05-07 15:00	2019-05-08 10:15	2019-05-09 13:45
	Units	LOR	Limits			
рН	pH units	0.1	6.0 - 9.5	7.81	7.83	7.68
Total Suspended Solids	mg/L 2		30	175	30.8	19.2
Total Dissolved Solids	mg/L	20	-	121	98	65
Turbidity	NTU	NTU 0.1		165	58.5	42.7
Acute Toxicity	-	-	Non-lethal	-	-	Non-lethal

Table 2. CLSP Outfall Water Quality Results

	Sa	ample ID)	CLSP-OUT	CSLP-OUT	
Analista	ALS Labor	atory Sa	ample ID	L2270047-1	L2270800-2 2019-05-09 12:50	
Analyte	Sample	Date &	Time	2019-05-08 9:25		
	Units	LOR	Limits			
рН	pH units	0.1	6.0 - 9.5	7.96	7.87	
Total Suspended Solids	mg/L	2	30	187	187	
Total Dissolved Solids	mg/L	20	1	148	122	
Turbidity	NTU	0.1	-	324	279	
Acute Toxicity	-	-	Non-lethal	-	Non-lethal	

Table 3. SDLT Outfall Water Quality Results



	Sa	mple II	D	SDLT-OUT	SDLT-OUT	SDLT-OUT	
A l . l .	ALS Labor	ratory S	Sample ID	L2269130-1	L2270047-4	L2270800-5	
Analyte	Sample	Date 8	& Time	2019-05-07 11:20	2019-05-08 11:55	2019-05-09 15:35	
	Units	LOR	Limits				
рН	pH units	0.1	6.0 - 9.5	7.5	7.6	7.56	
Total Suspended Solids	mg/L	2	30	28.8	74.4	116	
Total Dissolved Solids	mg/L	20	-	62	61	74	
Turbidity	NTU	0.1	-	78.1	122	142	
Acute Toxicity	-	-	Non-lethal	-	-	Non-lethal	

Spill Report Number: 19-201



June 11, 2019

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 XOA 0H0

Re: Follow-up to Spill #19-201

Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On May 12, 2019 at approximately 02:00 hrs, a skid steer lost traction while approaching a tote of diesel exhaust fluid, resulting in the skid steer fork puncturing the tote and the subsequent release of DEF fluid. The operator immediately placed the tote into secondary containment on its side to prevent further release. Approximately 0.6m³ of diesel exhaust fluid was released to the pad, impacting an approximate area of 60m².

Immediate and Follow-Up Action:

The tote was placed on its side in a containment berm to prevent further release. The contaminated water and soil were removed and properly disposed of. Proper fork lift operation was reviewed with operators.

Current Status:

The impacted area has been remediated and has 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:

Connor Devereaux

Environmental Superintendent

Reviewed by:

Al Weltz

Port and Logistics Superintendent

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Shawn Stevens, William Bowden, Gerald Rogers, Francois Gaudreau, Christopher Murray, Al Wertz (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).



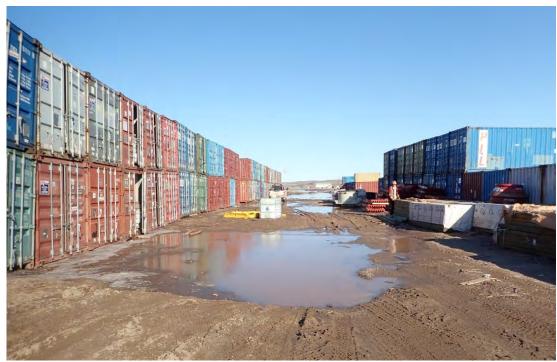


Photo 1. DEF Fluid Impacted Water on May 12, 2019



Photo 2. DEF Fluid Spill After Clean Up on June 11, 2019



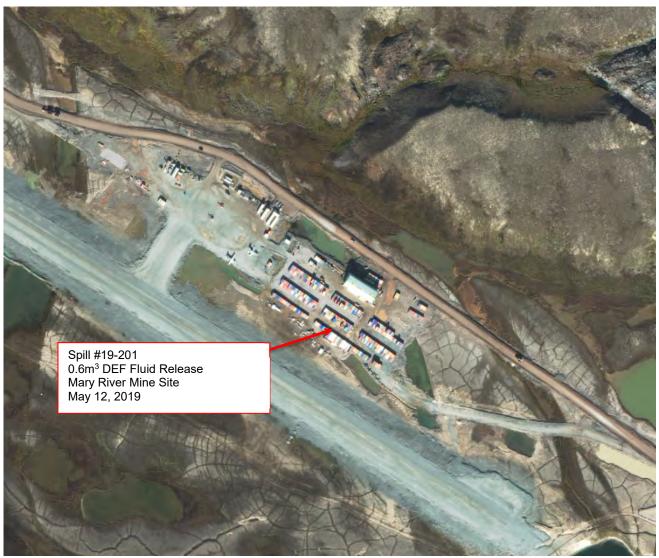


Figure 1. Map of spill location







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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
Α	00 12 2010		11:20	0	Xor	RIGINAL SPILL REPO	ORT.	REPORT NUMBER
В	OCCURRENCE DATE: MONTH - D. 05-12-2019		02:00	RENCE TIME 0		PDATE # HE ORIGINAL SPILL	REPORT	19 - 201
С	IAND USE PERMIT NUMBER (IF A	ease: Q13C301		2AM-MRY13				
D	Mary River Mine Sit	DISTANCE AND DIRECTION FROM NAMI te, Baffin Island, NU	ED LOCATION	DINKT XNU	UNAVUT	☐ AĎJAČENT JURIS	SDICTION	OR OCEAN
Ε	Dr. M. V. Stowner S	INUTES 19 SECONDS	16	DEGREES 79		MINUTES 20	SI	ECONDS 07
F	Baffinland Iron Mine	es Corp. 2275 N	Middle R	noness on office to load East, Suit	ite 300,	Oakville, Ol	N L6H	0C3
G	N/A	CONTRACT N/A	TOR ADDRESS	S OR OFFICE LOCATION	INC			
	PRODUCT SPILLED Diesel Exhaust Fluid		IN LITBES, KIL	LOGRAMS OR CUBIC N	METHES	N/A		
Н	SECOND PRODUCT SPILLED (IF /	APPLICABLE) OLIANTITY I	IN LITRES, KIL	LOGRAMS OR CUBIC M	METRES	N/A		
t	SPILL SOURCE Tote	SPILL CAUS	se ment Dai	mage		AREA OF CONTAMIN	NATION IN	SQUARE METRES
J	FACTORS AFFECTING SPILL OR F	Carlo Alle	E ANY ASSISTANCE REQUIRED			HAZÁROS TO PERSONS, PROPERTY OR EQUIPMENT N/A		
K	impacting an appro deposited in a lined nearest water cours follow-up report. Th	ease. Approximately 0.6 eximate area of 60m2. The dengineered containme se. The investigation is his spill is being reporte t H, item 9 (b) pursuant bunal Act.	he conta ent facilit ongoing ed as req	minated wate by at the Mine g and further o puired by the o	er from Site. To details condition	the pad was he spill occi will be provi ons of NWB	s colle urred > ided in Water	cted and >100 m to the of the of License no.
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superintendent	20.00			OCATION CALLING FROM		416 364 8820
М	ANY ALTERNATE CONTACT Tim Sewell	POSITION Director of HSES	EMPLOY Baffi	ren inland	ALTE	ATION		ext. 6016
		REPORT	T LINE USE OF	INLY	1	1134.7		
NI	RECEIVED AT SPILL LINE BY	POSITION	EMPLOY	/ER	LOCA	ATION CALLED	P	REPORT LINE NUMBER
Ν	1	STATION OPERATOR			YELL	OWKNIFE, NT	0	867) 920-8130
LEA	DAGENCY DEC DCCG DGNV	WI GN DILA DINAC DNEB D	IC SIGN	NIFICANCE MINOR	□ MAJOR	UNKNOWN	ILE STATE	US □ OPEN □ CLOSED
AGE	NGA COL	INTACT NAME	CON	HACT TIME	P	REMARKS		
LEA	D AGENCY							
FIRS	ST SUPPORT AGENCY							
SEC	OND SUPPORT AGENCY							
7) (1)	RD SUPPORT AGENCY							

PAGE 1 OF 1

Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-212



June 18, 2019

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 #19-212

Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

While completing an inspection of the crawl space beneath the Port Site Weatherhaven camp, the building maintainer observed an area of pooling water below the women's bathroom. Upon initial investigation it was observed that a 2" drain line from the restroom showers had developed a leak. Approximately 1m3 of grey water was released to the adjacent camp pad, impacting an area of approximately 80m2. The spill was >100 m from the nearest water body.

Immediate and Follow-Up Action:

Following the release discovery, a confined space entry permit was completed, the water was pumped out using a vac truck and the damaged pipe was replaced. The contaminated water was removed and transported to the Polishing Waste Stabilization Pond.

Recommendations:

Continued routine inspections of the bathroom drainage system.

Current Status:

The drainage pipe is operational as designed with no further leaks.

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:

William Bowden

Environmental Superintendent

Bell Burder

Han 11

Reviewed by:

James Martin

Site Services Superintendent

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Shawn Stevens, Connor Devereaux, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).





Photo 1. Damaged drain below women's bathroom.



Photo 2. Repaired drain below women's bathroom.





Figure 1. Map of spill location





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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 ONL
A	REPORT DATE: MONTH - DAY - YEAR			REPORT TIME		₩ OF	ORIGINAL SPILL REPORT,		
_	05-20-2019			14:00	0				REPORT NUMBER
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j	IOL - Commercia				2AM-MRY132	5 Typ	e "A"		
0	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED Mary River Mine Site, Baffin Island, NU				REGION NWT XNUN	AVUT	□ ADJACENT JURISDIC	TION	OR OCEAN
Ξ	DEGREES 71	MINUTES 52	SECONDS		DEGREES 80		MINUTES 53	SE	conds 54
F	RESPONSIBLE PARTY OR VE Baffinland Iron M	ines Corp.	2275 M	iddle Ro	The second of the second of the second		Oakville, ON L	6H (0C3
G	N/A)	N/A	R ADDRESS	OR OFFICE LOCATION				
П	PRODUCT SPILLED		QUANTITY IN	LITRES, KIL	OGRAMS OR CUBIC ME	TRES	U.N. NUMBER		
	Grey water Approx.			. 1m3			N/A		
1	SECOND PRODUCT SPILLED	(IF APPLICABLE)	100000000000000000000000000000000000000	LITRES, KIL	OGRAMS OR CUBIC ME	TRES	U.N. NUMBER		
	N/A		N/A				N/A		
ĺ	SPILL SQURCE Drain pipe		SPILL CAUSE Pipe fitt		ure		AREA OF CONTAMINATION IN SQUARE METRES		
	FACTORS AFFECTING SPILL	OR RECOVERY	DESCRIBE AL	NY ASSISTAN	NCE REQUIRED	1	HAZARDS TO PERSONS, PROPERTY OR		ERTY OR EQUIPMENT
J	Congested area,	ice and water	N/A				N/A		
<	was released to t water was remove from the nearest follow-up report. 2AM-MRY1325, P Surface Rights To	ed and transpor water body. An This spill is beir art H , item 9 (b) ribunal Act, and	ted to the f investigation g reported pursuant t	Polishin on is on I as req to subs	g Waste Stabil going and furt uired by the co ection 12(3) of graph 5.1(a).	lization ther dondition the N	on Pond, The s etails will be p ons of water li lunavut Waters	pill i rovi cens and	s >100 m ded in the se no.
	Connor Devereau		ntendent	100	nland	7	OCATION CALLING FROM Mary River		116 364 8820
	ANY ALTERNATE CONTACT	POSITION	// Complete	EMPLOY			RNATE CONTACT	ALTERNATE TELEPI	
M	Tim Sewell	Director of	HSES	Baffi		127	ATION		ext. 6016
	2.55 0.508	THE CALL OF THE	REPORT	INE USE OF	II Y	200	TION .	-	
	RECEIVED AT SPILL LINE BY	POSITION		EMPLOY		LOCA	ATION CALLED	HE	EPORT LINE NUMBER
V	STATION OPERATOR		ū.				OWKNIFE, NT		87) 920-8130
EAI	AGENCY DEC DCCG D	GNWT DGN DILA DIN	AC DINEB DITC	SIGN	FICANCE MINOR	MAJOR I	UNKNOWN FILE	STATUS	S OPEN OCLOSE
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IRS	T SUPPORT AGENCY			11,011					
EC	OND SUPPORT AGENCY								
	D SUPPORT AGENCY			- 17/11					

PAGE 1 OF 1

Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-219



June 23, 2019

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 XOA 0H0

Re: Follow-up to Spill #19-219
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On May 23, 2019, during routine inspections, the Waste Water Treatment Operator discovered a sewage release at the Weather Haven Mine Site Complex lift station. Upon initial investigation, it was determined that the discharge line sourcing from the lift station had separated at a coupling. The pumps servicing the lift station were immediately shut off and repairs to the separated coupler were made. Approximately 1m3 of sewage was released to the adjacent camp pad ground surface, impacting an area of approximately 16m2.

Immediate and Follow-Up Action:

The pumps from lift station were immediately shut off to prevent further potential release. Repairs were made to the discharge line pipe fitting.

Recommendations:

Continue daily inspections of lift stations and sewage lines.

Current Status:

The discharge line has been repaired and is operational and inspected regularly.

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:

Reviewed by:

William Bowden

Environmental Superintendent

Bell Border

Jeff Bush

Site Services Superintendent

I Albust

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Shawn Stevens, Connor Devereaux, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC) Chris Spencer, Jared Ottenhof (QIA).





Photo 1. Separated Discharge Line under Weatherhaven lift station.



Photo 2. Repaired Discharge Line under Weatherhaven lift station.





Figure 1. Map of spill location





NT-NU SPILL REPORT

IL GASOLINE CHEMICALS AND OTHER HAZARDOUS MATERIALS

HT-NU 24-HOUR SPILL REPORT LINE TEL! (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca

								REPORT LINE USE ONLY	
Α	REPORT DATE: MONTH - DAY - YEA 05-24-2019	AR		REPORT T 22:00	ME	OKORIGINAL SPILL REI	PORT,	REPORT NUMBER	
	OCCURRENCE DATE MONTH - DAY	Y - YEAR		OCCURRE	NCE TIME	OR UPDATE #			
В	05-23-2019	- · - · · · ·		Unkno	own	TO THE ORIGINAL SPIL	l report	19 - 219	
\sim	LAND USE PERMIT NUMBER (IF AP		1	1.	VATER LICENCE NUMBE				
C	IOL - Commercial Le				2AM-MRY1325	Туре "А"			
D	GEOGRAPHIC PLACE NAME OR DIS Mary River Mine Site				REGION	UT 🗆 ADJACENT JU	RISDICTION	I OR OCEAN	
Ε			SECONDS 33	; _[ONGITUDE PEGREES 79	MINUTES 22	:	SECONDS 26	
F	RESPONSIBLE PARTY OR VESSEL Baffinland Iron Mine		2275 Mid	ldle Ro	RESS OR OFFICE LOCA ad East, Suite		ON L6H	1 0C3	
G	ANY CONTRACTOR INVOLVED N/A		N/A		OR OFFICE LOCATION				
	PRODUCT SPILLED		1	TRES, KILC	GRAMS OR CUBIC MET	I			
н	Sewage/ grey water		1m3			N/A			
' '	SECOND PRODUCT SPILLED (IF AS	PPLICABLE)	OWNTITY IN LE	TRES, KILC	GRAMS OR CUBIC MET	N/A			
	SPILL SOURCE		SPILL CAUSE			1001	AINATION I	V SQUARE METRES	
ı	Weatherhaven Lift S		Pipe Fitti	-		16m2			
J	FACTORS AFFECTING SPILL OR RE Congested area, sno		DESCRIBE ANY	ASSISTAN	CE REQUIRED	N/A	RSONS, PRI	OPERTY OR EQUIPMENT	
	ADDITIONAL INFORMATION, COMI		1	O CONTAIN	I. RECOVER OR DISPOSI	1	AND CON	AMINATED MATERIALS	
K	pumps servicing the made. Approximatel impacting an area of the investigation is being reported as repursuant to subsect the GN EPA paragra	y 1m3 of sewag f approximately ongoing, and f equired by the c tion 12(3) of the	ge was rele y 16m2. The further deta conditions	eased to spill ails will of wat	to the adjacent is >100 m from I be provided i er license no. 2	camp pad gro the nearest w n the follow-up 2AM-MRY1325,	und su ater bo report Part H	rface, ody. t. This spill is I, item 9 (b)	
L	REPORTED TO SPILL LINE BY William Bowden	POSITION Env. Superint	tendent	EMPLOYE Baffir		LOCATION CALLING F	ROM	TELEPHONE 416 364 8820	
	ANY ALTERNATE CONTACT	POSITION		EMPLOYE		ALTERNATE CONTAC	Г	ALTERNATE TELEPHONE	
M	Tim Sewell	Head of HSE		Baffir	nland	LOCATION		ext. 6016	
			REPORT LI	VE USE ON	ILY				
N.	RECEIVED AT SPILL LINE BY	POSITION		EMPLOYE	R	LOCATION CALLED		REPORT LINE NUMBER	
N		STATION OPERATOR		<u> </u>		YELLOWIGNIFE, NT	,	(867) 920-8130	
LEA	DAGENCY DEC DCCG DGNW	T II GN II ILA II INAC	C DINEB DIC	SIGN	FICANCE MINOR I	AJOR UNKNOWN	FILE STA		
AGE	ENCY CON	NTACT NAME		CON	ACT TIME	REMARKS		TUS OPEN OCLOSED	
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SEC	COND SUPPORT AGENCY							itus Open Glosed	
\vdash								NIUS OPEN CLOSED	

Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-226



June 29, 2019

Water Resources Officer Nunavut Region Crown Indigenous Relations and Northern Affairs Canada Box 100 Igaluit, 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 #19-226
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On May 30th 2019, runoff from the Mine Haul Road ditches and Tundra above at 108.5 and 106.5 was observed to be flowing impacted discharging onto the tundra as designed. Upon investigation, water runoff through the road's ditching and culvert system resulted in sediment impacted water traveling across the mountain tundra, entering Mary River Tributary and Mary River. Table 1 outlines water quality results from monitoring conducted May 31st and June 7th on Mary River downstream of the Project Infrastructure.

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 Management Plan, sedimentation mitigation measures were implemented. Project personnel worked to install sedimentation mitigation measures, including check dams, gabion baskets, silt fences and ditch maintenance in an attempt to settle sediments before reaching the receiving environment. This included construction of a new check dam system at the km 108.5 location. Surface water was diverted away from problematic areas to minimize the impacted water entering Mary River.

Samples, including acute toxicity, were collected on May 31st 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. The samples collected were determined to be acutely non-toxic. On June 7th, 2019, E0-20 was resampled and confirmed that sedimentation mitigation measures were effectively settling suspended solids.

In the days leading up to freshet, snow pack around the Mine Haul Road culverts and ditches were excavated to reduce the volume of snow melt 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 the road is ongoing.



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:

Reviewed by:

William Bowden

Environmental Superintendent

Bill Borden

Simon Fleury Mine Manager

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Shawn Stevens, Connor Devereaux, Gerald Rogers, Francois Gaudreau, Christopher Murray, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC) Curtis Didham (ECCC).



Photos



Photo 1. Sediment impacted water traveling across the tundra on May 30, 2019



Photo 2. Sediment impacted water traveling across the tundra on May 30, 2019





Photo 3. Sediment impacted water on May 30, 2019



Photo 4. Km 108.5 Check Dam Sedimentation mitigation measure installation on June 5, 2019





Photo 5. Examples of Sedimentation mitigation measure installation on June 5, 2019



Photo 6. Examples of Sedimentation mitigation measure installation on June 7, 2019





Photo 7. Mary River, sediment impacted water on May 31, 2019



Photo 8. Mary River, normal conditions on June 7, 2019



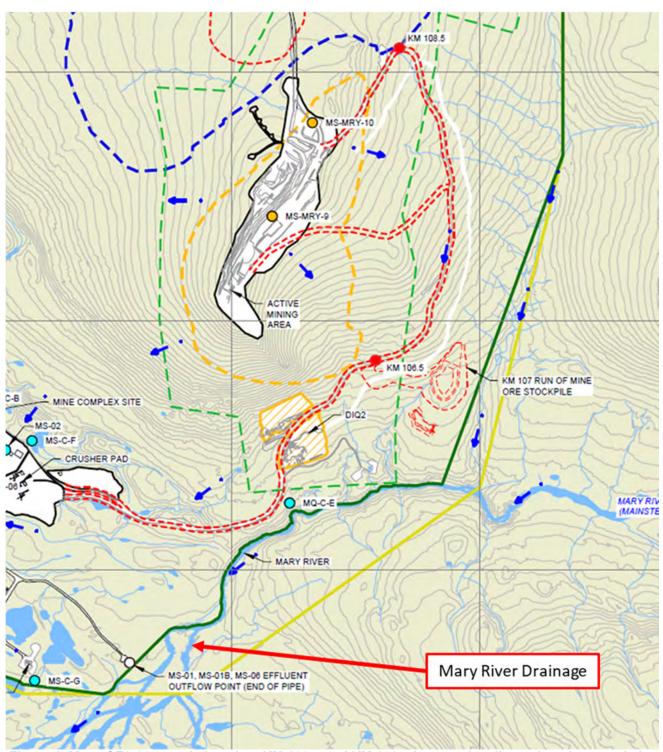


Figure 1. Map of E0-20 sample location, KM 108.5 and KM 106.5 impacted sediment locations, and site drainage







NT-NU SPILL REPORT

DIL GASOLINE CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: Spills@gov.nf.ca

_								REPORT LINE USE ONLY
A	05-31-2019	19		20:00)	▼ ORIGINAL SPILL RE	PORT,	REPORT NUMBER
В	OCCURRENCE DATE: MONTH - DAY 05-30-2019	-YEAR			TENCE TIME TOWN	☐ UPDATE #_ TO THE ORIGINAL SPI	ILL REPORT	19 - 226
С	LAND USE PERMIT NUMBER (IF APP IOL - Commercial Lea					MBER (IF APPLICABLE) 325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DIS Mary River Milne Inle	THE PROPERTY OF THE PARTY OF TH			-5.5	UNAVUT - ADJACENT JU	JRISDICTION	OR OCEAN
E	DEGREES 71 MINU	UTES 18	SECONDS 3	39	LONGITUDE DEGREES 79	MINUTES 11	1 5	econos 56
F	RESPONSIBLE PARTY OR VESSEL N Baffinland Iron Mines		The Mark Control of the Control of t		oad East, Sui	ite 300, Oakville,	ON L6H	0C3
G	N/A		N/A	R ADDRESS	OR OFFICE LOCATIO	ON .		
	PRODUCT SPILLED Sediment		unquan		OGRAMS OR CUBIC	METRES U.N. NUMBER		
H	SECOND PRODUCT SPILLED (IF APP	PUCABLE)	N/A		OGRAMS OR CUBIC	METRES U.N. NUMBER N/A		
1	Spring freshet/snow i	melt	Rapid s		elt	N/A	MINATION IN	SQUARE METRES
J	Steep embankment, p		N/A	NY ASSISTAL	NCE REQUIRED	N/A	RSONS, PRO	PERTY OR EQUIPMENT
K	receiving environmer the impacted water en on mitigation measur License no. 2AM-MRY Nunavut Surface Rigi	tering Mary Ŕiv Plan, sediment d ditch mainter nt. Surface wa entering Mary F res. This incid Y1325, Part H,	ver Tribut tation miti nance in a ater is also River. A fo lent is bein , item 9(b)	tary and igation an atter o being ollow up ing repo) pursua	d Mary River. measures ar mpt to settle diverted awa p report will l orted as requ ant to subsec	In accordance we being implement sediments before ay from problema be provided with irred by the condiction 12(3) of the	vith the nted inc e discha ntic area further i tions of Nunavu	Surface luding; check rge to the s to minimize information Water t Waters and
L		Env. Superint	tendent	Baffin	ER nland	416-364-8820		ext. 6016
M	Shawn Stevens	POSITION Manager of H	ISES	Baffi	ER nland	ALTERNATE CONTACT		ext. 6006
			REPORT LI	INE USE O	NLY			
6.1	RECEIVED AT SPILL LINE BY	POSITION		EMPLOY	ER	LOCATION CALLED	F	REPORT LINE NUMBER
N		STATION OPERATOR				YELLOWKNIFE, NT	(867) 920-8130
LEAL	DAGENCY DEC DCCG DGNWT	GN DILA DINAK	C DNEB DTC	SIGN	IIFICANCE II MINOR	□ MAJOR □ UNKNOWN	FILE STATE	US - OPEN - CLOSED
AGE	NCY CONTI	TACT NAME		CON	TACT TIME	REMARKS	-	
LEAD	D AGENCY							
FIRS	ST SUPPORT AGENCY							
SEC	OND SUPPORT AGENCY			1				
THIR	RD SUPPORT AGENCY							

PAGE 1 OF ___

Figure 3. Baffinland NT NU spill report



Table 1. E0-20 Water Quality Results

		Sample I	D	E0-20	E0-20	
	ALS La	boratory	Sample ID	L2283557-1	L2287922-1	
Analyte	San	nple Date	& Time	2019-05-31 12:40	2019-06-07 8:35	
	Units	LOR	Limits			
рН	pH units	0.1	6.0 - 9.5	7.54	7.69	
Total Suspended Solids	mg/L	2	30	63.6	7.2	
Total Dissolved Solids	mg/L	20	-	49	24	
Turbidity	NTU	0.1	-	64.1	7.69	
Acute Toxicity	-	-	Non-lethal	Non-Lethal	-	

Spill Report Number: 19-246



July 18, 2019

Resource Management Officer Nunavut Field Operations Indigenous and Northern Affairs Canada Box 100 Iqaluit, NU X0A 0H0 Jonathan.mesher@aandc-aadnc.gc.ca Manager, Major Projects Qikiqtani Inuit Association P.O. Box 219 Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #19-246, Reported on June 18, 2019
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

During routine inspections of the Port Site, staining was observed on an area of LP7 laydown. Upon initial investigation it was observed that a release of transmission fluid was present beneath a seacan container. Following the removal of the seacan it was observed that approximately 250L of transmission oil was released onto the laydown pad, impacting an area of approximately 50m2. The source of the spill could not be verified. The contaminated material was removed, placed in quatrex bags and stored temporally in the landfarm facility until backhaul. The spill occurred >100m to the nearest water course and was confined to the immediate area.

Immediate and Follow-Up Action:

The contractor responsible for the laydown was immediately notified, the spill was inspected, and cleanup efforts were initiated. Spill sorbents were deployed and the contaminated water was pumped into totes and prepped for backhaul. The remnants of the contaminated material were removed and placed in Quatrex bags for backhaul. The laydown was remediated to its original state using clean fill material.

Recommendations:

Regular inspections of the area will continue to occur. Contractor supervisors reviewed spill reporting guidelines with their teams.

Current Status:

The laydown use continues as intended. Inspections of the area continues to ensure no further sheen or staining is observed.

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

Prepared By:

William Bowden

Environmental Superintendent

Bell Bonder

Reviewed by:

Shawn Stevens

Manager Health, Safety, Environment and Security

Attach: Photos, Map, NT-NU Spill Report

cc.Grant Goddard, Sylvain Proulx, Tim Sewell, Shawn Stevens, Connor Devereaux, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC) Chris Spencer, Jared Ottenhof (QIA).



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

A	06-18-2019			22:00 OR			-11	
В	OCCURRENCE DATE: MONTH- D Unknown	DAY - YEAR		Unkn	IOWN	TO THE ORIGINAL S	PILL REPORT	
С	IOL - Commercial L	ease: Q13C3			2AM-MRY13	MBER (IF APPLICABLE) 25 Type "A"		
D	Mary River Mine Si					NAVUT DADJACENT	JURISDICTION	OR OCEAN
E		INUTES 52	SECONDS 2	22	DEGREES 80	MINUTES	53 g	SECONDS 34
F	RESPONSIBLE PARTY OR VESSI Baffinland Iron Min		2275 Mi	ddle Ro		e 300, Oakville,	ON L6H	1 0C3
G	ANY CONTRACTOR INVOLVED N/A		N/A		OR OFFICE LOCATION			
	Transmission oil		Арргох.	. 250L	OGRAMS OR CUBIC M	N/A		
1	SECOND PRODUCT SPILLED (IF	APPLICABLE)	N/A	LITRES, KILO	OGRAMS OR CUBIC M	N/A		
ĺ	SPILL SQURCE laydown area		SPILL CAUSE Unknow	/n		50m2	TAMINATION IN	SQUARE METRES
J	FACTORS AFFECTING SPILL OR	RECOVERY	N/A	IY ASSISTAN	NGE REQUIRED	N/A	ERSONS, PRO	OPERTY OR EQUIPMENT
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Figure 2 - NT-NU Spill report



APPENDIX E.8.4

Initial and Follow-up Spill Reports

Spill Report Number: 19-279



August 09, 2019

Jonathan Mesher, Water Resource Officer Nunavut Field Operations Crown Indigenous Relations and Northern Affairs Canada Iqaluit Office Box 100 Iqaluit, NU XOA 0H0 Monika Trottier, Enforcement Officer Curtis Didham, Enforcement Officer Environment and Climate Change Canada 933 Mivvik Street Igaluit, NU XOA OHO

Re: Follow-up to Spill #19-279, Reported on July 11, 2019, Mary River Project - Water Licence No. 2AM-MRY1325

On July 10th 2019, at approximately 14:00, during an inspection of the Crusher Facility (CF) with Environment and Climate Change Canada (ECCC) it was observed that water was flowing out of the east collection ditch at the toe in two (2) separate locations. Water entering this ditch was immediately diverted to prevent entry into the east ditch, and pumped directly from the source into the CF sedimentation pond (MS-06). It was determined that the source of water on the pad was ice and water entrained in the ore stockpile that melted as the pile was reclaimed. During this period the site was experiencing dry and warm conditions which compounded melting. Initial in situ field readings of the releases demonstrated neutral pH. Prior to this event, field monitoring completed on July 8th indicated that no water was observed entering, or pooling, in the east collection ditch.

Water quality monitoring was conducted downstream of the CF sedimentation pond at the Water License sampling location MS-C-C on June 30th, July 7th, 10th and 16th. Water quality monitoring was conducted at both release locations on July 10th and 11th. CP-SEEPAGE-1 was dry during the July 11th site visit, and was not sampled. Field monitoring was conducted on July 14th and field readings were taken at CP-SEEPAGE-1. CP-SEEPAGE-2 was dry. Lab results for all parameters analyzed were compliant with applicable regulatory criteria with the exception of total suspended solids (TSS). Field personnel noted that substrate entered bottle during sample collection due to low water level.

Appendix A outlines water quality results from monitoring conducted at the release locations and the downstream Water License location. Appendix B includes the Certificates of Analyses (COAs) for these sampling events.

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

- a) Surface water at the CF sedimentation pond collection ditch.
- b) Unknown quantity
- c) The release was first observed at approximately 14:00 on July 10th, 2019. A summary is provided in Appendix A of the sampling events that occurred upon observation of the uncontrolled release which includes date, time and respective water quality results.
- d) The quantity of surface water released from the collection ditch is unknown. The two locations of the release are listed below.

ID	Location
CP-SEEPAGE-1	17W 561645 7912653
CP-SEEPAGE-2	17W 561580 7912914

- e) N/A. The release did not occur through a final discharge point.
- f) Sheardown Lake tributary is the receiving body of water. The release was contained to the adjacent tundra of the crusher pad which is over 1km from Sheardown Lake tributary, the nearest fish bearing waters.



- g) No acute lethality test was able to be taken at the time of deposit.
- h) See summary above for circumstances of deposit. Extent of release was minimal and prohibited proper water sampling procedures. As per Baffinland's Emergency Response Plan and Spill Contingency Plan a berm was immediately constructed to prevent water from entering the ditch and the water was pumped directly into the CF sedimentation pond (MS-06).
- i) The water from the pad continues to be diverted from the ditch and pumped directly into the CF sedimentation pond. Field monitoring continues at the crusher pad facility and no further releases have been observed. A third party engineering firm has been contracted to complete a field visit to determine corrective actions.

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

Prepared by:

Connor Devereaux

Environmental Superintendent

Reviewed by:

Shawn Stevens

Manager Health, Safety, Environment and Security

Attach: Photos, Map, NT-NU Spill Report, Water Quality Results, Certificates of Analyses

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Shawn Stevens, William Bowden, Francois Gaudreau, Christopher Murray, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC), Curtis Didham (ECCC).

Baffinland



Photo 1. July 8th, 2019 – Dry collection ditch.



Photo 2. July 8th, 2019 – Dry collection ditch.





Photo 3. July 10th, 2019 – CP-SEEPAGE-1 sample location.



Photo 4. July 10th, 2019 – CP-SEEPAGE-2 sample location.



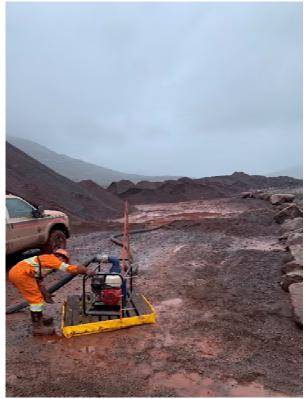


Photo 5. July 10th, 2019 – Pump set up to bypass ditch.

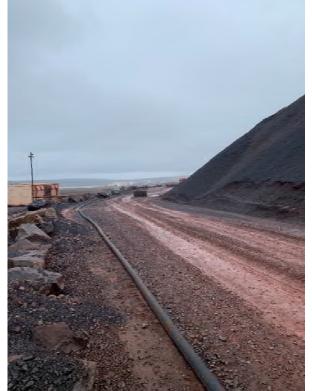


Photo 6. July 10th, 2019 – Pump set up to bypass ditch.





Photo 7. July 11th, 2019 – Dry collection ditch.



Photo 8. July 11th, 2019 – Dry collection ditch.





Photo 9. July 11th, 2019 - CP-SEEPAGE-1 sample location.



Photo 10. July 11th, 2019 - CP-SEEPAGE-2 sample location.





Photo 11. July 11th, 2019 – Collection Ditch.





Figure 1 – Overview map of spill location







NT-NU SPILL REPORT

NT-NU 24-HOUR SPILL REPORT LINE TEL: (867) 920-8130 FAX: (867) 873-6924

EMAIL: spills@gov.nt.ca

									REPORT LINE USE ONL
Α	07-11-2019			18:00)	OR OR	XORIGINAL SPILL REPORT.		REPORT NUMBER
В	OCCURRENCE DATE MONTH - 07-10-2019			14:00	ENCE TIME	101	PDATE# THE ORIGINAL SPI	LLBEPORT	19 - 279
С	IOL - Commercial		01		2AM-MRY13				
D	GEOGRAPHIC PLACE NAME OF Mary River Mine S			LOCATION	REGION	UNAVUT	□ ADJACENT JU	IRISDICTION	OR OCEAN
Е	to make a market	MINUTES 18	SECONDS 3	30	DEGREES 79		MINUTES 16	s s	ECONUS 35
F	Baffinland Iron Mi		2275 Mi	iddle Ro	DRESS ON OFFICE L Dad East, Sui	ite 300	, Oakville, (ои ген	0C3
G	14171		N/A		OR OFFICE LOCATIO				
	PRODUCT SPILLED Surface Water		Unknov		OGRAMS OR CUBIC I	METRES	UN NUMBER		
Н	SECOND PRODUCT SPILLED (II	F APPLICABLE)	N/A	LITRES KIL	OGRAMS OR CUBIC	METRES	U.N. NUMBER		
1	SPILI SOURCE Crusher Pad		SPILL CAUSE Seepage		gh ditch		AREA OF CONTAIN	MINATION IN	SQUARE METRES
J	PACIDRS AFFECTING SPILL OF Drainage to tundra		N/A	NY ASSISTAN	NCE REQUIRED		N/A	RSONS, PRO	PERTY OR EQUIPMENT
K	stockpile that melt warm conditions with applicable wa observed entering 1km from Sheardo of release. Water of	which compou iter license cri i, or pooling, it own Lake tribu	inded meltin iteria. During n the east co itary, the nea	ng. Initia g field n ollection arest fis	Il field readin nonitoring co n ditch. The i sh bearing wa	ngs of tomplete incider raters a	the releases ed on July nt occurred and did not	s were o 8th no v on IOL migrate	compliant water was located > from vicinity
ľ	REPORTED TO SPILL LINE BY	POSITION	3	EMPLOYI	ER	1.00	CATION CALLING F	HOM I	IELEPHONE
1.1	ANY ALTERNATE CONTACT	POSITION	-00000	EMPLOYI		ALT	16-364-8820 ERNATE CONTACT	/	ext. 6016
M	Shawn Stevens	Manager o			nland	LOC	16-364-8820		ext. 6006
÷	RECEIVED AT SPILL LINE BY	POSITION	REPORT L	JNE USE ON		liox	CATION CALLED	T I	REPORT LINE NUMBER
N	ACCEIVED AT SPILE LINE BY	STATION OPERATO	OR .	Chill Coll	(4.7)		LOWKNIFE, NI		867) 920-8130
LEAG	DAGENCY DEC DCCG DG	IWT DGN DILA D	INAC DINEB DIC	SIGN	IFIGANCE D MINOR	□ MAJOR	DINKNOWN	FILE STATE	US OPEN OCLOSED
AGE	NCY G	CONTACT NAME		CON	TACT TIME		REMARKS		
LEA	O AGENCY								
FIRS	ST SUPPORT AGENCY								
SEC	OND SUPPORT AGENCY								
THIE	ED SUPPORT AGENCY								

PAGE 1 OF 1

Figure 2 – NT-NU Spill report

Appendix A Water Quality Results Summary



Table 1 - Summary of Analytical Results Crusher Facility Seepage, Mary River Project

	Α	LS Laboratory Sample	e ID	MS-C-C	MS-C-C	CP-SEEPAGE-1 ²	CP-SEEPAGE-2 2	MS-C-C	CP-SEEPAGE-2	MS-C-C
		ALS ID		L2303454-6	L2305271-9	L2307800-2	L2307800-1	L2307800-4	L2308650-4	L2311077-14
		Sample Date & Time	9	6/30/2019 1:55:00 PM	7/7/2019 12:30:00 PM	7/10/2019 3:55:00 PM	7/10/2019 3:10:00 PM	7/10/2019 4:25:00 PM	7/11/2019 3:10:00 PM	7/16/2019 1:55:00 PM
		QA/QC Sample Type	9	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	MDMER Grab Sample Limits							
рН	pH units	0.1	6.0-9.5	7.48	7.71	6.94	7.32	7.63	7.27	7.88
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	481.00	99.40	<2.0	6	<2.0
Total Dissolved Solids	mg/L	20	-	1400	1180	6960	4360	1290	4320	909
Turbidity	NTU	0.1	-	0.4	0.3	51.2	31.6	1.04	14.6	0.58

Notes:

¹Metal and Diamond Mining Effluent Regulations - Schedule 4

²Field personnel indicated substrate entered bottle during sample collection due to low water level

Appendix B Certificates of Analyses



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 04-JUL-19

Report Date: 05-JUL-19 10:58 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2303454 Project P.O. #: 4500057496

Job Reference: MS SNP MONITORING

C of C Numbers: Legal Site Desc:

Olich Hawthorns

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



L2303454 CONTD....

PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2303454-1 MQ-C-D Sampled By: BR/JK on 30-JUN-19 @ 10:25 Matrix: WATER							
Physical Tests							
pH	7.91		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	6.4		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	167		20	mg/L		04-JUL-19	R4694209
Turbidity	14.5		0.10	NTU		04-JUL-19	R4693286
L2303454-2 MQ-C-D03 Sampled By: BR/JK on 30-JUN-19 @ 10:25 Matrix: WATER							
Physical Tests							
pH	5.28		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	<20		20	mg/L		04-JUL-19	R4694209
Turbidity	<0.10		0.10	NTU		04-JUL-19	R4693286
L2303454-3 MQ-C-B Sampled By: BR/JK on 30-JUN-19 @ 11:10 Matrix: WATER							
Physical Tests							
pH	8.06		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	4.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	415		20	mg/L		04-JUL-19	R4694209
Turbidity	6.43		0.10	NTU		04-JUL-19	R4693286
L2303454-4 MS-C-E Sampled By: BR/JK on 30-JUN-19 @ 13:25 Matrix: WATER							
Physical Tests							
pH	8.08		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	851		20	mg/L		04-JUL-19	R4694209
Turbidity	0.73		0.10	NTU		04-JUL-19	R4693286
L2303454-5 MS-C-D Sampled By: BR/JK on 30-JUN-19 @ 13:45 Matrix: WATER							
Physical Tests							
pH	8.39		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	1040		20	mg/L		04-JUL-19	R4694209
Turbidity	2.59		0.10	NTU		04-JUL-19	R4693286
L2303454-6 MS-C-C Sampled By: BR/JK on 30-JUN-19 @ 13:55 Matrix: WATER							
Physical Tests							
рН	7.48		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	1400		20	mg/L	I	04-JUL-19	R4694209

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

L2303454 CONTD.... PAGE 3 of 5

Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2303454-6 MS-C-C Sampled By: BR/JK on 30-JUN-19 @ 13:55 Matrix: WATER							
Physical Tests							
Turbidity	0.39		0.10	NTU		04-JUL-19	R4693286
L2303454-7 MS-MRY-13B Sampled By: BR/JK on 30-JUN-19 @ 14:55 Matrix: WATER							
Physical Tests							
рН	8.38		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	2.4		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	351		20	mg/L		04-JUL-19	R4694209
Turbidity	0.67		0.10	NTU		04-JUL-19	R4693286
L2303454-8 MS-MRY-13A Sampled By: BR/JK on 30-JUN-19 @ 15:15 Matrix: WATER							
Physical Tests							
рН	8.14		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	206		20	mg/L		04-JUL-19	R4694209
Turbidity	0.55		0.10	NTU		04-JUL-19	R4693286
L2303454-9 MS-C-A Sampled By: BR/JK on 30-JUN-19 @ 16:25 Matrix: WATER							
Physical Tests							
рН	7.86		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	89		20	mg/L		04-JUL-19	R4694209
Turbidity	0.74		0.10	NTU		04-JUL-19	R4693286
L2303454-10 MS-C-A01 Sampled By: BR/JK on 30-JUN-19 @ 16:25 Matrix: WATER							
Physical Tests							
рН	7.86		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	73		20	mg/L		04-JUL-19	R4694209
Turbidity	0.75		0.10	NTU		04-JUL-19	R4693286
L2303454-11 MS-C-B Sampled By: BR/JK on 30-JUN-19 @ 17:00 Matrix: WATER							
Physical Tests							
рН	7.77		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	81		20	mg/L		04-JUL-19	R4694209
Turbidity	0.91		0.10	NTU		04-JUL-19	R4693286
L2303454-12 MS-C-F Sampled By: BR/JK on 30-JUN-19 @ 17:25 Matrix: WATER							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2303454-12 MS-C-F Sampled By: BR/JK on 30-JUN-19 @ 17:25 Matrix: WATER							
Physical Tests							
рН	8.03		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	74		20	mg/L		04-JUL-19	R4694209
Turbidity	3.62		0.10	NTU		04-JUL-19	R4693286
L2303454-13 MS-MRY-09 Sampled By: BR/JK on 01-JUL-19 @ 10:30 WATER							
Physical Tests							
рН	7.78		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	21		20	mg/L		04-JUL-19	R4694209
Turbidity	1.23		0.10	NTU		04-JUL-19	R4693286
L2303454-14 MS-D1-02 Sampled By: BR/JK on 01-JUL-19 @ 11:00 WATER							
Physical Tests							
рН	8.09		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	<20		20	mg/L		04-JUL-19	R4694209
Turbidity	1.02		0.10	NTU		04-JUL-19	R4693286
L2303454-15 MS-C-H Sampled By: BR/JK on 01-JUL-19 @ 11:30 WATER							
Physical Tests							
pH	7.81		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	119		20	mg/L		04-JUL-19	R4694209
Turbidity	0.42		0.10	NTU		04-JUL-19	R4693286
L2303454-16 MS-C-G Sampled By: BR/JK on 01-JUL-19 @ 15:15 Matrix: WATER							
Physical Tests							
рН	7.60		0.10	pH units		04-JUL-19	R4693283
Total Suspended Solids	<2.0		2.0	mg/L		04-JUL-19	R4694193
Total Dissolved Solids	96		20	mg/L		04-JUL-19	R4694209
Turbidity	0.15		0.10	NTU		04-JUL-19	R4693286

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

MS SNP MONITORING

Reference Information

APHA 4500 H-Electrode

L2303454 CONTD.... PAGE 5 of 5 Version: FINAL

Test Method References:

PH-BF

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

Water 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 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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2303454

Report Date: 05-JUL-19

Page 1 of 3

Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-BF Batch R4693283	Water							
WG3095103-2 DUP pH		L2303454-1 7.91	7.89	J	pH units	0.02	0.2	04-JUL-19
WG3095103-1 LCS pH			7.01		pH units		6.9-7.1	04-JUL-19
SOLIDS-TDS-BF	Water							
Batch R4694209								
WG3095086-3 DUP Total Dissolved Solids		L2303454-1 167	159		mg/L	5.3	20	04-JUL-19
WG3095086-2 LCS Total Dissolved Solids			105.6		%		85-115	04-JUL-19
WG3095086-1 MB Total Dissolved Solids			<20		mg/L		20	04-JUL-19
SOLIDS-TSS-BF	Water							
Batch R4694193								
WG3095085-3 DUP Total Suspended Solids		L2303454-1 6.4	5.2		mg/L	21	25	04-JUL-19
WG3095085-2 LCS Total Suspended Solids			102.0		%		85-115	04-JUL-19
WG3095085-1 MB Total Suspended Solids			<2.0		mg/L		2	04-JUL-19
TURBIDITY-BF	Water							
Batch R4693286								
WG3095105-3 DUP Turbidity		L2303454-1 14.5	14.4		NTU	0.7	15	04-JUL-19
WG3095105-2 LCS Turbidity			105		%		85-115	04-JUL-19
WG3095105-1 MB Turbidity			<0.10		NTU		0.1	04-JUL-19

Workorder: L2303454 Report Date: 05-JUL-19

Baffinland Iron Mine's Corporation (Oakville) Client:

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

ALS Control Limit (Data Quality Objectives) Limit 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

Average Desorption Efficiency ADE

MB Method Blank

Internal Reference Material IRM CRM Certified Reference Material Continuing Calibration Verification CCV 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.

Page 2 of 3

Workorder: L2303454 Report Date: 05-JUL-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifie
Physical Tests							
Turbidity							
	1	30-JUN-19 10:25	04-JUL-19 03:00	48	89	hours	EHTR
	2	30-JUN-19 10:25	04-JUL-19 03:00	48	89	hours	EHTR
	3	30-JUN-19 11:10	04-JUL-19 03:00	48	88	hours	EHTR
	4	30-JUN-19 13:25	04-JUL-19 03:00	48	86	hours	EHTR
	5	30-JUN-19 13:45	04-JUL-19 03:00	48	85	hours	EHTR
	6	30-JUN-19 13:55	04-JUL-19 03:00	48	85	hours	EHTR
	7	30-JUN-19 14:55	04-JUL-19 03:00	48	84	hours	EHTR
	8	30-JUN-19 15:15	04-JUL-19 03:00	48	84	hours	EHTR
	9	30-JUN-19 16:25	04-JUL-19 03:00	48	83	hours	EHTR
	10	30-JUN-19 16:25	04-JUL-19 03:00	48	83	hours	EHTR
	11	30-JUN-19 17:00	04-JUL-19 03:00	48	82	hours	EHTR
	12	30-JUN-19 17:25	04-JUL-19 03:00	48	82	hours	EHTR
	13	01-JUL-19 10:30	04-JUL-19 03:00	48	65	hours	EHTR
	14	01-JUL-19 11:00	04-JUL-19 03:00	48	64	hours	EHTR
	15	01-JUL-19 11:30	04-JUL-19 03:00	48	64	hours	EHTR
	16	01-JUL-19 15:15	04-JUL-19 03:00	48	60	hours	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 L2303454 were received on 04-JUL-19 01:59.

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

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

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

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Environmental

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical

COC Number: 15 -

www.alsglobal.com Report Format / Distribution Report To Contact and company name below will appear on the final report sse confirm all E&P TATs with your AM - surcharges will apply Baffinland Iron Mines Corp. Select Report Format: PDF EXCEL EDD (DIGITAL) Company: Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply Wiliam Bowden and Connor Devereaux 1 Business day [E1] Contact: 4 day [P4] \Box 647-253-0596 EXT 6016 Phone: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3] Same Day, Weekend or \Box ✓ EMAIL ☐ MAIL ☐ FAX Company address below will appear on the final report Select Distribution: 2 day [P2] Statutory holiday [E0] 2275 Upper Middle Rd. E., Suite #300 Email 1 or Fax bimcore@alsglobal.com Date and Time Required for all E&P TATs: Street: Oakville, ON Email 2 City/Province: bimww@alsglobal.com For tests that can not be performed according to the service level selected, you will be contacted. L6H 0C3 Analysis Request Postal Code: Email 3 ✓ YES □ NO Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice To Same as Report To ☐ YES ☑ NO Select Invoice Distribution: 🗵 EMAIL 🔲 MAIL Copy of Invoice with Report ☐ FAX Email 1 or Fax ap@baffinland.com Company: Contact: Email 2 commercial@baffinland.com Containers **Project Information** Oil and Gas Required Fields (client use) ALS Account # / Quote #: 23642 /Q42455 PO# AFE/Cost Center: Job #: MS SNP Monitoring Major/Minor Code: Routing Code: ₽ PO / AFE: 4500057496 Requisitioner: Number SD: Location ŪŠ, ALS Lab Work Order # (lab use only) L2303454 ALS Contact: Sampler: BR/JK TSS, Sample Identification and/or Coordinates Date Time ALS Sample # Sample Type (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) MQ-C-D 30-Jun-19 10:25 Water R 2 MQ-C-D03 10:25 2 30-Jun-19 R Water МО-С-В 30-Jun-19 11:10 R 2 Water MS-C-E 30-Jun-19 13:25 R Water 2 MS-C-D 30-Jun-19 13:45 R 2 Water MS-C-C 30-Jun-19 13:55 Water R 2 MS-MRY-13B 14:55 30-Jun-19 Water R 2 MS-MRY-13A 30-Jun-19 15:15 Water R 2 MS-C-A 30-Jun-19 16:25 R 2 Water MS-C-A01 30-Jun-19 16:25 R 2 Water MS-C-B 30-Jun-19 17:00 2 Water R SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples (client use) (electronic COC only) SIF Observations No Frozen Are samples taken from a Regulated DW System? П Ice Packs П ☐ YES ☑ NO Cooling Initiated П Are samples for human drinking water use? INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C TYES INO SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) Released by: Stephanie Sawchuk Release Date: 02-Jul-19 Time: Received by: J.STREETER Time:6:30PM Received by: Date: Time: Date: JULY 3/19 21:00



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2303454-COFC

COC Number: 15 -

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

EMAIL ☐ MAIL ☐ FAX Email 1 or Fax ap@baffinland.com Company: Contact: Email 2 commercial@baffinland.com Containers **Project Information** Oil and Gas Required Fields (client use) ALS Account # / Quote #: 23642 /Q42455 PO# AFE/Cost Center MS SNP Monitoring Job #: Major/Minor Code: Routing Code: Ď 4500057496 PO / AFE: Requisitioner: SD. Location: TDS, ALS Lab Work Order # (lab use only) ALS Contact: Sampler: BR/JK rss, Sample Identification and/or Coordinates ALS Sample # Date Time Sample Type (lab use only) 표 (This description will appear on the report) (dd-mmm-yy) (hh:mm) MS-C-F 30-Jun-19 17:25 R 2 Water MS-MRY-09 1-Jul-19 10:30 2 Water R MS-D1-02 1-Jul-19 11:00 R 2 Water IMS-C-H 1-Jul-19 11:30 Water R 2 MS-C-G 1-Jul-19 15:15 Water R 2 SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples¹ (client use) (electronic COC only) SIF Observations Yes Frozen Are samples taken from a Regulated DW System? Ice Packs ☐ YES ☑ NO Cooling Initiated П Are samples for human drinking water use? INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C ☐ YES ☑ NO SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) Released by: Release Date: Time: Received by: Date: Date: Time: Received by: Time:



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 07-JUL-19

Report Date: 16-JUL-19 13:58 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2305271
Project P.O. #: 4500057496

Job Reference: MS SNP MONITORING

C of C Numbers: Legal Site Desc:

Rick Hawthorne

Account Manager

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

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

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L2305271 CONTD.... PAGE 2 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2305271-1 MS-MRY-9 Sampled By: VP/SP/BC on 07-JUL-19 @ 08:35 Matrix: WATER							
Physical Tests							
Hardness (as CaCO3)	42.5		0.50	mg/L		11-JUL-19	
pH	7.81		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	59		20	mg/L		12-JUL-19	R4709351
Turbidity	0.79		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	47		10	mg/L		11-JUL-19	R4709474
Ammonia, Total (as N)	<0.010		0.010	mg/L		12-JUL-19	R4709000
Chloride (CI)	0.56		0.50	mg/L		10-JUL-19	R4707156
Fluoride (F)	<0.020		0.020	mg/L		10-JUL-19	R4707156
Nitrate (as N)	0.116		0.020	mg/L		10-JUL-19	R4707156
Total Kjeldahl Nitrogen	<0.15		0.15	mg/L	11-JUL-19	12-JUL-19	R4709135
Phosphorus, Total	0.0033		0.0030	mg/L	10-JUL-19	11-JUL-19	R4707849
Sulfate (SO4)	2.31		0.30	mg/L		10-JUL-19	R4707156
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					09-JUL-19	R4700868
Dissolved Organic Carbon	2.04		0.50	mg/L	09-JUL-19	10-JUL-19	R4703168
Total Organic Carbon	2.44		0.50	mg/L		10-JUL-19	R4703169
Total Metals							
Aluminum (Al)-Total	0.0213		0.0050	mg/L	10-JUL-19	10-JUL-19	R4703429
Arsenic (As)-Total	<0.00010		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429
Cadmium (Cd)-Total	<0.000050		0.0000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Calcium (Ca)-Total	9.00		0.50	mg/L	10-JUL-19	10-JUL-19	R4703429
Copper (Cu)-Total	0.0023		0.0010	mg/L	10-JUL-19	10-JUL-19	R4703429
Iron (Fe)-Total	<0.050		0.050	mg/L	10-JUL-19	10-JUL-19	R4703429
Lead (Pb)-Total	<0.000050		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Magnesium (Mg)-Total	5.60		0.050	mg/L	10-JUL-19	10-JUL-19	R4703429
Manganese (Mn)-Total	0.00077		0.00050	mg/L	10-JUL-19	10-JUL-19	R4703429
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		10-JUL-19	R4703589
Molybdenum (Mo)-Total	0.000659		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	10-JUL-19	10-JUL-19	R4703429
Potassium (K)-Total	1.59		0.050	mg/L	10-JUL-19	10-JUL-19	R4703429
Selenium (Se)-Total	<0.000050		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Sodium (Na)-Total	0.401		0.050	mg/L	10-JUL-19	10-JUL-19	R4703429
Thallium (TI)-Total	0.000015		0.000010	mg/L	10-JUL-19	10-JUL-19	R4703429
Uranium (U)-Total	0.00100		0.000010	mg/L	10-JUL-19	10-JUL-19	R4703429
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	10-JUL-19	10-JUL-19	R4703429
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					10-JUL-19	R4702349
Dissolved Metals Filtration Location	FIELD					10-JUL-19	R4702046
Aluminum (Al)-Dissolved	0.0090		0.0050	mg/L	10-JUL-19	10-JUL-19	R4706329
Arsenic (As)-Dissolved	<0.00010		0.00010	mg/L	10-JUL-19	10-JUL-19	R4706329

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

L2305271 CONTD.... PAGE 3 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2305271-1 MS-MRY-9 Sampled By: VP/SP/BC on 07-JUL-19 @ 08:35 Matrix: WATER							
Dissolved Metals							
Cadmium (Cd)-Dissolved	<0.000010		0.000010	mg/L	10-JUL-19	10-JUL-19	R4706329
Calcium (Ca)-Dissolved	8.21		0.050	mg/L	10-JUL-19	10-JUL-19	R4706329
Copper (Cu)-Dissolved	0.00212		0.00020	mg/L	10-JUL-19	10-JUL-19	R4706329
Iron (Fe)-Dissolved	<0.010		0.010	mg/L	10-JUL-19	10-JUL-19	R4706329
Lead (Pb)-Dissolved	<0.000050		0.000050	mg/L	10-JUL-19	10-JUL-19	R4706329
Magnesium (Mg)-Dissolved	5.34		0.050	mg/L	10-JUL-19	10-JUL-19	R4706329
Manganese (Mn)-Dissolved	<0.00050		0.00050	mg/L	10-JUL-19	10-JUL-19	R4706329
Mercury (Hg)-Dissolved	<0.000010		0.000010	mg/L	10-JUL-19	10-JUL-19	R4703592
Molybdenum (Mo)-Dissolved	0.000585		0.000050	mg/L	10-JUL-19	10-JUL-19	R4706329
Nickel (Ni)-Dissolved	<0.00050		0.00050	mg/L	10-JUL-19	10-JUL-19	R4706329
Potassium (K)-Dissolved	1.57		0.050	mg/L	10-JUL-19	10-JUL-19	R4706329
Selenium (Se)-Dissolved	<0.000050		0.000050	mg/L	10-JUL-19	10-JUL-19	R4706329
Sodium (Na)-Dissolved	<0.50		0.50	mg/L	10-JUL-19	10-JUL-19	R4706329
Thallium (TI)-Dissolved	0.000011		0.000010	mg/L	10-JUL-19	10-JUL-19	R4706329
Uranium (U)-Dissolved	0.000909		0.000010	mg/L	10-JUL-19	10-JUL-19	R4706329
Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	10-JUL-19	10-JUL-19	R4706329
L2305271-2 MS-C-F Sampled By: VP/SP/BC on 07-JUL-19 @ 08:35 Matrix: WATER							
Physical Tests							
Conductivity	193		3.0	umhos/cm		11-JUL-19	R4709474
рН	8.10		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	120		20	mg/L		12-JUL-19	R4709351
Turbidity	3.00		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L			R4709000
Nitrate (as N) Aggregate Organics	0.132		0.020	mg/L		10-JUL-19	R4707156
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708742
L2305271-3 MS-C-F01 Sampled By: VP/SP/BC on 07-JUL-19 @ 08:35 Matrix: WATER	\$2.0		2.0	Tilg/L	11 002 13	11 302 13	114700742
Physical Tests							
Conductivity	192		3.0	umhos/cm		11-JUL-19	R4709474
рН	8.10		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	110		20	mg/L		12-JUL-19	R4709351
Turbidity	3.26		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	0.012		0.010	mg/L		12-JUL-19	R4709000
Nitrate (as N) Aggregate Organics	0.135		0.020	mg/L		10-JUL-19	R4707156

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

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2305271-3 MS-C-F01 Sampled By: VP/SP/BC on 07-JUL-19 @ 08:35 Matrix: WATER							
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708742
L2305271-4 MS-C-G Sampled By: VP/SP/BC on 07-JUL-19 @ 09:10 Matrix: WATER							
Physical Tests							
Conductivity	207		3.0	umhos/cm		11-JUL-19	R4709474
рН	7.58		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4701308
Total Dissolved Solids	124		2.0	mg/L		12-JUL-19	R4709351
Turbidity	0.16		0.10	NTU		09-JUL-19	R4709351
Anions and Nutrients	0.16		0.10	INTO		09-JUL-19	K4701590
Ammonia, Total (as N)	<0.010		0.010	mg/L		12-JUL-19	R4709000
Nitrate (as N)	2.47		0.010	mg/L		10-JUL-19	R4707156
Aggregate Organics	2.47		0.020	IIIg/L		10-301-19	K4707136
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708742
L2305271-5 MS-C-H Sampled By: VP/SP/BC on 07-JUL-19 @ 09:40 Matrix: WATER	12.0						
Physical Tests							
Conductivity	241		3.0	umhos/cm		11-JUL-19	R4709474
Hq	7.80		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	135		20	mg/L		12-JUL-19	R4709351
Turbidity	0.38		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		12-JUL-19	R4709000
Nitrate (as N)	0.053		0.020	mg/L		10-JUL-19	R4707156
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708742
L2305271-6 MQ-C-B Sampled By: VP/SP/BC on 07-JUL-19 @ 09:45 Matrix: WATER							
Physical Tests							
Conductivity	927		3.0	umhos/cm		11-JUL-19	R4709474
рН	7.92		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	547		20	mg/L		12-JUL-19	R4709351
Turbidity	3.51		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	3.9	DLHC	1.0	mg/L		15-JUL-19	R4712011
Nitrate (as N)	29.3	DLDS	0.040	mg/L		10-JUL-19	R4707156
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708001

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

L2305271 CONTD.... PAGE 5 of 11 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2305271-7 MS-MRY-13B Sampled By: VP/SP/BC on 07-JUL-19 @ 10:35 Matrix: WATER							
Physical Tests							
Conductivity	725		3.0	umhos/cm		11-JUL-19	R4709476
pH	8.23		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	402		20	mg/L		12-JUL-19	R4709351
Turbidity	0.48		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	155		10	mg/L		11-JUL-19	R4709476
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					09-JUL-19	R4700868
Dissolved Organic Carbon	5.98		0.50	mg/L	09-JUL-19	10-JUL-19	R4703168
Total Organic Carbon	6.64		0.50	mg/L		10-JUL-19	R4703169
Total Metals							
Aluminum (Al)-Total	0.0216		0.0050	mg/L	10-JUL-19	10-JUL-19	R4703429
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429
Arsenic (As)-Total	0.00016		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429
Barium (Ba)-Total	0.0510		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Boron (B)-Total	0.088		0.010	mg/L	10-JUL-19	10-JUL-19	R4703429
Cadmium (Cd)-Total	0.0000080		0.0000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Calcium (Ca)-Total	71.3		0.050	mg/L	10-JUL-19	10-JUL-19	R4703429
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	10-JUL-19	10-JUL-19	R4703429
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429
Copper (Cu)-Total	0.0016		0.0010	mg/L	10-JUL-19	10-JUL-19	R4703429
Iron (Fe)-Total	0.048		0.010	mg/L	10-JUL-19	10-JUL-19	R4703429
Lead (Pb)-Total	<0.000050		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Lithium (Li)-Total	0.0190		0.0010	mg/L	10-JUL-19	10-JUL-19	R4703429
Magnesium (Mg)-Total	35.5		0.0050	mg/L	10-JUL-19	10-JUL-19	R4703429
Manganese (Mn)-Total	0.00137		0.00050	mg/L	10-JUL-19	10-JUL-19	R4703429
Mercury (Hg)-Total	<0.000010		0.000010	mg/L		10-JUL-19	R4703589
Molybdenum (Mo)-Total	0.000287		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Nickel (Ni)-Total	0.00898		0.00050	mg/L	10-JUL-19	10-JUL-19	R4703429
Potassium (K)-Total	1.99		0.050	mg/L	10-JUL-19	10-JUL-19	R4703429
Selenium (Se)-Total	0.000086		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Silicon (Si)-Total	4.76		0.10	mg/L	10-JUL-19	10-JUL-19	R4703429
Silver (Ag)-Total	<0.000050		0.000050	mg/L	10-JUL-19	10-JUL-19	R4703429
Sodium (Na)-Total	14.5		0.050	mg/L	10-JUL-19	10-JUL-19	R4703429
Strontium (Sr)-Total	0.0786		0.0010	mg/L	10-JUL-19	10-JUL-19	R4703429
Thallium (TI)-Total	0.000015		0.000010	mg/L	10-JUL-19	10-JUL-19	R4703429
Tin (Sn)-Total	<0.00010		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429
Titanium (Ti)-Total	0.00096		0.00030	mg/L	10-JUL-19	10-JUL-19	R4703429
Tungsten (W)-Total	<0.00010		0.00010	mg/L	10-JUL-19	10-JUL-19	R4703429

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2305271-7 MS-MRY-13B Sampled By: VP/SP/BC on 07-JUL-19 @ 10:35 Matrix: WATER							
Total Metals							
Uranium (U)-Total	0.00192		0.000010	mg/L	10-JUL-19	10-JUL-19	R4703429
Vanadium (V)-Total	<0.00050		0.00050	mg/L	10-JUL-19	10-JUL-19	R4703429
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	10-JUL-19	10-JUL-19	R4703429
Zirconium (Zr)-Total	<0.00030		0.00030	mg/L	10-JUL-19	10-JUL-19	R4703429
Aggregate Organics	VO.00030		0.00030	IIIg/L	10 002 10	10 002 10	114700425
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708001
Phenols (4AAP)	0.0017		0.0010	mg/L		12-JUL-19	R4708458
Hydrocarbons	0.001.		0.00.0				
F1 (C6-C10)	<100		100	ug/L		16-JUL-19	R4712645
F2 (C10-C16)	<100		100	ug/L	09-JUL-19	10-JUL-19	R4705753
F3 (C16-C34)	<250		250	ug/L	09-JUL-19	10-JUL-19	R4705753
F4 (C34-C50)	<250		250	ug/L	09-JUL-19	10-JUL-19	R4705753
Total Hydrocarbons (C6-C50)	<380		380	ug/L	00 002 10	16-JUL-19	
Chrom. to baseline at nC50	YES		000	~9/ -	09-JUL-19	10-JUL-19	R4705753
Surrogate: 2-Bromobenzotrifluoride	89.4		60-140	%	09-JUL-19	10-JUL-19	R4705753
Surrogate: 3,4-Dichlorotoluene	91.2		60-140	%	00 002 10	16-JUL-19	R4712645
L2305271-8 MS-C-D Sampled By: VP/SP/BC on 07-JUL-19 @ 12:15 Matrix: WATER							
Physical Tests							
Conductivity	1460		3.0	umhos/cm		11-JUL-19	R4709476
рН	8.32		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	1120		20	mg/L		12-JUL-19	R4709351
Turbidity	2.87		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	0.020		0.010	mg/L		15-JUL-19	R4712011
Nitrate (as N)	11.4	DLDS	0.040	mg/L		10-JUL-19	R4707156
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708001
L2305271-9 MS-C-C Sampled By: VP/SP/BC on 07-JUL-19 @ 12:30 Matrix: WATER							
Physical Tests							
Conductivity	1530		3.0	umhos/cm		11-JUL-19	R4709476
pH	7.71		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	1180		20	mg/L		12-JUL-19	R4709351
Turbidity	0.32		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients	3.02		3.10				
Ammonia, Total (as N)	<0.010		0.010	mg/L		15-JUL-19	R4712011
Nitrate (as N)	11.8	DLDS	0.10	mg/L		10-JUL-19	R4707156
Aggregate Organics			-] 3			

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2305271-9 MS-C-C Sampled By: VP/SP/BC on 07-JUL-19 @ 12:30 Matrix: WATER							
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708001
L2305271-10 MS-C-A Sampled By: VP/SP/BC on 07-JUL-19 @ 10:40 Matrix: WATER							
Physical Tests							
Conductivity	173		3.0	umhos/cm		11-JUL-19	R4709476
pH	7.87		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	113		20	mg/L		12-JUL-19	R4709351
Turbidity	0.49		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		12-JUL-19	R4709000
Nitrate (as N)	0.149		0.020	mg/L		10-JUL-19	R4707156
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708001
L2305271-11 MS-C-B Sampled By: VP/SP/BC on 07-JUL-19 @ 11:10 Matrix: WATER							
Physical Tests							
Conductivity	179		3.0	umhos/cm		11-JUL-19	R4709476
рН	7.74		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	115		20	mg/L		12-JUL-19	R4709351
Turbidity Anions and Nutrients	0.56		0.10	NTU		09-JUL-19	R4701590
Ammonia, Total (as N)	<0.010		0.010	mg/L		12-JUL-19	R4709000
Nitrate (as N)	0.178		0.020	mg/L		10-JUL-19	R4707156
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708001
L2305271-12 MS-C-E Sampled By: VP/SP/BC on 07-JUL-19 @ 11:50 Matrix: WATER							
Physical Tests							
Conductivity	1350		3.0	umhos/cm		11-JUL-19	R4709476
рН	8.01		0.10	pH units		09-JUL-19	R4701568
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4708384
Total Dissolved Solids	1020		20	mg/L		12-JUL-19	R4709351
Turbidity	0.68		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		12-JUL-19	R4709000
Nitrate (as N)	7.31	DLDS	0.040	mg/L		10-JUL-19	R4707156
Aggregate Organics							

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2305271-13 MS-C-E03							
Sampled By: VP/SP/BC on 07-JUL-19 @ 11:50 Matrix: WATER							
Matrix: WATER Physical Tests							
Conductivity	<3.0		3.0	umhos/cm		11-JUL-19	R4709476
pH	5.83		0.10	pH units			R4701568
Total Suspended Solids	<2.0		2.0	mg/L			R4708384
Total Dissolved Solids	<20		20	mg/L		12-JUL-19	R4709351
Turbidity	<0.10		0.10	NTU		09-JUL-19	R4701590
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L			R4709000
Nitrate (as N) Aggregate Organics	<0.020		0.020	mg/L		10-JUL-19	R4707156
Oil and Grease, Total	<2.0		2.0	mg/L	11-JUL-19	11-JUL-19	R4708001

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

MS SNP MONITORING

Reference Information

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QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2305271-1	
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2305271-1	
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2305271-1	
Matrix Spike	Calcium (Ca)-Total	MS-B	L2305271-1, -7	
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2305271-1, -7	
Matrix Spike	Silicon (Si)-Total	MS-B	L2305271-1, -7	
Matrix Spike	Uranium (U)-Total	MS-B	L2305271-1, -7	

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).
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**

ALK-WT Water Alkalinity, Total (as CaCO3) EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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 APHA 2510

Only)

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.

F1-F4-CALC-WT Water CCME Total Hydrocarbons CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-WT Water F1 (O.Reg.153/04) E3421/CCME (HS) Fraction F1 is determined by analyzing by headspace-GC/FID.

F2-F4 (O.Reg.153/04)

Reference Information

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F2-F4-WT Water

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

HARDNESS-CALC-WT Water Hardness APHA 2340 B

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 Dissolved Mercury in Water by EPA 1631E (mod) Water

CVAAS

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)

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 APHA 3030B/6020A (mod)

ICPMS

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 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.

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

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

OGG-TOT-WT Water Oil and Grease, Total APHA 5520 B

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to

determine Oil and Grease.

P-T-COL-WT 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 deteremined colourimetrically

after persulphate digestion of the sample.

APHA 4500 H-Electrode Water Hq

Water samples are analyzed directly by a calibrated pH meter.

PHENOLS-4AAP-WT Water Phenol (4AAP) FPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a

red complex which is measured colorimetrically.

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

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

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

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.

Total Kjeldahl Nitrogen APHA 4500-Norg D Water

This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total Kjeldahl Nitrogen is determined by

TURBIDITY-BF

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Reference Information

sample digestion at 380 Celsius with analysis using an automated colorimetric method.

TOC-WT Water **Total Organic Carbon APHA 5310B**

Turbidity

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.

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.

APHA 2130 B

** 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

Water

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

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2305271 Report Date: 16-JUL-19

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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	Water							
Batch R4709474 WG3101990-4 DUP Alkalinity, Total (as Cad		WG3101990-3 106	106		mg/L	0.2	20	11-JUL-19
WG3101990-2 LCS Alkalinity, Total (as Ca	CO3)		103.9		%		85-115	11-JUL-19
WG3101990-1 MB Alkalinity, Total (as Ca	CO3)		<10		mg/L		10	11-JUL-19
Batch R4709476	;							
WG3101993-4 DUP Alkalinity, Total (as Ca	CO3)	WG3101993-3 155	155		mg/L	0.0	20	11-JUL-19
WG3101993-2 LCS Alkalinity, Total (as Ca	CO3)		102.6		%		85-115	11-JUL-19
WG3101993-1 MB Alkalinity, Total (as Ca	CO3)		<10		mg/L		10	11-JUL-19
CL-IC-N-WT	Water							
Batch R4707156	;							
WG3100909-4 DUP Chloride (CI)		WG3100909-3 62.9	62.9		mg/L	0.0	20	10-JUL-19
WG3100909-2 LCS Chloride (Cl)			101.9		%		90-110	10-JUL-19
WG3100909-1 MB Chloride (Cl)			<0.50		mg/L		0.5	10-JUL-19
WG3100909-5 MS Chloride (CI)		WG3100909-3	101.6		%		75-125	10-JUL-19
DOC-WT	Water							
Batch R4703168	,							
WG3100247-3 DUP Dissolved Organic Carl	oon	L2305271-1 2.04	2.11		mg/L	3.4	25	10-JUL-19
WG3100247-2 LCS Dissolved Organic Carl	oon		110.4		%		70-130	10-JUL-19
WG3100247-1 MB Dissolved Organic Carl	oon		<0.50		mg/L		0.5	10-JUL-19
WG3100247-4 MS Dissolved Organic Carl	oon	L2305271-1	113.6		%		70-130	10-JUL-19
EC-WT	Water							



Workorder: L2305271

Report Date: 16-JUL-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT		Water							
Batch R4	709474								
WG3101990-4 Conductivity	DUP		WG3101990-3 1460	1450		umhos/cm	0.5	10	11-JUL-19
WG3101990-2 Conductivity	LCS			98.7		%		90-110	11-JUL-19
WG3101990-1 Conductivity	MB			<3.0		umhos/cm		3	11-JUL-19
Batch R4	709476								
WG3101993-4 Conductivity	DUP		WG3101993-3 725	728		umhos/cm	0.4	10	11-JUL-19
WG3101993-2 Conductivity	LCS			97.8		%		90-110	11-JUL-19
WG3101993-1 Conductivity	MB			<3.0		umhos/cm		3	11-JUL-19
F-IC-N-WT		Water							
Batch R4	707156								
WG3100909-4 Fluoride (F)	DUP		WG3100909-3 0.094	0.096		mg/L	1.9	20	10-JUL-19
WG3100909-2 Fluoride (F)	LCS			105.4		%		90-110	10-JUL-19
WG3100909-1 Fluoride (F)	MB			<0.020		mg/L		0.02	10-JUL-19
WG3100909-5 Fluoride (F)	MS		WG3100909-3	106.5		%		75-125	10-JUL-19
F1-HS-WT		Water							
Batch R4	712645								
WG3105835-6 F1 (C6-C10)	LCS			107.8		%		80-120	16-JUL-19
WG3105835-7 F1 (C6-C10)	МВ			<100		ug/L		100	16-JUL-19
Surrogate: 3,4-I	Dichloroto	oluene		104.4		%		60-140	16-JUL-19
F2-F4-WT		Water							
Batch R4	705753								
WG3100424-2	LCS			97.4		0/		05.405	40 40
F2 (C10-C16)						%		65-135	10-JUL-19
F3 (C16-C34)				103.0		%		65-135	10-JUL-19
F4 (C34-C50)	ме			94.1		%		65-135	10-JUL-19
WG3100424-1	MB								



Workorder: L2305271 Report Date: 16-JUL-19 Page 3 of 14

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-WT	Water							
Batch R4705753								
WG3100424-1 MB F2 (C10-C16)			<100		ug/L		100	10-JUL-19
F3 (C16-C34)			<250		ug/L		250	10-JUL-19 10-JUL-19
F4 (C34-C50)			<250		ug/L		250	10-JUL-19
Surrogate: 2-Bromobenz	otrifluoride		90.1		%		60-140	10-JUL-19
HG-D-CVAA-WT	Water							10 002 10
Batch R4703592	water							
WG3100701-4 DUP		WG3100701-3						
Mercury (Hg)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUL-19
WG3100701-2 LCS								
Mercury (Hg)-Dissolved			99.9		%		80-120	10-JUL-19
WG3100701-1 MB Mercury (Hg)-Dissolved			<0.000010		mg/L		0.00001	10-JUL-19
WG3100701-6 MS Mercury (Hg)-Dissolved		WG3100701-5	97.1		%		70-130	10-JUL-19
	Motor		0111		,,		70-130	10-301-19
HG-T-CVAA-WT Batch R4703589	Water							
WG3100694-6 DUP		WG3100694-5						
Mercury (Hg)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	10-JUL-19
WG3100694-2 LCS								
Mercury (Hg)-Total			101.0		%		80-120	10-JUL-19
WG3100694-1 MB			0.000040		m a/I		0.00004	
Mercury (Hg)-Total			<0.000010		mg/L		0.00001	10-JUL-19
WG3100694-8 MS Mercury (Hg)-Total		WG3100694-7	91.7		%		70-130	10-JUL-19
MET-D-CCMS-WT	Water							10 002 10
Batch R4706329	Water							
WG3100531-4 DUP		WG3100531-3						
Aluminum (Al)-Dissolved	I	0.0090	0.0082		mg/L	8.9	20	10-JUL-19
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-19
Cadmium (Cd)-Dissolved	d	<0.000050	<0.00005	C RPD-NA	mg/L	N/A	20	10-JUL-19
Calcium (Ca)-Dissolved		8.21	8.01		mg/L	2.4	20	10-JUL-19
Copper (Cu)-Dissolved		0.00212	0.00211		mg/L	0.7	20	10-JUL-19
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUL-19
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-19
Magnesium (Mg)-Dissolv	ved .	5.34	5.39		mg/L	0.9	20	10-JUL-19



Workorder: L2305271 Report Date: 16-JUL-19 Page 4 of 14

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Mate	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
W3100531-4 DUP W3100531-3 N/A 20 10-JUL-19 Manganese (Mh)-Dissolved 0,000565 0,000566 mg/L 3.2 20 10-JUL-19 Nickel (Ni)-Dissolved 0,00050 <0.00050	MET-D-CCMS-WT	Water							
Manganese (Min)-Dissolved	Batch R47	06329							
Molybdenum (Mol)-Dissolved					DDD 114		N1/A	22	
Nickel (Ni)-Dissolved					RPD-NA	•			
Potassium (K)-Dissolved	`	,				•			
Selenium (Se)-Dissolved <0.000050 0.000057 RPD-NA mg/L N/A 20 10-JUL-19 Sodium (Na)-Dissolved 0.382 0.388 mg/L 1.6 20 10-JUL-19 Thallium (TI)-Dissolved 0.000011 0.000010 mg/L 7.5 20 10-JUL-19 Uranium (U)-Dissolved 0.00099 0.00088 mg/L 2.4 20 10-JUL-19 Zinc (Zn)-Dissolved 0.0010 <0.0010	` ,				RPD-NA	•			
Sodium (Na)-Dissolved 0.382 0.388 mg/L 1.6 20 10-JUL-19	()					Ü			
Thallium (TI)-Dissolved 0.00011 0.000010 mg/L 7.5 20 10-JUL-19 Uranium (U)-Dissolved 0.000909 0.000888 mg/L 2.4 20 10-JUL-19 Zinc (Zn)-Dissolved 0.0010 <0.0010 RPD-NA mg/L N/A 20 10-JUL-19 WG3100531-2 LCS Aluminum (AI)-Dissolved 96.5 % 80-120 10-JUL-19 Arsenic (As)-Dissolved 94.8 % 80-120 10-JUL-19 Cadmium (Cd)-Dissolved 93.1 % 80-120 10-JUL-19 Cadmium (Cd)-Dissolved 93.1 % 80-120 10-JUL-19 Calcium (Ca)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 95.4 % 80-120 10-JUL-19 Lead (Pb)-Dissolved 101.5 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Na)-Dissolved 90.5 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Na)-Dissolved 98.3 % 80-120 10-JUL-19 Cadmium (Na)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Na)-Dissolved 90.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (AI)-Dissolved 90.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (AI)-Dissolved 0.00000 mg/L 0.0005 10-JUL-19 Cadmium (Ca)-Dissolved 0.00000 mg/L 0.0000 10-JUL-19 Cadmium (Ca)-Dissolved 0.00000 mg/L 0.00000 10-JUL-19 Calcium (Ca)-Dissolved 0.00000 mg/L 0.00000 10-JUL-19 Calcium (Ca)-Dissolved 0.00000 mg/L 0.00000 10-JUL-19	` ,				RPD-NA	•			
Uranium (U)-Dissolved 0.000909 0.000888 mg/L 2.4 20 10-JUL-19 Zinc (Zn)-Dissolved <0.0010	` '					•			
Zinc (Zn)-Dissolved <0.0010 RPD-NA mg/L N/A 20 10-JUL-19 WG3100531-2 LCS Aluminum (Al)-Dissolved 96.5 % 80-120 10-JUL-19 Arsenic (As)-Dissolved 94.8 % 80-120 10-JUL-19 Cadinium (Ca)-Dissolved 93.1 % 80-120 10-JUL-19 Calcium (Ca)-Dissolved 93.6 % 80-120 10-JUL-19 Copper (Cu)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 101.5 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 97.1 % 80-120 10-JUL-19 Mickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 98.3 80-120 10-JUL-19	` ,					•		20	
WG3100531-2 LCS Aluminum (Al)-Dissolved 96.5 % 80-120 10-JUL-19 Arsenic (As)-Dissolved 94.8 % 80-120 10-JUL-19 Cadrium (Cd)-Dissolved 93.1 % 80-120 10-JUL-19 Calcium (Ca)-Dissolved 93.6 % 80-120 10-JUL-19 Copper (Cu)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 101.5 % 80-120 10-JUL-19 Lead (Pb)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Micke (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved </td <td>. ,</td> <td></td> <td></td> <td></td> <td></td> <td>•</td> <td></td> <td></td> <td>10-JUL-19</td>	. ,					•			10-JUL-19
Aluminum (Al)-Dissolved 96.5 % 80-120 10-JUL-19 Arsenic (As)-Dissolved 94.8 % 80-120 10-JUL-19 Cadmium (Cd)-Dissolved 93.1 % 80-120 10-JUL-19 Calcium (Ca)-Dissolved 93.6 % 80-120 10-JUL-19 Copper (Cu)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 101.5 % 80-120 10-JUL-19 Lead (Pb)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 102.1 % 80-120 10-JUL-19 Thallium (Tl)-Dissolved <	Zinc (Zn)-Dissolv	ed	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-JUL-19
Cadmium (Cd)-Dissolved 93.1 % 80-120 10-JUL-19 Calcium (Ca)-Dissolved 93.6 % 80-120 10-JUL-19 Copper (Cu)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 101.5 % 80-120 10-JUL-19 Lead (Pb)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 98.5 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 101.8 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4				96.5		%		80-120	10-JUL-19
Cadmium (Cd)-Dissolved 93.1 % 80-120 10-JUL-19 Calcium (Ca)-Dissolved 93.6 % 80-120 10-JUL-19 Copper (Cu)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 101.5 % 80-120 10-JUL-19 Lead (Pb)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.3 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (Ti)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4	Arsenic (As)-Diss	solved		94.8		%		80-120	10-JUL-19
Calcium (Ca)-Dissolved 93.6 % 80-120 10-JUL-19 Copper (Cu)-Dissolved 95.4 % 80-120 10-JUL-19 Iron (Fe)-Dissolved 101.5 % 80-120 10-JUL-19 Lead (Pb)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 WG3100531-1 MB Alumi	Cadmium (Cd)-D	issolved		93.1		%		80-120	
Iron (Fe)-Dissolved 101.5 % 80-120 10-JUL-19 Lead (Pb)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Calcium (Ca)-Dis	solved		93.6		%		80-120	
Lead (Pb)-Dissolved 101.2 % 80-120 10-JUL-19 Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (Ti)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 VG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Copper (Cu)-Diss	solved		95.4		%		80-120	10-JUL-19
Magnesium (Mg)-Dissolved 101.4 % 80-120 10-JUL-19 Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (Ti)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Iron (Fe)-Dissolve	ed		101.5		%		80-120	10-JUL-19
Manganese (Mn)-Dissolved 97.1 % 80-120 10-JUL-19 Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB MB Number of the property of the	Lead (Pb)-Dissolv	ved		101.2		%		80-120	10-JUL-19
Molybdenum (Mo)-Dissolved 94.9 % 80-120 10-JUL-19 Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (Tl)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB MB Ng/L 0.005 10-JUL-19 Arsenic (As)-Dissolved <0.00010	Magnesium (Mg)	-Dissolved		101.4		%		80-120	10-JUL-19
Nickel (Ni)-Dissolved 95.7 % 80-120 10-JUL-19 Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Manganese (Mn)	-Dissolved		97.1		%		80-120	10-JUL-19
Potassium (K)-Dissolved 98.5 % 80-120 10-JUL-19 Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB MB Aluminum (Al)-Dissolved <0.0050	Molybdenum (Mo)-Dissolved		94.9		%		80-120	10-JUL-19
Selenium (Se)-Dissolved 98.3 % 80-120 10-JUL-19 Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Nickel (Ni)-Dissol	ved		95.7		%		80-120	10-JUL-19
Sodium (Na)-Dissolved 101.8 % 80-120 10-JUL-19 Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Potassium (K)-Di	ssolved		98.5		%		80-120	10-JUL-19
Thallium (TI)-Dissolved 102.1 % 80-120 10-JUL-19 Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Selenium (Se)-Di	ssolved		98.3		%		80-120	10-JUL-19
Uranium (U)-Dissolved 100.4 % 80-120 10-JUL-19 Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Sodium (Na)-Diss	solved		101.8		%		80-120	10-JUL-19
Zinc (Zn)-Dissolved 96.2 % 80-120 10-JUL-19 WG3100531-1 MB Aluminum (Al)-Dissolved < < 0.0050 mg/L 0.005 10-JUL-19 Arsenic (As)-Dissolved < < 0.00010 mg/L 0.0001 10-JUL-19 Cadmium (Cd)-Dissolved < < 0.000050 mg/L 0.05 10-JUL-19 Copper (Cu)-Dissolved < < 0.00020 mg/L 0.0002 10-JUL-19	Thallium (TI)-Diss	solved		102.1		%		80-120	10-JUL-19
WG3100531-1 MB Aluminum (Al)-Dissolved <0.0050	Uranium (U)-Diss	solved		100.4		%		80-120	10-JUL-19
Aluminum (Al)-Dissolved <0.0050	Zinc (Zn)-Dissolv	ed		96.2		%		80-120	10-JUL-19
Arsenic (As)-Dissolved <0.00010									
Cadmium (Cd)-Dissolved <0.000005C mg/L 0.000005 10-JUL-19 Calcium (Ca)-Dissolved <0.050						•			10-JUL-19
Calcium (Ca)-Dissolved <0.050 mg/L 0.05 10-JUL-19 Copper (Cu)-Dissolved <0.00020				<0.00010		_			
Copper (Cu)-Dissolved <0.00020 mg/L 0.0002 10-JUL-19	` ,				С	_			10-JUL-19
	` ,			<0.050		_			10-JUL-19
Iron (Fe)-Dissolved <0.010 mg/L 0.01 10-JUL-19						_			10-JUL-19
	Iron (Fe)-Dissolve	ed		<0.010		mg/L		0.01	10-JUL-19



Workorder: L2305271 Report Date: 16-JUL-19 Page 5 of 14

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R47063	29							
WG3100531-1 MB				_				
Lead (Pb)-Dissolved			<0.00005	0	mg/L		0.00005	10-JUL-19
Magnesium (Mg)-Dis			<0.0050		mg/L		0.005	10-JUL-19
Manganese (Mn)-Dis			<0.00050		mg/L		0.0005	10-JUL-19
Molybdenum (Mo)-Di			<0.00005	0	mg/L		0.00005	10-JUL-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	10-JUL-19
Potassium (K)-Disso			<0.050		mg/L		0.05	10-JUL-19
Selenium (Se)-Disso	lved		<0.00005	0	mg/L		0.00005	10-JUL-19
Sodium (Na)-Dissolv	ed		<0.050		mg/L		0.05	10-JUL-19
Thallium (TI)-Dissolv	ed		<0.00001	0	mg/L		0.00001	10-JUL-19
Uranium (U)-Dissolve	ed		<0.00001	0	mg/L		0.00001	10-JUL-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	10-JUL-19
WG3100531-5 MS Aluminum (Al)-Disso		WG3100531-	3 94.6		%		70.420	40 1111 40
Arsenic (As)-Dissolve			105.3		%		70-130 70-130	10-JUL-19
Cadmium (Cd)-Disso			98.8		%			10-JUL-19
			96.6 N/A	MC D			70-130	10-JUL-19
Calcium (Ca)-Dissolv			94.4	MS-B	%		70.400	10-JUL-19
Copper (Cu)-Dissolved	eu		94.4 97.2		%		70-130	10-JUL-19
Iron (Fe)-Dissolved Lead (Pb)-Dissolved			97.0		%		70-130	10-JUL-19
` ,				MOD			70-130	10-JUL-19
Magnesium (Mg)-Dis			N/A	MS-B	%		-	10-JUL-19
Manganese (Mn)-Dis			95.4		%		70-130	10-JUL-19
Molybdenum (Mo)-Di			92.6		%		70-130	10-JUL-19
Nickel (Ni)-Dissolved			93.6		%		70-130	10-JUL-19
Potassium (K)-Disso			98.5		%		70-130	10-JUL-19
Selenium (Se)-Disso			122.4		%		70-130	10-JUL-19
Sodium (Na)-Dissolv			99.7		%		70-130	10-JUL-19
Thallium (TI)-Dissolv			97.9		%		70-130	10-JUL-19
Uranium (U)-Dissolve	ed		N/A	MS-B	%		-	10-JUL-19
Zinc (Zn)-Dissolved			108.3		%		70-130	10-JUL-19
MET-T-CCMS-WT	Water							
Batch R47034 WG3100488-4 DU		WG2400499	2					
Aluminum (Al)-Total	F	WG3100488 -3	0.0206		mg/L	3.2	20	10-JUL-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-19
, (2.2)				1 1	J	14/1		10 002 10



Workorder: L2305271 Report Date: 16-JUL-19 Page 6 of 14

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4703429								
WG3100488-4 DUP Arsenic (As)-Total		WG3100488-3 <0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-19
Barium (Ba)-Total		0.00715	0.00695		mg/L	2.8	20	10-JUL-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-JUL-19
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	10-JUL-19
Calcium (Ca)-Total		9.00	8.94		mg/L	0.7	20	10-JUL-19
Chromium (Cr)-Total		< 0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUL-19
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-19
Copper (Cu)-Total		0.0023	0.0023		mg/L	3.4	20	10-JUL-19
Iron (Fe)-Total		0.026	0.025		mg/L	3.6	20	10-JUL-19
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-19
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	10-JUL-19
Magnesium (Mg)-Total		5.60	5.43		mg/L	3.0	20	10-JUL-19
Manganese (Mn)-Total		0.00077	0.00065		mg/L	17	20	10-JUL-19
Molybdenum (Mo)-Total		0.000659	0.000651		mg/L	1.1	20	10-JUL-19
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUL-19
Potassium (K)-Total		1.59	1.56		mg/L	1.7	20	10-JUL-19
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-19
Silicon (Si)-Total		0.70	0.68		mg/L	1.9	20	10-JUL-19
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	10-JUL-19
Sodium (Na)-Total		0.401	0.392		mg/L	2.3	20	10-JUL-19
Strontium (Sr)-Total		0.0056	0.0056		mg/L	0.6	20	10-JUL-19
Thallium (TI)-Total		0.000015	0.000015		mg/L	2.6	20	10-JUL-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-19
Titanium (Ti)-Total		0.00070	0.00064		mg/L	8.3	20	10-JUL-19
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-JUL-19
Uranium (U)-Total		0.00100	0.00101		mg/L	0.8	20	10-JUL-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	10-JUL-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	10-JUL-19
Zirconium (Zr)-Total		0.00021	0.00021		mg/L	3.4	20	10-JUL-19
WG3100488-2 LCS Aluminum (Al)-Total			104.0		%		80-120	10-JUL-19



Workorder: L2305271 Report Date: 16-JUL-19 Page 7 of 14

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4703429								
WG3100488-2 LCS Antimony (Sb)-Total			103.2		%		00.400	40 40
Arsenic (As)-Total			99.9		%		80-120	10-JUL-19
Barium (Ba)-Total			101.6		%		80-120	10-JUL-19
Beryllium (Be)-Total			101.9		%		80-120	10-JUL-19
Bismuth (Bi)-Total			98.2		%		80-120	10-JUL-19
Boron (B)-Total			98.7		%		80-120 80-120	10-JUL-19
Cadmium (Cd)-Total			100.5		%			10-JUL-19
Calcium (Ca)-Total			100.9		%		80-120	10-JUL-19
Chromium (Cr)-Total			99.9		%		80-120	10-JUL-19
Cobalt (Co)-Total			98.0		%		80-120 80-120	10-JUL-19
Copper (Cu)-Total			99.0		%		80-120	10-JUL-19
Iron (Fe)-Total			96.9		%		80-120	10-JUL-19
Lead (Pb)-Total			98.4		%			10-JUL-19 10-JUL-19
Lithium (Li)-Total			102.8		%		80-120 80-120	10-JUL-19 10-JUL-19
Magnesium (Mg)-Total			101.4		%		80-120	10-JUL-19
Manganese (Mn)-Total			100.1		%		80-120	10-JUL-19
Molybdenum (Mo)-Total			99.4		%		80-120	10-JUL-19
Nickel (Ni)-Total			98.5		%		80-120	10-JUL-19
Potassium (K)-Total			97.6		%		80-120	10-JUL-19
Selenium (Se)-Total			98.4		%		80-120	10-JUL-19
Silicon (Si)-Total			101.5		%		60-140	10-JUL-19
Silver (Ag)-Total			101.6		%		80-120	10-JUL-19
Sodium (Na)-Total			103.3		%		80-120	10-JUL-19
Strontium (Sr)-Total			103.0		%		80-120	10-JUL-19
Thallium (TI)-Total			100.2		%		80-120	10-JUL-19
Tin (Sn)-Total			99.3		%		80-120	10-JUL-19
Titanium (Ti)-Total			97.4		%		80-120	10-JUL-19
Tungsten (W)-Total			99.5		%		80-120	10-JUL-19
Uranium (U)-Total			103.0		%		80-120	10-JUL-19
Vanadium (V)-Total			100.4		%		80-120	10-JUL-19
Zinc (Zn)-Total			99.1		%		80-120	10-JUL-19
Zirconium (Zr)-Total			98.4		%		80-120	10-JUL-19
WG3100488-1 MB							00 120	10 002 10
Aluminum (Al)-Total			<0.0050		mg/L		0.005	10-JUL-19



Workorder: L2305271 Report Date: 16-JUL-19 Page 8 of 14

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water						
Batch R4703429							
WG3100488-1 MB		0.00040				0.0004	
Antimony (Sb)-Total		<0.00010		mg/L		0.0001	10-JUL-19
Arsenic (As)-Total		<0.00010		mg/L		0.0001	10-JUL-19
Barium (Ba)-Total		<0.00010		mg/L		0.0001	10-JUL-19
Beryllium (Be)-Total		<0.00010		mg/L		0.0001	10-JUL-19
Bismuth (Bi)-Total		<0.000050		mg/L		0.00005	10-JUL-19
Boron (B)-Total		<0.010		mg/L		0.01	10-JUL-19
Cadmium (Cd)-Total		<0.000005	C	mg/L		0.000005	10-JUL-19
Calcium (Ca)-Total		<0.050		mg/L		0.05	10-JUL-19
Chromium (Cr)-Total		<0.00050		mg/L		0.0005	10-JUL-19
Cobalt (Co)-Total		<0.00010		mg/L		0.0001	10-JUL-19
Copper (Cu)-Total		<0.0010		mg/L		0.001	10-JUL-19
Iron (Fe)-Total		<0.010		mg/L		0.01	10-JUL-19
Lead (Pb)-Total		<0.000050		mg/L		0.00005	10-JUL-19
Lithium (Li)-Total		<0.0010		mg/L		0.001	10-JUL-19
Magnesium (Mg)-Total		<0.0050		mg/L		0.005	10-JUL-19
Manganese (Mn)-Total		<0.00050		mg/L		0.0005	10-JUL-19
Molybdenum (Mo)-Total		<0.000050		mg/L		0.00005	10-JUL-19
Nickel (Ni)-Total		<0.00050		mg/L		0.0005	10-JUL-19
Potassium (K)-Total		<0.050		mg/L		0.05	10-JUL-19
Selenium (Se)-Total		<0.000050		mg/L		0.00005	10-JUL-19
Silicon (Si)-Total		<0.10		mg/L		0.1	10-JUL-19
Silver (Ag)-Total		<0.000050		mg/L		0.00005	10-JUL-19
Sodium (Na)-Total		<0.050		mg/L		0.05	10-JUL-19
Strontium (Sr)-Total		<0.0010		mg/L		0.001	10-JUL-19
Thallium (TI)-Total		<0.000010		mg/L		0.00001	10-JUL-19
Tin (Sn)-Total		<0.00010		mg/L		0.0001	10-JUL-19
Titanium (Ti)-Total		<0.00030		mg/L		0.0003	10-JUL-19
Tungsten (W)-Total		<0.00010		mg/L		0.0001	10-JUL-19
Uranium (U)-Total		<0.000010	l	mg/L		0.00001	10-JUL-19
Vanadium (V)-Total		<0.00050		mg/L		0.0005	10-JUL-19
Zinc (Zn)-Total		<0.0030		mg/L		0.003	10-JUL-19
Zirconium (Zr)-Total		<0.00020		mg/L		0.0002	10-JUL-19
WG3100488-5 MS Aluminum (Al)-Total	WG3100488-3	95.4		%		70-130	10-JUL-19



Workorder: L2305271 Report Date: 16-JUL-19 Page 9 of 14

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4703429								
WG3100488-5 MS		WG3100488			0.4			
Antimony (Sb)-Total			103.4		%		70-130	10-JUL-19
Arsenic (As)-Total			98.7		%		70-130	10-JUL-19
Barium (Ba)-Total			95.7		%		70-130	10-JUL-19
Beryllium (Be)-Total			95.1		%		70-130	10-JUL-19
Bismuth (Bi)-Total			97.7		%		70-130	10-JUL-19
Boron (B)-Total			95.3		%		70-130	10-JUL-19
Cadmium (Cd)-Total			102.6		%		70-130	10-JUL-19
Calcium (Ca)-Total			N/A	MS-B	%		-	10-JUL-19
Chromium (Cr)-Total			98.3		%		70-130	10-JUL-19
Cobalt (Co)-Total			94.4		%		70-130	10-JUL-19
Copper (Cu)-Total			94.3		%		70-130	10-JUL-19
Iron (Fe)-Total			86.2		%		70-130	10-JUL-19
Lead (Pb)-Total			96.0		%		70-130	10-JUL-19
Lithium (Li)-Total			95.5		%		70-130	10-JUL-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	10-JUL-19
Manganese (Mn)-Total			95.1		%		70-130	10-JUL-19
Molybdenum (Mo)-Total			100.7		%		70-130	10-JUL-19
Nickel (Ni)-Total			95.5		%		70-130	10-JUL-19
Potassium (K)-Total			89.3		%		70-130	10-JUL-19
Selenium (Se)-Total			99.1		%		70-130	10-JUL-19
Silicon (Si)-Total			N/A	MS-B	%		-	10-JUL-19
Silver (Ag)-Total			101.3		%		70-130	10-JUL-19
Sodium (Na)-Total			99.7		%		70-130	10-JUL-19
Strontium (Sr)-Total			99.2		%		70-130	10-JUL-19
Thallium (TI)-Total			98.2		%		70-130	10-JUL-19
Tin (Sn)-Total			99.4		%		70-130	10-JUL-19
Titanium (Ti)-Total			94.7		%		70-130	10-JUL-19
Tungsten (W)-Total			99.0		%		70-130	10-JUL-19
Uranium (U)-Total			N/A	MS-B	%		-	10-JUL-19
Vanadium (V)-Total			98.2		%		70-130	10-JUL-19
Zinc (Zn)-Total			91.9		%		70-130	10-JUL-19
Zirconium (Zr)-Total			99.5		%		70-130	10-JUL-19

NH3-F-WT Water



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	Water							_
Batch R4709000								
WG3103451-19 DUP Ammonia, Total (as N)		L2305271-1 <0.010	<0.010	RPD-NA	mg/L	N/A	20	12-JUL-19
WG3103451-18 LCS Ammonia, Total (as N)			95.7		%		85-115	12-JUL-19
WG3103451-17 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	12-JUL-19
WG3103451-20 MS Ammonia, Total (as N)		L2305271-1	92.4		%		75-125	12-JUL-19
Batch R4712011								
WG3105265-3 DUP Ammonia, Total (as N)		L2305271-8 0.020	0.021		mg/L	4.8	20	15-JUL-19
WG3105265-2 LCS Ammonia, Total (as N)			102.8		%		85-115	15-JUL-19
WG3105265-1 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	15-JUL-19
WG3105265-4 MS Ammonia, Total (as N)		L2305271-8	103.5		%		75-125	15-JUL-19
NO3-IC-WT	Water							
Batch R4707156								
WG3100909-4 DUP Nitrate (as N)		WG3100909-3 1.70	1.70		mg/L	0.2	20	10-JUL-19
WG3100909-2 LCS Nitrate (as N)			102.0		%		90-110	10-JUL-19
WG3100909-1 MB Nitrate (as N)			<0.020		mg/L		0.02	10-JUL-19
WG3100909-5 MS Nitrate (as N)		WG3100909-3	100.5		%		75-125	10-JUL-19
OGG-TOT-WT	Water							
Batch R4708001								
WG3102010-2 LCS Oil and Grease, Total			85.1		%		70-130	11-JUL-19
WG3102010-1 MB Oil and Grease, Total			<2.0		mg/L		2	11-JUL-19
Batch R4708742								
WG3101776-2 LCS Oil and Grease, Total			92.1		%		70-130	11-JUL-19
WG3101776-1 MB							2	



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Report Date: 16-JUL-19

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Client:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result Qualifier L		Units	RPD	Limit	Analyzed		
OGG-TOT-WT	Water									
Batch R4708742 WG3101776-1 MB Oil and Grease, Total			<2.0		mg/L		2	11-JUL-19		
P-T-COL-WT	Water									
Batch R4707849 WG3101589-3 DUP Phosphorus, Total		L2305272-1 0.0054	0.0069	J	mg/L	0.0016	0.006	11-JUL-19		
WG3101589-2 LCS Phosphorus, Total			100.3		%		80-120	11-JUL-19		
WG3101589-1 MB Phosphorus, Total			<0.0030		mg/L		0.003	11-JUL-19		
WG3101589-4 MS Phosphorus, Total		L2305272-1	93.3		%		70-130	11-JUL-19		
PH-BF	Water									
Batch R4701568 WG3100344-2 DUP pH		L2305271-1 7.81	7.83	J	pH units	0.02	0.2	09-JUL-19		
WG3100344-1 LCS pH			7.02		pH units		6.9-7.1	09-JUL-19		
PHENOLS-4AAP-WT	Water									
Batch R4708458 WG3102168-3 DUP Phenols (4AAP)		L2305271-7 0.0017	0.0019		mg/L	12	20	12-JUL-19		
WG3102168-2 LCS Phenols (4AAP)			107.4		%		85-115	12-JUL-19		
WG3102168-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	12-JUL-19		
WG3102168-4 MS Phenols (4AAP)		L2305271-7	107.2		%		75-125	12-JUL-19		
SO4-IC-N-WT	Water									
Batch R4707156 WG3100909-4 DUP Sulfate (SO4)		WG3100909-3 18.0	18.0		mg/L	0.0	20	10-JUL-19		
WG3100909-2 LCS Sulfate (SO4)			102.3		%		90-110	10-JUL-19		
WG3100909-1 MB Sulfate (SO4)			<0.30		mg/L		0.3	10-JUL-19		



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT	Water							
Batch R4707156 WG3100909-5 MS Sulfate (SO4)		WG3100909-3	103.9		%		75-125	10-JUL-19
SOLIDS-TDS-BF	Water							
Batch R4709351 WG3102972-3 DUP Total Dissolved Solids		L2305271-13 <20	<20	RPD-NA	mg/L	N/A	20	12-JUL-19
WG3102972-2 LCS Total Dissolved Solids			100.7		%		85-115	12-JUL-19
WG3102972-1 MB Total Dissolved Solids			<20		mg/L		20	12-JUL-19
SOLIDS-TSS-BF	Water							
Batch R4708384 WG3102894-3 DUP Total Suspended Solids		L2305271-4 <2.0	<2.0	RPD-NA	mg/L	N/A	25	11-JUL-19
WG3102894-2 LCS Total Suspended Solids			101.2	2	%		85-115	11-JUL-19
WG3102894-1 MB Total Suspended Solids			<2.0		mg/L		2	11-JUL-19
TKN-WT	Water							
Batch R4709135 WG3101807-3 DUP Total Kjeldahl Nitrogen		L2305271-1 <0.15	<0.15	RPD-NA	mg/L	N/A	20	12-JUL-19
WG3101807-2 LCS Total Kjeldahl Nitrogen			97.5		%		75-125	12-JUL-19
WG3101807-1 MB Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	12-JUL-19
WG3101807-4 MS Total Kjeldahl Nitrogen		L2305271-1	97.3		%		70-130	12-JUL-19
TOC-WT	Water							
Batch R4703169 WG3100605-3 DUP Total Organic Carbon		L2305882-1 3.65	3.68		mg/L	0.8	20	10-JUL-19
WG3100605-2 LCS Total Organic Carbon			102.7		%		80-120	10-JUL-19
WG3100605-1 MB Total Organic Carbon			<0.50		mg/L		0.5	10-JUL-19



Workorder: L2305271

Report Date: 16-JUL-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TOC-WT		Water							
Batch R4 WG3100605-4 Total Organic C	703169 MS Carbon		L2305882-1	112.4		%		70-130	10-JUL-19
TURBIDITY-BF		Water							
Batch R4	701590								
WG3100350-3 Turbidity	DUP		L2305271-1 0.79	0.80		NTU	1.3	15	09-JUL-19
WG3100350-2 Turbidity	LCS			103.0		%		85-115	09-JUL-19
WG3100350-1 Turbidity	MB			<0.10		NTU		0.1	09-JUL-19

Report Date: 16-JUL-19 Workorder: L2305271

Baffinland Iron Mine's Corporation (Oakville) Client:

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives) DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample Standard Reference Material SRM

MS Matrix Spike

MSD Matrix Spike Duplicate

Average Desorption Efficiency ADE

Method Blank MB

Internal Reference Material IRM 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.

Hold Time Exceedances:

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

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

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

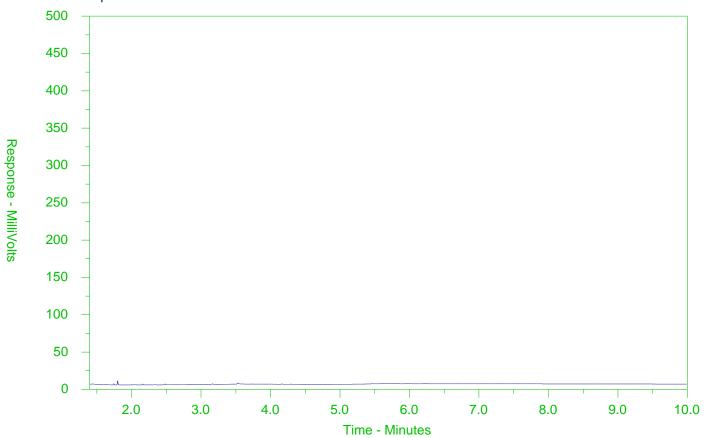
Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

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CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2305271-7 Client Sample ID: MS-MRY-13B



← -F2-	→ ←	—F3——◆4—F4-	→						
nC10	nC16	nC34	nC50						
174°C	287°C	481°C	575°C						
346°F	549°F	898°F	1067°F						
Gasolin	e →	← M	otor Oils/Lube Oils/Grease—	-					
←	← Diesel/Jet Fuels →								

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

ALS) Environmental

Chain of Custody (COC) / Analytical Request Form

L2305271-COFC

COC Number: 15 -

ge 1 of

2

Canada Toli Free: 1 800 668 9878 www.aisglobal.com onfirm all E&P TATs with your AM - surcharges will apply Report Format / Distribution Contact and company name below will appear on the final report Report To Standard TAT if received by 3 pm - business days - no surcharges apply Select Report Format: PDF EXCEL EDD (DIGITAL) Regular [R] Baffinland Iron Mines Corp. Company: 1 Business day [E1] 4 day [P4] П Wiliam Bowden and Connor Devereaux Contact: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3] Same Day, Weekend or 647-253-0596 FXT 6016 Phone: П Statutory holiday [E0] 2 day [P2] Company address below will appear on the final report Date and Time Required for all E&P TATs: Email 1 or Fax bimcore@alsglobal.com 2275 Upper Middle Rd. E., Suite #300 Street: For tests that can not be performed according to the service level selected, you will be contacted. bimww@alsglobal.com Email 2 Oakville, ON City/Province: Analysis Request Postal Code 16H 0C3 Email 3 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice Distribution ✓ YES
☐ NO invoice To Same as Report To F/P Select Invoice Distribution: 🗹 EMAIL 🔲 MAIL 🔲 FAX YES INO Copy of Invoice with Report Email 1 or Fax ap@baffinland.com Company: commercial@baffinland.com Email 2 Contact: Number of Containers Oil and Gas Required Fields (client use) Project Information PO# 23642 /Q42455 AFE/Cost Center ALS Account # / Quote #: Routing Code: MS SNP Monitoring Major/Minor Code: Job# 4500057496 Requisitioner: PO / AFE: l ocation: LSD: VP/SP/BC ALS Contact: Sampler: L2305271 ALS Lab Work Order # (lab use only) Group 6 Date Time Sample Identification and/or Coordinates ALS Sample # Sample Type (hh:mm) (lab use only) (This description will appear on the report) (dd-mmm-yy) 7 7-Jul-19 8:35 Water MS-MRY-9 5 R 7-Jul-19 8:35 Water MS-C-F 5 8:35 Water R 7-Jul-19 MS-C-F01 R 6 7-Jul-19 9:10 Water MS-C-G 5 R 9:40 Water MS-C-H 7-Jul-19 5 R 9:45 Water 7-Jul-19 MQ-C-B 12 10:35 R 7-Jul-19 Water MS-MRY-13B 5 R 12:15 Water MS-C-D 7-Jul-19 5 R 7-Jul-19 12:30 Water MS-C-C 5 10:40 Water R MS-C-A 7-Jul-19 5 R 7-Jul-19 11:10 Water MS-C-B 5 R MS-C-E 7-Jul-19 11:50 Water SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples¹ (client use) SIF Observations (electronic COC only) Frozen Ice Packs Are samples taken from a Regulated DW System? Cooling Initiated YES VINO FINAL COOLER TEMPERATURES °C INITIAL COOLER TEMPERATURES °C Are samples for human drinking water use? ☐ YES ☑ NO FINAL SHIPMENT RECEPTION (lab use only) INITIAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) Received by: Time: Date: Release Date: 7-Jul-19 Time: Received by: Released by: Kendra Button

20:20

Environmental

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

Canada Toll Free: 1 800 668 9878

COC Number: 15 -

OCTOBER 2015 FRONT

	www.alsglobal.com				-														
Report To Contact and company name below will appear on the final report			Report Format / Distribution.						confirm all E&P TATs with your AM - surcharges will apply										
Company:	Baffinland Iron Mines Corp.		Select Report F	ormat: 🔽 PDF	☑ EXCEL ☑ E	DD (DIGITAL)		Reg	ular [R]	Standard TAT if received by 3 pm - business days - no surcharges apply									
Contact:	Wiliam Bowden and Connor Devereau	x	Quality Control (QC) Report with Report					4 d	ay [P4]			ò	1 Business day [E1]						
Phone:	647-253-0596 EXT 6016		Compare Result	s to Criteria on Report	provide details bek	ow if box checked	IORIT Tess	3 d	ay [P3]			EMERGENCY	Same Day, Weekend or				r	_	
	Company address below will appear on the	final report	Select Distributi	on: 🗸 EMAIL	☐ MAIL ☐	FAX	PRIORITY (Business Days)	2 d	ay [P2]			E		tutory					
Street:	2275 Upper Middle Rd. E., Suite #300		Email 1 or Fax	bimcore@alsgloba	al.com			Date and	Time Req	uired for	all E&P	ATs:	4.5		.5 <u>1</u> -17	пшп-ү	y 25,434	11 62	
City/Province:	Oakville, ON		Email 2	bimww@alsgloba	.com		For tes	ts that can	not be perf	performed according to the service level selected, you will be contacted.									
Postal Code:	L6H 0C3		Email 3						Analysis Request										
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Are samples taken from a Regulated DW System?							ice P		☐ lce	Cubes						Ħ	No	8	
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Are samples for human drinking water use?								-	L COOLER		ATURES	°C		FINA	L COOL	ER TE	MPERA	TURES °C	
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Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 10-JUL-19

Report Date: 12-JUL-19 10:01 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2307800 Project P.O. #: 4500057496

Job Reference: CRUSHER PERIMETER

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

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

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L2307800 CONTD.... PAGE 2 of 3 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2307800-1 CP-SEEPAGE-2 Sampled By: KB/LM on 10-JUL-19 @ 15:10 Matrix: Water							
Physical Tests							
рН	7.32		0.10	pH units		10-JUL-19	R4705949
Total Suspended Solids	99.4		2.0	mg/L		11-JUL-19	R4708445
Total Dissolved Solids	4360		20	mg/L		11-JUL-19	R4708370
Turbidity	31.6		0.10	NTU		11-JUL-19	R4706129
L2307800-2 CP-SEEPAGE-1 Sampled By: KB/LM on 10-JUL-19 @ 15:55 Matrix: Water							
Physical Tests							
рН	6.94		0.10	pH units		10-JUL-19	R4705949
Total Suspended Solids	481		2.0	mg/L		11-JUL-19	R4708445
Total Dissolved Solids	6960		20	mg/L		11-JUL-19	R4708370
Turbidity	51.2		0.10	NTU		11-JUL-19	R4706129
L2307800-3 CP-CONDUIT-CULVERT Sampled By: KB/LM on 10-JUL-19 @ 16:10 Matrix: Water							
Physical Tests							
рН	7.96		0.10	pH units		10-JUL-19	R4705949
Total Suspended Solids	47.6		2.0	mg/L			R4706168
Total Dissolved Solids	2910		20	mg/L		11-JUL-19	R4708370
Turbidity	59.2		0.10	NTU		11-JUL-19	R4706129
L2307800-4 MS-C-C Sampled By: KB/LM on 10-JUL-19 @ 16:25 Matrix: Water							
Physical Tests							
pH	7.63		0.10	pH units		10-JUL-19	R4705949
Total Suspended Solids	<2.0		2.0	mg/L		11-JUL-19	R4706168
Total Dissolved Solids	1290		20	mg/L		11-JUL-19	R4708370
Turbidity	1.04		0.10	NTU		11-JUL-19	R4706129

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

CRUSHER PERIMETER

L2307800 CONTD.... PAGE 3 of 3

PAGE 3 of 3 Version: FINAL

Reference Information

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

 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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2307800 Report

Report Date: 12-JUL-19

Page 1 of 2

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-BF	Water							
Batch R4705949 WG3101666-2 DUP pH		L2307800-4 7.63	7.64	J	pH units	0.01	0.2	10-JUL-19
WG3101666-1 LCS pH			7.02		pH units		6.9-7.1	10-JUL-19
SOLIDS-TDS-BF	Water							
Batch R4708370 WG3101718-3 DUP Total Dissolved Solids		L2306750-1 1960	1990		mg/L	1.1	20	11-JUL-19
WG3101718-2 LCS Total Dissolved Solids			103.4		%		85-115	11-JUL-19
WG3101718-1 MB Total Dissolved Solids			<20		mg/L		20	11-JUL-19
SOLIDS-TSS-BF	Water							
Batch R4706168 WG3101667-3 DUP Total Suspended Solids		L2307801-2 9.2	10.0		mg/L	8.3	25	11-JUL-19
WG3101667-2 LCS Total Suspended Solids			98.6		%		85-115	11-JUL-19
WG3101667-1 MB Total Suspended Solids			<2.0		mg/L		2	11-JUL-19
Batch R4708445 WG3103079-3 DUP Total Suspended Solids		L2307800-2 481	416		mg/L	14	25	11-JUL-19
WG3103079-2 LCS Total Suspended Solids		401	100.8		%	14	85-115	11-JUL-19
WG3103079-1 MB Total Suspended Solids			<2.0		mg/L		2	11-JUL-19
TURBIDITY-BF	Water							
Batch R4706129 WG3101708-3 DUP Turbidity		L2307800-1 31.6	31.9		NTU	0.9	15	11-JUL-19
WG3101708-2 LCS Turbidity			103.0		%		85-115	11-JUL-19
WG3101708-1 MB Turbidity			<0.10		NTU		0.1	11-JUL-19

Workorder: L2307800 Report Date: 12-JUL-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

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

Sample Parameter Qualifier Definitions:

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

Hold Time Exceedances:

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

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

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

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

Page 2 of 2



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number:	15	

Page 1 of

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Report To	Contact and compar	ny name below will ap	pear on the final repo	ort		Report Format			Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply													
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Contact:	Wiliam Bowden and Co	nnor Devereaux			Quality Control	(QC) Report with R	Report 🗸 YES	☐ NO	γ Jays)	4 (day [P	4]			ıcy	1	Busir	ness (lay [I	E1]		
Phone:	647-253-0596 EXT 60	16			Compare Results	s to Criteria on Report -			PRIORITY (Business Days)	3 (day [P	3]			EMERGENCY					end o		
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City/Province:	Oakville, ON				Email 2	bimww@alsglobal	l.com		For test	ts that ca	ın not be	performe	d accor	ding to	the ser	vice lev	el selec	ted, you	will be	contact	ed.	
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LSD:					Location:				Turbidity													Number of Containers
ALS Lab Wor	k Order # (lab use onl	y) L2307800			ALS Contact:		Sampler:	KB/LM	TDS,													Z
ALS Sample #	Sam	ple Identificatio	n and/or Coordi	inates	•	Date	Time	0	pH, TSS,													
(lab use only)	(Th	is description will	appear on the re	eport)		(dd-mmm-yy)	(hh:mm)	Sample Type	pH,													
1	CP-SEEPAGE-2					10-Jul-19	15:10	Water	E0													2
2	CP-SEEPAGE-1					10-Jul-19	15:55	Water	E0													1
3	CP-CONDUIT-CULVER	RT				10-Jul-19	16:10	Water	E0													2
4	MS-C-C					10-Jul-19	16:25	Water	E0													2
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			Special Instruc	tions / Sı	pecify Criteria to a	dd on report by clic	king on the drop-	down list below				SAMPL	LE CC	NDIT	ION A	AS R	ECEI\	/ED (I	ab us	se onl	y)	
Drinking	Water (DW) Samples ¹	(client use)				tronic COC only)			Froze	n					SIF (Obser	rvatior	าร	⁄es		No	
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Are samples for I	human drinking water use	?								INIITI	IAL CO	OLER TEI	MPERA	TURES	3 ℃			FINAL	COOL	ER TEI	VIPERA	TURES °C
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Released By: Ke	endra Button	Date: 10-Jul-19		Time:	Received by: C	V	Date: July 10, 2	2019	Time:	6pm	Rece	ived by	:				Date	:				Time:
				17:45																		



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 11-JUL-19

Report Date: 15-JUL-19 08:42 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2308650 Project P.O. #: 4500057496

Job Reference: CRUSHER PAD PERIMETER

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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L2308650 CONTD.... PAGE 2 of 3

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2308650-1 CRUSHERPAD-SW Sampled By: RH/AZ/CP on 11-JUL-19 @ 13:50 Matrix: Water							
Physical Tests							
рН	7.96		0.10	pH units		12-JUL-19	R4708382
Total Suspended Solids	<2.0		2.0	mg/L		12-JUL-19	R4708422
Total Dissolved Solids	231		20	mg/L		12-JUL-19	R4709355
Turbidity	1.36		0.10	NTU		12-JUL-19	R4708383
L2308650-2 CRUSHERPAD-SOUTHSUMP Sampled By: RH/AZ/CP on 11-JUL-19 @ 14:10 Water			0.10			1200210	
Physical Tests							
рН	7.39		0.10	pH units		12-JUL-19	R4708382
Total Suspended Solids	<2.0		2.0	mg/L		12-JUL-19	R4708422
Total Dissolved Solids	790		20	mg/L		12-JUL-19	R4709355
Turbidity	3.16		0.10	NTU		12-JUL-19	R4708383
L2308650-3 CP-CONDUIT-CULVERT Sampled By: RH/AZ/CP on 11-JUL-19 @ 15:30 Matrix: Water							
Physical Tests							
рН	7.59		0.10	pH units		12-JUL-19	R4708382
Total Suspended Solids	4.4		2.0	mg/L		12-JUL-19	R4708422
Total Dissolved Solids	2330		20	mg/L		12-JUL-19	R4709355
Turbidity	30.2		0.10	NTU		12-JUL-19	R4708383
L2308650-4 CP-SEEPAGE-2 Sampled By: RH/AZ/CP on 11-JUL-19 @ 15:10 Water Use 15:10							
Physical Tests							
рН	7.27		0.10	pH units		12-JUL-19	R4708382
Total Suspended Solids	6.0		2.0	mg/L		12-JUL-19	R4708422
Total Dissolved Solids	4320		20	mg/L		12-JUL-19	R4709355
Turbidity	14.6		0.10	NTU		12-JUL-19	R4708383
L2308650-5							
Physical Tests							
рН	7.25		0.10	pH units		12-JUL-19	R4708382
Total Suspended Solids	13.6		2.0	mg/L		12-JUL-19	R4708422
Total Dissolved Solids	4830		20	mg/L		12-JUL-19	R4709355
Turbidity	39.9		0.10	NTU		12-JUL-19	R4708383
			_				

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

CRUSHER PAD PERIMETER

Reference Information

L2308650 CONTD....
PAGE 3 of 3
Version: FINAL

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

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

 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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2308650

Report Date: 15-JUL-19

Page 1 of 2

Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-BF Batch R4708382	Water							
WG3102933-2 DUP pH		L2308632-1 4.53	4.51	J	pH units	0.02	0.2	12-JUL-19
WG3102933-1 LCS pH			7.02		pH units		6.9-7.1	12-JUL-19
SOLIDS-TDS-BF	Water							
Batch R4709355 WG3102987-3 DUP		L2306752-2						
Total Dissolved Solids		80	82		mg/L	2.4	20	12-JUL-19
WG3102987-2 LCS Total Dissolved Solids			99.8		%		85-115	12-JUL-19
WG3102987-1 MB Total Dissolved Solids			<20		mg/L		20	12-JUL-19
SOLIDS-TSS-BF	Water							
Batch R4708422								
WG3102895-3 DUP Total Suspended Solids		L2308632-1 3.4	3.4		mg/L	0.0	25	12-JUL-19
WG3102895-2 LCS Total Suspended Solids			100.2		%		85-115	12-JUL-19
WG3102895-1 MB Total Suspended Solids			<2.0		mg/L		2	12-JUL-19
TURBIDITY-BF	Water							
Batch R4708383								
WG3102936-3 DUP Turbidity		L2308632-1 24.0	24.4		NTU	1.7	15	12-JUL-19
WG3102936-2 LCS Turbidity			105.0		%		85-115	12-JUL-19
WG3102936-1 MB Turbidity			<0.10		NTU		0.1	12-JUL-19

Workorder: L2308650 Report Date: 15-JUL-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

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

Sample Parameter Qualifier Definitions:

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

Hold Time Exceedances:

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

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

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

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

Page 2 of 2



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here

COC Number: 15 -

ge 1 of

1

www alsolobal com

	www.alsglobal.com																				
Report To	Contact and compar	ny name below will app	ear on the final repo	ort		Report Format	/ Distribution		Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply												
Company:	Baffinland Iron Mines C	orp.			Select Report F	ormat: 🗸 PDF	✓ EXCEL ✓ ED	D (DIGITAL)		Reg	gular [F	R] Sta	andard 1	TAT if re	ceived b	y 3 pm	- busines	s days	- no surch	arges apply	
Contact:	Wiliam Bowden and Cor	nnor Devereaux			Quality Control	(QC) Report with Re	eport 🗸 YES	□ NO	Y Jays)	4 (day [P4] 🗆		ICY	1 E	Busin	ess da	/ [E1]			
Phone:	647-253-0596 EXT 601	6			Compare Result	s to Criteria on Report -	provide details below	w if box checked	PRIORITY (Business Days)	3 (day [P3] 🗆		EMERGENCY	Sa	ame D	Day, We	eken	d or		
	Company address below	will appear on the final	report		Select Distributi	on: 🔽 EMAIL	MAIL	FAX	PR (Busi	2 (day [P2] 🗵		EME	5	Statut	ory hol	iday [E0]		
Street:	2275 Upper Middle Rd.	E., Suite #300			Email 1 or Fax	bimcore@alsgloba	I.com		l l	Date an	d Time F	Required for	all E&F	TATs:			do	-mmn	n-yy hh:	mm	
City/Province:	Oakville, ON				Email 2	bimww@alsglobal.	.com		For test	ts that ca	n not be p	performed acc	cording 1	to the se	vice leve	el select	ted, you w	ill be co	ntacted.		
Postal Code:	L6H 0C3				Email 3				Analysis Request												
Invoice To	Same as Report To	✓ YES	□ NO			Invoice Dis	stribution			Indic	ate Filter	ed (F), Pres	erved (F) or Filte	ered and	Prese	rved (F/F) below	1		
	Copy of Invoice with Rep	port YES	✓ NO		Select Invoice D	Distribution: 🔽 EMA	AIL MAIL [FAX													
Company:					Email 1 or Fax ap@baffinland.com															1	
Contact:					Email 2 commercial@baffinland.com																
	Project I	nformation			Oi	l and Gas Required	d Fields (client	use)												ine ine	
ALS Account #	/ Quote #:	23642 /Q42455			AFE/Cost Center:		PO#													onts	
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PO / AFE:	4500057496				Requisitioner:				idity											per	
LSD:					Location:				Turbidity											Number of Containers	
ALS Lab Wor	rk Order # (lab use only	y) L2308650			ALS Contact:		Sampler:	RH/AZ/CP	TDS,												
ALS Sample #	Sam	nple Identification	n and/or Coordi	nates	•	Date	Time	0	TSS												
(lab use only)	(Th	is description will	appear on the re	port)		(dd-mmm-yy)	(hh:mm)	Sample Type	pH, TSS,												
1	CRUSHERPAD-SW					11-Jul-19	13:50	Water	P2											1	
2	CRUSHERPAD-SOUTH	HSUMP				11-Jul-19	14:10	Water	P2											1	
3	CP-CONDUIT-CULVER	RT				11-Jul-19	15:30	Water	P2											1	
4	CP-SEEPAGE-2					11-Jul-19	15:10	Water	P2											1	
5	CP-SEEPAGE-3					11-Jul-19	16:10	Water	P2											1	
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-	en from a Regulated DW S	System?							Ice Pa	acks		Ice Cubes		Cust	ody se	al inta	act Ye	s [No		l
☐ YE	S NO								Coolir	ng Initia	ated										
Are samples for	human drinking water us	e?								INIITI	AL COOL	ER TEMPE	RATUR	ES ℃			FINAL CO	OLER	TEMPER	ATURES °C	
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Released By: Ke	endra Button	Date: 11-Jul-19		Time:	Received by: C	V	Date: July 11, 2	2019	Time:	7pm	Receiv	ed by:				Date:				Time:	
				20:20			<u> </u>														



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 16-JUL-19

Report Date: 24-JUL-19 08:51 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2311077
Project P.O. #: 4500057496

Job Reference: MS SNP MONITORING

C of C Numbers: Legal Site Desc:

Rick Hawthorne

Rick Hawthorne Account Manager

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

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

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L2311077 CONTD.... PAGE 2 of 8

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2311077-1 MQ-C-A Sampled By: AM/BC/JK on 15-JUL-19 @ 14:15 Matrix: Water							
Physical Tests							
рН	8.19		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	147		20	mg/L		17-JUL-19	R4715007
Turbidity	0.50		0.10	NTU		17-JUL-19	R4713144
L2311077-2 MQ-C-A03 Sampled By: AM/BC/JK on 15-JUL-19 @ 14:15 Matrix: Water							
Physical Tests							
рН	5.92		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	24		20	mg/L		17-JUL-19	R4715007
Turbidity	0.12		0.10	NTU		17-JUL-19	R4713144
L2311077-3 MQ-C-D Sampled By: AM/BC/JK on 15-JUL-19 @ 14:25 Matrix: Water							
Physical Tests	0.40		0.40	m I I mita		47 1111 40	D 4740400
pH Total Supponded Solida	8.12 3.6		0.10	pH units		17-JUL-19 16-JUL-19	R4713120
Total Suspended Solids Total Dissolved Solids	214		2.0 20	mg/L		17-JUL-19	R4713148 R4715007
Turbidity	9.43		0.10	mg/L NTU		17-JUL-19	R4713144
L2311077-4 MS-C-A Sampled By: AM/BC/JK on 15-JUL-19 @ 15:15 Matrix: Water	3.43		0.10	WIO		17 302 13	10144
Physical Tests							
pH	7.91		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	102		20	mg/L		17-JUL-19	R4715007
Turbidity	2.22		0.10	NTU		17-JUL-19	R4713144
L2311077-5 MS-C-B Sampled By: AM/BC/JK on 15-JUL-19 @ 14:40 Matrix: Water							
Physical Tests							
рН	7.91		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	94		20	mg/L		17-JUL-19	R4715007
Turbidity	2.75		0.10	NTU		17-JUL-19	R4713144
L2311077-6 MS-C-F Sampled By: AM/BC/JK on 15-JUL-19 @ 16:15 Matrix: Water							
Physical Tests							
рН	7.94		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	96		20	mg/L		17-JUL-19	R4715007

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

L2311077 CONTD.... PAGE 3 of 8

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2311077-6 MS-C-F Sampled By: AM/BC/JK on 15-JUL-19 @ 16:15 Water							
Physical Tests							
Turbidity	5.28		0.10	NTU		17-JUL-19	R4713144
L2311077-7 MS-C-F01 Sampled By: AM/BC/JK on 15-JUL-19 @ 16:15 Matrix: Water							
Physical Tests							
рН	7.95		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	103		20	mg/L		17-JUL-19	R4715007
Turbidity	5.19		0.10	NTU		17-JUL-19	R4713144
L2311077-8 MS-MRY-9 Sampled By: AM/BC/JK on 15-JUL-19 @ 14:00 Matrix: Water							
Physical Tests							
рН	7.92		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	68		20	mg/L		17-JUL-19	R4715007
Turbidity	0.70		0.10	NTU		17-JUL-19	R4713144
L2311077-9 MQ-C-B Sampled By: AM/BC/JK on 16-JUL-19 @ 09:25 Matrix: Water							
Physical Tests							
pH	8.19		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	206		20	mg/L		17-JUL-19	R4715007
Turbidity	1.65		0.10	NTU		17-JUL-19	R4713144
L2311077-10 MS-C-G Sampled By: AM/BC/JK on 16-JUL-19 @ 10:00 Matrix: Water							
Physical Tests							
рН	8.02		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	128		20	mg/L		17-JUL-19	R4715007
Turbidity	0.33		0.10	NTU		17-JUL-19	R4713144
L2311077-11 MS-C-H Sampled By: AM/BC/JK on 16-JUL-19 @ 10:45 Matrix: Water							
Physical Tests							
pH	8.16		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	143		20	mg/L		17-JUL-19	R4715007
Turbidity	0.46		0.10	NTU		17-JUL-19	R4713144
L2311077-12 MS-C-D Sampled By: AM/BC/JK on 16-JUL-19 @ 13:45 Water							

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

L2311077 CONTD.... PAGE 4 of 8

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2311077-12 MS-C-D Sampled By: AM/BC/JK on 16-JUL-19 @ 13:45 Water							
Physical Tests							
pH	8.21		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	2.8		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	830		20	mg/L		17-JUL-19	R4715007
Turbidity	7.07		0.10	NTU		17-JUL-19	R4713144
L2311077-13 MS-C-E Sampled By: AM/BC/JK on 16-JUL-19 @ 13:20 Water Water			<u> </u>				
Physical Tests							
pH	8.03		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	872		20	mg/L		17-JUL-19	R4715007
Turbidity	0.92		0.10	NTU		17-JUL-19	R4713144
L2311077-14 MS-C-C Sampled By: AM/BC/JK on 16-JUL-19 @ 14:00 Matrix: Water							
Physical Tests							
рН	7.88		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	909		20	mg/L		17-JUL-19	R4715007
Turbidity	0.58		0.10	NTU		17-JUL-19	R4713144
L2311077-15 MS-MRY-13B Sampled By: AM/BC/JK on 16-JUL-19 @ 11:40 Water							
Physical Tests							
рН	8.10		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	680		20	mg/L		17-JUL-19	R4715007
Turbidity	0.23		0.10	NTU		17-JUL-19	R4713144
L2311077-16 MS-MRY-13A Sampled By: AM/BC/JK on 16-JUL-19 @ 11:55 Matrix: Water							
Physical Tests							
Conductivity	476		3.0	umhos/cm		18-JUL-19	R4716090
рН	8.09		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L		16-JUL-19	R4713148
Total Dissolved Solids	297		20	mg/L		17-JUL-19	R4715007
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	178		10	mg/L		18-JUL-19	R4716090
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					18-JUL-19	R4715019
Dissolved Organic Carbon	4.82		0.50	mg/L	18-JUL-19	19-JUL-19	R4719664
Total Organic Carbon	5.25		0.50	mg/L		23-JUL-19	R4722414
Total Metals							

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

L2311077 CONTD.... PAGE 5 of 8 Version: FINAL

Sample Details/Parameters	Result	Qualifier* I	D.L.	Units	Extracted	Analyzed	Batch
L2311077-16 MS-MRY-13A Sampled By: AM/BC/JK on 16-JUL-19 @ 11:55 Water							
Total Metals							
Aluminum (Al)-Total	0.0066		0.0050	mg/L	18-JUL-19	19-JUL-19	R4715311
Antimony (Sb)-Total	0.00019	0	0.00010	mg/L	18-JUL-19	19-JUL-19	R4715311
Arsenic (As)-Total	0.00020	0	0.00010	mg/L	18-JUL-19	19-JUL-19	R4715311
Barium (Ba)-Total	0.0307	0	0.00010	mg/L	18-JUL-19	19-JUL-19	R4715311
Beryllium (Be)-Total	<0.00010	0	0.00010	mg/L	18-JUL-19	19-JUL-19	R4715311
Bismuth (Bi)-Total	<0.000050	0.	.000050	mg/L	18-JUL-19	19-JUL-19	R4715311
Boron (B)-Total	0.029		0.010	mg/L	18-JUL-19	19-JUL-19	R4715311
Cadmium (Cd)-Total	0.0000072	0.0	0000050	mg/L	18-JUL-19	19-JUL-19	R4715311
Calcium (Ca)-Total	41.9		0.050	mg/L	18-JUL-19	19-JUL-19	R4715311
Chromium (Cr)-Total	<0.00050	0	0.00050	mg/L	18-JUL-19	19-JUL-19	R4715311
Cobalt (Co)-Total	<0.00010	0	0.00010	mg/L	18-JUL-19	19-JUL-19	R4715311
Copper (Cu)-Total	0.0014		0.0010	mg/L	18-JUL-19	19-JUL-19	R4715311
Iron (Fe)-Total	0.014		0.010	mg/L	18-JUL-19	19-JUL-19	R4715311
Lead (Pb)-Total	<0.000050	0.	.000050	mg/L	18-JUL-19	19-JUL-19	R4715311
Lithium (Li)-Total	0.0029		0.0010	mg/L	18-JUL-19	19-JUL-19	R4715311
Magnesium (Mg)-Total	32.2		0.0050	mg/L	18-JUL-19	19-JUL-19	R4715311
Manganese (Mn)-Total	0.00405	0	0.00050	mg/L	18-JUL-19	19-JUL-19	R4715311
Mercury (Hg)-Total	<0.000010	0.	.000010	mg/L		19-JUL-19	R4716330
Molybdenum (Mo)-Total	0.000346	0.	.000050	mg/L	18-JUL-19	19-JUL-19	R4715311
Nickel (Ni)-Total	0.00954	0	0.00050	mg/L	18-JUL-19	19-JUL-19	R4715311
Potassium (K)-Total	1.66		0.050	mg/L	18-JUL-19	19-JUL-19	R4715311
Selenium (Se)-Total	0.000056	0.	.000050	mg/L	18-JUL-19	19-JUL-19	R4715311
Silicon (Si)-Total	4.54		0.10	mg/L	18-JUL-19	19-JUL-19	R4715311
Silver (Ag)-Total	<0.000050	0.	.000050	mg/L	18-JUL-19	19-JUL-19	R4715311
Sodium (Na)-Total	7.36		0.050	mg/L	18-JUL-19	19-JUL-19	R4715311
Strontium (Sr)-Total	0.0343		0.0010	mg/L	18-JUL-19	19-JUL-19	R4715311
Thallium (TI)-Total	0.000013	0.	.000010	mg/L	18-JUL-19	19-JUL-19	R4715311
Tin (Sn)-Total	<0.00010	0	0.00010	mg/L	18-JUL-19	19-JUL-19	R4715311
Titanium (Ti)-Total	<0.00030	0	0.00030	mg/L	18-JUL-19	19-JUL-19	R4715311
Tungsten (W)-Total	<0.00010	0	0.00010	mg/L	18-JUL-19	19-JUL-19	R4715311
Uranium (U)-Total	0.00106	0.	.000010	mg/L	18-JUL-19	19-JUL-19	R4715311
Vanadium (V)-Total	<0.00050	0	0.00050	mg/L	18-JUL-19	19-JUL-19	R4715311
Zinc (Zn)-Total	0.0041		0.0030	mg/L	18-JUL-19	19-JUL-19	R4715311
Zirconium (Zr)-Total	<0.00030	0	0.00030	mg/L	18-JUL-19	19-JUL-19	R4715311
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	22-JUL-19	22-JUL-19	R4721008
Phenols (4AAP)	0.0029		0.0010	mg/L		19-JUL-19	R4719699
Hydrocarbons							
F1 (C6-C10)	<100		100	ug/L			R4720754
F2 (C10-C16)	<100		100	ug/L	18-JUL-19		R4719837
F3 (C16-C34)	<250		250	ug/L	18-JUL-19	19-JUL-19	R4719837

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

L2311077 CONTD.... PAGE 6 of 8 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2311077-16 MS-MRY-13A							
Sampled By: AM/BC/JK on 16-JUL-19 @ 11:55							
Matrix: Water							
Hydrocarbons	050		050	/!	40 1111 40	40 1111 40	D 4740007
F4 (C34-C50)	<250		250	ug/L	18-JUL-19	19-JUL-19	R4719837
Total Hydrocarbons (C6-C50) Chrom. to baseline at nC50	<380 VEC		380	ug/L	18-JUL-19	24-JUL-19	D 4740007
Surrogate: 2-Bromobenzotrifluoride	YES		00.440	0/		19-JUL-19	R4719837
	91.6		60-140	%	18-JUL-19	19-JUL-19	R4719837
Surrogate: 3,4-Dichlorotoluene	104.1		60-140	%		24-JUL-19	R4720754
L2311077-17 MQ-C-A Sampled By: AM/BC/JK on 16-JUL-19 @ 09:05 Matrix: Water							
Physical Tests							
Conductivity	255		3.0	umhos/cm		23-JUL-19	R4720571
pH	8.18		0.10	pH units		17-JUL-19	R4713120
Total Suspended Solids	<2.0		2.0	mg/L			R4713148
Total Dissolved Solids	171		20	mg/L			R4715007
Turbidity	0.43		0.10	NTU		17-JUL-19	R4713144
Anions and Nutrients							
Ammonia, Total (as N)	<0.010		0.010	mg/L		22-JUL-19	R4719920
Nitrate (as N)	<0.020		0.020	mg/L		19-JUL-19	R4719726
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	22-JUL-19	22-JUL-19	R4721008
* Poter to Poteranced Information for Qualifiers (if any) and		I		1	<u> </u>	<u> </u>	

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

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Version: FINAL

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Barium (Ba)-Total	MS-B	L2311077-16
Matrix Spike	Calcium (Ca)-Total	MS-B	L2311077-16
Matrix Spike	Copper (Cu)-Total	MS-B	L2311077-16
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2311077-16
Matrix Spike	Potassium (K)-Total	MS-B	L2311077-16
Matrix Spike	Silicon (Si)-Total	MS-B	L2311077-16
Matrix Spike	Sodium (Na)-Total	MS-B	L2311077-16
Matrix Spike	Strontium (Sr)-Total	MS-B	L2311077-16

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**

ALK-WT Water Alkalinity, Total (as CaCO3) EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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 APHA 2510

Only)

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.

F1-F4-CALC-WT Water CCME Total Hydrocarbons CCME CWS-PHC, Pub #1310, Dec 2001-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
- 3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

- 1. All extraction and analysis holding times were met.
- 2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
- 3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
- 4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-WT Water F1 (O.Reg.153/04) E3421/CCME (HS)

Fraction F1 is determined by analyzing by headspace-GC/FID.

F2-F4-WT Water F2-F4 (O.Reg.153/04) MOE DECPH-E3421/CCME TIER 1

Petroleum Hydrocarbons (F2-F4 fractions) are extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, 2001.

HG-T-CVAA-WT Water Total Mercury in Water by CVAAS EPA 1631E (mod)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WT 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.

MS SNP MONITORING

Reference Information

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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.

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

OGG-TOT-WT Water Oil and Grease, Total APHA 5520 B

The procedure involves an extraction of the entire water sample with hexane. This extract is then evaporated to dryness, and the residue weighed to

determine Oil and Grease.

PH-BF Water pH APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

PHENOLS-4AAP-WT Water Phenol (4AAP) EPA 9066

An automated method is used to distill the sample. The distillate is then buffered to pH 9.4 which reacts with 4AAP and potassium ferricyanide to form a

red complex which is measured colorimetrically.

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.

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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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



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Workorder: L2311077 Report Date: 24-JUL-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	Water							
Batch R47 WG3108626-4 Alkalinity, Total (16090 DUP as CaCO3)	WG3108626-3 52	56		mg/L	7.5	20	18-JUL-19
WG3108626-2 Alkalinity, Total (LCS as CaCO3)		102.9		%		85-115	18-JUL-19
WG3108626-1 Alkalinity, Total (MB as CaCO3)		<10		mg/L		10	18-JUL-19
DOC-WT	Water							
Batch R47	19664							
WG3109390-3 Dissolved Organ	DUP ic Carbon	L2311626-1 5.86	5.92		mg/L	1.0	25	19-JUL-19
WG3109390-2 Dissolved Organ			102.0		%		70-130	19-JUL-19
WG3109390-1 Dissolved Organ	MB ic Carbon		<0.50		mg/L		0.5	19-JUL-19
WG3109390-4 Dissolved Organ	MS ic Carbon	L2311626-1	105.1		%		70-130	19-JUL-19
EC-WT	Water							
Batch R47	16090							
WG3108626-4 Conductivity	DUP	WG3108626-3 2020	2020		umhos/cm	0.0	10	18-JUL-19
WG3108626-2 Conductivity	LCS		98.7		%		90-110	18-JUL-19
WG3108626-1 Conductivity	MB		<3.0		umhos/cm		3	18-JUL-19
Batch R47	20571							
WG3112605-4 Conductivity	DUP	WG3112605-3 748	746		umhos/cm	0.3	10	23-JUL-19
WG3112605-2 Conductivity	LCS		100.6		%		90-110	23-JUL-19
WG3112605-1 Conductivity	МВ		<3.0		umhos/cm		3	23-JUL-19
F1-HS-WT	Water							
Batch R47	20754							
WG3112475-4 F1 (C6-C10)	DUP	WG3112475-3 <100	<100	RPD-NA	ug/L	N/A	50	23-JUL-19
WG3112475-1 F1 (C6-C10)	LCS		103.2		%		80-120	23-JUL-19



Workorder: L2311077 Report Date: 24-JUL-19 Page 2 of 9

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F1-HS-WT	Water							
Batch R4720754 WG3112475-2 MB F1 (C6-C10)			<100		ug/L		100	23-JUL-19
Surrogate: 3,4-Dichlorot	oluene		130.6		%		60-140	23-JUL-19
WG3112475-5 MS F1 (C6-C10)		WG3112475-3	79.0		%		50-150	23-JUL-19
F2-F4-WT	Water							
Batch R4719837								
WG3109410-2 LCS F2 (C10-C16)			97.0		%		65-135	19-JUL-19
F3 (C16-C34)			101.1		%		65-135	19-JUL-19
F4 (C34-C50)			104.8		%		65-135	19-JUL-19
WG3109410-1 MB F2 (C10-C16)			<100		ug/L		100	19-JUL-19
F3 (C16-C34)			<250		ug/L		250	19-JUL-19
F4 (C34-C50)			<250		ug/L		250	19-JUL-19
Surrogate: 2-Bromoben	zotrifluoride		88.5		%		60-140	19-JUL-19
HG-T-CVAA-WT	Water							
Batch R4716330								
WG3108866-3 DUP Mercury (Hg)-Total		L2311819-1 0.000042	0.000044		mg/L	4.4	20	19-JUL-19
WG3108866-2 LCS Mercury (Hg)-Total			100.0		%		80-120	19-JUL-19
WG3108866-1 MB Mercury (Hg)-Total			<0.000010		mg/L		0.00001	19-JUL-19
WG3108866-4 MS Mercury (Hg)-Total		L2311819-2	107.4		%		70-130	19-JUL-19
MET-T-CCMS-WT	Water							
Batch R4715311								
WG3109048-4 DUP		WG3109048-3						
Aluminum (Al)-Total		15.5	15.5		mg/L	0.3	20	18-JUL-19
Antimony (Sb)-Total		0.0050	0.0049		mg/L	1.6	20	18-JUL-19
Arsenic (As)-Total		0.0017	0.0016		mg/L	12	20	18-JUL-19
Barium (Ba)-Total		0.0766	0.0749		mg/L	2.2	20	18-JUL-19
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-19
Bismuth (Bi)-Total		0.00053	0.00052		mg/L	1.4	20	18-JUL-19
Boron (B)-Total		0.44	0.45		mg/L	3.5	20	18-JUL-19



Contact:

Quality Control Report

Workorder: L2311077 Report Date: 24-JUL-19 Page 3 of 9

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4715311								
WG3109048-4 DUP		WG3109048-3	0.00400			4.0	00	
Cadmium (Cd)-Total Calcium (Ca)-Total		0.000993	0.00100		mg/L	1.0	20	18-JUL-19
Chromium (Cr)-Total		106 0.0259	107 0.0257		mg/L	1.5	20	18-JUL-19
, ,		0.0259	0.0257		mg/L	0.9	20	18-JUL-19
Cobalt (Co)-Total Copper (Cu)-Total					mg/L	2.8	20	18-JUL-19
,		0.067	0.067		mg/L	0.8	20	18-JUL-19
Iron (Fe)-Total		16.8	16.4		mg/L	2.6	20	18-JUL-19
Lead (Pb)-Total		0.0959	0.0965		mg/L	0.6	20	18-JUL-19
Lithium (Li)-Total		0.082	0.085		mg/L	3.4	20	18-JUL-19
Magnesium (Mg)-Total		21.9	22.0		mg/L	0.7	20	18-JUL-19
Manganese (Mn)-Total		0.336	0.337		mg/L	0.1	20	18-JUL-19
Molybdenum (Mo)-Total		0.0371	0.0370		mg/L	0.2	20	18-JUL-19
Nickel (Ni)-Total		0.0333	0.0323		mg/L	3.0	20	18-JUL-19
Potassium (K)-Total		15.0	15.2		mg/L	1.0	20	18-JUL-19
Selenium (Se)-Total		0.00150	0.00145		mg/L	3.2	20	18-JUL-19
Silicon (Si)-Total		31.2	30.4		mg/L	2.7	20	18-JUL-19
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	18-JUL-19
Sodium (Na)-Total		69.1	69.1		mg/L	0.1	20	18-JUL-19
Strontium (Sr)-Total		0.554	0.587		mg/L	5.8	20	18-JUL-19
Thallium (TI)-Total		0.00017	0.00016		mg/L	4.7	20	18-JUL-19
Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-JUL-19
Titanium (Ti)-Total		0.852	0.849		mg/L	0.5	20	18-JUL-19
Tungsten (W)-Total		0.0296	0.0296		mg/L	0.2	20	18-JUL-19
Uranium (U)-Total		0.00517	0.00521		mg/L	0.9	20	18-JUL-19
Vanadium (V)-Total		0.0453	0.0460		mg/L	1.5	20	18-JUL-19
Zinc (Zn)-Total		0.172	0.166		mg/L	3.4	20	18-JUL-19
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-JUL-19
WG3109048-2 LCS								
Aluminum (Al)-Total			104.6		%		80-120	18-JUL-19
Antimony (Sb)-Total			106.0		%		80-120	18-JUL-19
Arsenic (As)-Total			99.6		%		80-120	18-JUL-19
Barium (Ba)-Total			100.2		%		80-120	18-JUL-19
Beryllium (Be)-Total			102.8		%		80-120	18-JUL-19
Bismuth (Bi)-Total			98.7		%		80-120	18-JUL-19



Workorder: L2311077 Report Date: 24-JUL-19 Page 4 of 9

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4715311								
WG3109048-2 LCS			100.4		%		00.400	
Boron (B)-Total Cadmium (Cd)-Total			102.4 103.1		%		80-120	18-JUL-19
Calcium (Ca)-Total			103.1		%		80-120	18-JUL-19
Chromium (Cr)-Total			101.2		%		80-120	18-JUL-19
Cobalt (Co)-Total			100.4		%		80-120	18-JUL-19
Copper (Cu)-Total			99.8		%		80-120	18-JUL-19
Iron (Fe)-Total			99.8		%		80-120	18-JUL-19
Lead (Pb)-Total			101.7		%		80-120	18-JUL-19
Lithium (Li)-Total			101.7		%		80-120 80-120	18-JUL-19
Magnesium (Mg)-Total			103.3		%		80-120	18-JUL-19 18-JUL-19
Manganese (Mn)-Total			99.5		%		80-120	18-JUL-19
Molybdenum (Mo)-Total			102.6		%		80-120	18-JUL-19
Nickel (Ni)-Total			100.1		%		80-120	18-JUL-19
Potassium (K)-Total			94.1		%		80-120	18-JUL-19
Selenium (Se)-Total			99.8		%		80-120	18-JUL-19
Silicon (Si)-Total			105.8		%		60-140	18-JUL-19
Silver (Ag)-Total			101.5		%		80-120	18-JUL-19
Sodium (Na)-Total			106.0		%		80-120	18-JUL-19
Strontium (Sr)-Total			101.1		%		80-120	18-JUL-19
Thallium (TI)-Total			101.5		%		80-120	18-JUL-19
Tin (Sn)-Total			102.8		%		80-120	18-JUL-19
Titanium (Ti)-Total			99.7		%		80-120	18-JUL-19
Tungsten (W)-Total			101.5		%		80-120	18-JUL-19
Uranium (U)-Total			107.3		%		80-120	18-JUL-19
Vanadium (V)-Total			102.1		%		80-120	18-JUL-19
Zinc (Zn)-Total			95.1		%		80-120	18-JUL-19
Zirconium (Zr)-Total			96.1		%		80-120	18-JUL-19
WG3109048-1 MB								
Aluminum (Al)-Total			< 0.0050		mg/L		0.005	18-JUL-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Bismuth (Bi)-Total			<0.00005	0	mg/L		0.00005	18-JUL-19



Workorder: L2311077 Report Date: 24-JUL-19 Page 5 of 9

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4715311								
WG3109048-1 MB Boron (B)-Total			<0.010		mg/L		0.01	18-JUL-19
Cadmium (Cd)-Total			<0.000005	С	mg/L		0.000005	18-JUL-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	18-JUL-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	18-JUL-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	18-JUL-19
Iron (Fe)-Total			<0.010		mg/L		0.01	18-JUL-19
Lead (Pb)-Total			<0.000050	l	mg/L		0.00005	18-JUL-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	18-JUL-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	18-JUL-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	18-JUL-19
Molybdenum (Mo)-Total			<0.000050	ı	mg/L		0.00005	18-JUL-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	18-JUL-19
Potassium (K)-Total			< 0.050		mg/L		0.05	18-JUL-19
Selenium (Se)-Total			<0.000050	1	mg/L		0.00005	18-JUL-19
Silicon (Si)-Total			<0.10		mg/L		0.1	18-JUL-19
Silver (Ag)-Total			<0.000050	l	mg/L		0.00005	18-JUL-19
Sodium (Na)-Total			< 0.050		mg/L		0.05	18-JUL-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	18-JUL-19
Thallium (TI)-Total			<0.000010	ı	mg/L		0.00001	18-JUL-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	18-JUL-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	18-JUL-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	18-JUL-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	18-JUL-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	18-JUL-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	18-JUL-19
WG3109048-5 MS		WG3109048-6						
Aluminum (Al)-Total			95.3		%		70-130	18-JUL-19
Antimony (Sb)-Total			108.8		%		70-130	18-JUL-19
Arsenic (As)-Total			100.7		%		70-130	18-JUL-19
Barium (Ba)-Total			N/A	MS-B	%		-	18-JUL-19
Beryllium (Be)-Total			99.9		%		70-130	18-JUL-19
Bismuth (Bi)-Total			102.5		%		70-130	18-JUL-19



Workorder: L2311077 Report Date: 24-JUL-19

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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4715311								
WG3109048-5 MS Boron (B)-Total		WG3109048-6	98.0		%		70-130	18-JUL-19
Cadmium (Cd)-Total			100.8		%		70-130	18-JUL-19
Calcium (Ca)-Total			N/A	MS-B	%		-	18-JUL-19
Chromium (Cr)-Total			99.3	WO B	%		70-130	18-JUL-19
Cobalt (Co)-Total			100.2		%		70-130	18-JUL-19
Copper (Cu)-Total			N/A	MS-B	%		-	18-JUL-19
Iron (Fe)-Total			88.9	2	%		70-130	18-JUL-19
Lead (Pb)-Total			102.0		%		70-130	18-JUL-19
Lithium (Li)-Total			103.8		%		70-130	18-JUL-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	18-JUL-19
Manganese (Mn)-Total			100.3		%		70-130	18-JUL-19
Molybdenum (Mo)-Total			106.3		%		70-130	18-JUL-19
Nickel (Ni)-Total			98.3		%		70-130	18-JUL-19
Potassium (K)-Total			N/A	MS-B	%		-	18-JUL-19
Selenium (Se)-Total			103.8		%		70-130	18-JUL-19
Silicon (Si)-Total			N/A	MS-B	%		-	18-JUL-19
Silver (Ag)-Total			101.0		%		70-130	18-JUL-19
Sodium (Na)-Total			N/A	MS-B	%		-	18-JUL-19
Strontium (Sr)-Total			N/A	MS-B	%		-	18-JUL-19
Thallium (TI)-Total			103.2		%		70-130	18-JUL-19
Tin (Sn)-Total			104.7		%		70-130	18-JUL-19
Titanium (Ti)-Total			98.7		%		70-130	18-JUL-19
Tungsten (W)-Total			106.6		%		70-130	18-JUL-19
Uranium (U)-Total			107.4		%		70-130	18-JUL-19
Vanadium (V)-Total			103.0		%		70-130	18-JUL-19
Zinc (Zn)-Total			88.2		%		70-130	18-JUL-19
Zirconium (Zr)-Total			100.5		%		70-130	18-JUL-19
NH3-F-WT	Water							
Batch R4719920								
WG3111652-7 DUP		L2311077-17	0.015					
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-JUL-19
WG3111652-6 LCS Ammonia, Total (as N)			100.6		%		85-115	22-JUL-19
WG3111652-5 MB								



Workorder: L2311077 Report Date: 24-JUL-19

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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	Water							
Batch R4719920 WG3111652-5 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	22-JUL-19
WG3111652-8 MS Ammonia, Total (as N)		L2311077-17	92.8		%		75-125	22-JUL-19
NO3-IC-WT	Water							
Batch R4719726 WG3110151-4 DUP Nitrate (as N)		WG3110151-3 <0.020	<0.020	RPD-NA	mg/L	N/A	20	19-JUL-19
WG3110151-2 LCS Nitrate (as N)			101.2		%		90-110	19-JUL-19
WG3110151-1 MB Nitrate (as N)			<0.020		mg/L		0.02	19-JUL-19
WG3110151-5 MS Nitrate (as N)		WG3110151-3	97.9		%		75-125	19-JUL-19
OGG-TOT-WT	Water							
Batch R4721008 WG3111791-2 LCS Oil and Grease, Total			88.2		%		70-130	22-JUL-19
WG3111791-1 MB Oil and Grease, Total			<2.0		mg/L		2	22-JUL-19
PH-BF	Water							
Batch R4713120 WG3106961-2 DUP pH		L2311077-17 8.18	8.19	J	pH units	0.01	0.2	17-JUL-19
WG3106961-1 LCS pH			7.01		pH units		6.9-7.1	17-JUL-19
PHENOLS-4AAP-WT	Water							
Batch R4719699 WG3109768-3 DUP Phenols (4AAP)		L2307302-2 0.0021	0.0021		mg/L	0.8	20	19-JUL-19
WG3109768-2 LCS Phenols (4AAP)			105.9		%		85-115	19-JUL-19
WG3109768-1 MB Phenols (4AAP)			<0.0010		mg/L		0.001	19-JUL-19
WG3109768-4 MS Phenols (4AAP)		L2307302-2	109.5		%		75-125	19-JUL-19
SOLIDS-TDS-BF	Water							



Workorder: L2311077

Report Date: 24-JUL-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-BF	Water							
Batch R4715007 WG3108230-3 DUP Total Dissolved Solids		L2311077-16 297	279		mg/L	6.1	20	17-JUL-19
WG3108230-2 LCS Total Dissolved Solids			101.1		%		85-115	17-JUL-19
WG3108230-1 MB Total Dissolved Solids			<20		mg/L		20	17-JUL-19
SOLIDS-TSS-BF	Water							
Batch R4713148								
WG3106971-3 DUP Total Suspended Solids		L2311077-5 <2.0	<2.0	RPD-NA	mg/L	N/A	25	16-JUL-19
WG3106971-2 LCS Total Suspended Solids			99.2		%		85-115	16-JUL-19
WG3106971-1 MB Total Suspended Solids			<2.0		mg/L		2	16-JUL-19
TOC-WT	Water							
Batch R4722414 WG3112422-3 DUP Total Organic Carbon		L2312192-21 <0.50	<0.50	RPD-NA	mg/L	N/A	20	23-JUL-19
WG3112422-2 LCS Total Organic Carbon		VO.50	106.7	KFD-INA	%	IVA	80-120	23-JUL-19 23-JUL-19
WG3112422-1 MB Total Organic Carbon			<0.50		mg/L		0.5	23-JUL-19
WG3112422-4 MS Total Organic Carbon		L2312192-21	110.0		%		70-130	23-JUL-19
TURBIDITY-BF	Water							
Batch R4713144 WG3106975-3 DUP Turbidity		L2311077-17 0.43	0.50		NTU	0.000	0.0	47 1111 40
WG3106975-2 LCS Turbidity		U.43	101.0	J	W10	0.080	0.2 85-115	17-JUL-19 17-JUL-19
WG3106975-1 MB					NTU		0.1	
Turbidity			<0.10		INTU		0.1	17-JUL-19

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Workorder: L2311077 Report Date: 24-JUL-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
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.

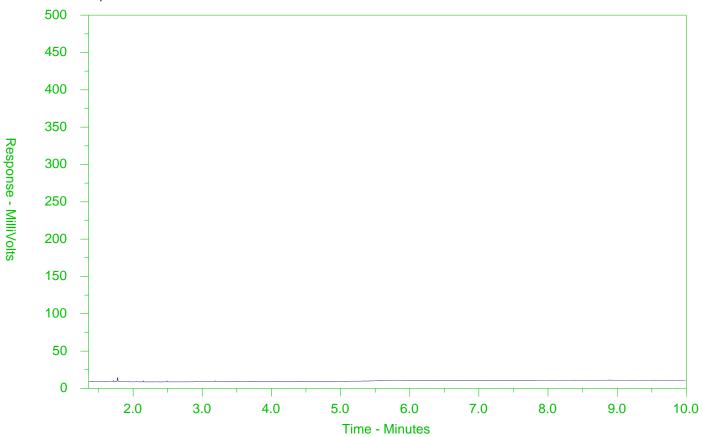
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined data quality objectives to provide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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2311077-16
Client Sample ID: MS-MRY-13A



← -F2-	→ ←	—F3—→ ← F4—	>							
nC10	nC16	nC34	nC50							
174°C	287°C	481°C	575°C							
346°F	549°F	898°F	1067⁰F							
Gasolin	Gasoline → Motor Oils/Lube Oils/Grease →									
•	← Diesel/Jet Fuels →									

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

SEnvironmental

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

Canada Toll Free: 1 800 668 9878

L2311077-COFC

COC Number: 15 -

	www.alsglobat.com												Jan									
Report To Contact and company name below will appear on the final report		Report Format.					Infirm all E&P TATs with your AM - surcharges will apply															
Company: Baffinland Iron Mines Corp.			Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)				Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply											oply				
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phone:	647-253-0596 EXT 601	6			Compare Results to Criteria on Report - provide details below if box checked					3 (lay [P3]			BG B	Sar	me Day	/, Wee	kend or				
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City/Province:	Oakville, ON				Email 2				For tests that can not be performed according to the service level selected, you will be contacted.													
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3 MQ-C-D				15-Jul-19	14:25	Water	R					1 1		1			+	1				
4 MS-C-A				15-Jul-19	15:15	Water	R							T-			1	1				
5 MS-C-B				15-Jul-19	14:40	Water	R										1	2				
6	MS-C-F					15-Jul-19	16:15	Water	R										†	1		
7	MS-C-F01					15-Jul-19	16:15	Water	R							1				1		
8	MS-MRY-9					15-Jul-19	14:00	Water	R											1		
9	MQ-C-B					16-Jul-19	9:25	Water	R											1		
10	MS-C-G					16-Jul-19	10:00	Water	R											1		
11	MS-C-H					16-Jul-19	10:45	Water	R										1	1		
12	MS-C-D					16-Jul-19	13:45	Water	R			_								1		
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Chain of Custody (COC) / Analytica



L2311077-COFC

COC Number: 15 -

www.alsglobal.com Contact and company name below will appear on the final report				Report Format / Distribution						ease confirm all E&P TATs with your AM - surcharges will apply										
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Street:				Email 2						For tests that can not be performed according to the service level selected, you will be contacted.										
City/Province:	Oakville, ON L6H 0C3		Email 3	Citiali 2						Analysis Request Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below										
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September 29, 2019

Jonathan Mesher, Water Resource Officer Nunavut Field Operations Crown Indigenous Relations and Northern Affairs Canada Iqaluit Office Box 100 Iqaluit, NU X0A 0H0 Monika Trottier, Enforcement Officer Curtis Didham, Enforcement Officer Environment and Climate Change Canada 933 Mivvik Street Igaluit, NU X0A 0H0

Re: Follow-up to Spill #19-279 – Update 1, Reported on September 01, 2019, Mary River Project - Water Licence No. 2AM-MRY1325

On August 31st, during inspections at the Crusher Facility, personnel observed runoff from the crusher pad entering the east collection ditch. The runoff sourced from the water pooling in the area of the ring road that originated from the ice and water entrained in the ore stockpile that was being reclaimed and was being disturbed from increased equipment traffic through the area at the time. Additional vehicle traffic was present due to the initiation of remedial earthworks in response to Spill No. 19-279. Upon further investigation, it was observed that water was flowing out of the east collection ditch at the toe, in the same location (CP-SEEPAGE-1) as reported on July 11th. The runoff from the crusher pad was immediately arrested from entering the ditch with a reinforced berm and equipment traffic was eliminated from the area with additional berms. Preliminary pH results at the release location at the ditch toe indicate pH levels below 6.0. Water quality monitoring conducted downstream of the release indicate neutral pH in the receiving environment.

Water quality monitoring was conducted at the release location CP-SEEPAGE-1 on August 31st. CP-SEEPAGE-1 was dry on subsequent site visits, and was not sampled. Lab results for CP-SEEPAGE-1 were non-compliant with applicable regulatory criteria for total suspended solids (TSS) and pH. Field personnel noted that substrate entered the sample bottle during sample collection due to low water level and could not be mitigated by sampling technique. Water quality monitoring was conducted downstream of the Crusher Facility at the Water Licence sampling location MS-C-C on August 31st and September 2nd, MS-C-E September 1st and 2nd. Lab results for all parameters analyzed at MS-C-C and MS-C-E, including acute toxicity, were compliant with applicable regulatory criteria.

Appendix A outlines water quality results from monitoring conducted at the release location and the downstream Water License location.

Repairs completed on the ditch were tested on September 6th with treated lake water. The water migrated approximately 50m along the ditch before draining downward emerging at the toe. This test confirmed the ditch was still compromised and Baffinland continues to contain and pump the Crusher Facility water on the pad to the pond.

Further ditch repairs and remedial actions are still under investigation by Golder Associates. Baffinland intends to repair the ditch and restore functionality prior to Freshet 2020.

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

- a) Surface water at the CF sedimentation pond collection ditch.
- b) Unknown quantity
- c) The release was first observed at approximately 14:00 on July 10th, 2019 (Spill No. 19-279), and again on August 31st, 2019. A summary is provided in Appendix A of the sampling events that occurred upon observation of the uncontrolled release which includes date, time and respective water quality results.
- d) The quantity of surface water released from the collection ditch is unknown. The location of the release is listed below.



ID	Location
CP-SEEPAGE-1	17W 561645 7912653

- e) N/A. The release did not occur through a final discharge point.
- f) Sheardown Lake tributary is the receiving body of water. The release was contained to the adjacent tundra of the crusher pad which is over 1km from Sheardown Lake tributary, the nearest fish bearing waters.
- g) No acute lethality test was able to be taken at the time of deposit from the release location itself. An acute lethality test was taken from the receiving environment (MS-C-E) and was determined to be not acutely lethal.
- h) See summary above for circumstances of deposit. Extent of release was minimal and prohibited proper water sampling procedures. As per Baffinland's Emergency Response Plan and Spill Contingency Plan a berm was immediately constructed to prevent water from entering the ditch and the water was pumped directly into the CF sedimentation pond (MS-06).
- i) The water from the pad continues to be diverted from the ditch and pumped directly into the CF sedimentation pond. Field monitoring continues at the crusher pad facility and no further releases have been observed. A third party engineering firm continues with field investigations and corrective actions will occur prior to Freshet 2020.

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:

Connor Devereaux

Environmental Superintendent

Reviewed by:

Christopher Murray

Environmental & Regulatory Compliance Manager

Attach: Photos, Map, NT-NU Spill Report, Water Quality Results, Certificates of Analyses

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Shawn Stevens, Francois Gaudreau, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC), Curtis Didham (ECCC).





Photo 1. August 31st, 2019 – Crusher Facility runoff into ditch.



Photo 2. August 31st, 2019 – CP-SEEPAGE-1 sample location.

Baffinland



Photo 3. September 1st, 2019 – Crusher Facility runoff berm.



Photo 4. September 1st, 2019 – MS-C-E water quality sampling.

Baffinland



Photo 5. September 3rd, 2019 – Crusher Facility ditch repairs.



Photo 6. September 6th, 2019 - CP-SEEPAGE-1



Photo 7. September 6th, 2019 – Crusher Facility ditch treated lake water test.



Photo 8. September 12th, 2019 – Crusher Facility ditch dry.





Photo 9. September 14th, 2019 – Crusher Facility pump set up to bypass ditch.





Figure 1 – Overview map of spill location



LEAI	AGENCY										
	110000000000000000000000000000000000000	VTACT NAME			ACT TIME	-	REMARKS		200		
	AGENCY DEC DOCG DOW	STATION OPERATO		SIGN	FICANCE I MINOR	-0.0.77	OWKNIFE, NT	(867) 920- LE STATUS 🗆 OP			
N	RECEIVED AT SPILL LINE BY	POSITION	ALPONI L	EMPLOY!		LOCA	ATION CALLED	REPORT	LINE NUMBER		
M	Shawn Stevens	Manager o			nland		6.364-8820	ext. 6			
L	REPORTED TO SPILL LINE BY Connor Devereaux ANY ALTERNATE CONTACT	POSITION Env. Super	rintendent	Baffir	nland	41	ATION CALLING FROM 6-364-8820 RNATE CONTACT	ext. 6			
K	crusher pad entering of the ring road that reclaimed and was I Additional vehicle to	g the east co originated for being disturb affic was prother investi- ne toe, in the d was imme as eliminated he ditch toe	ollection ditorom the ice bed from incesent due to gation, it was same location arres diately arres from the arrindicate pH	ch. The and war reased the initial s obsertion (CP sted from rea with levels I	runoff source ter entrained equipment to tiation of removed that water SEEPAGE-1 mentering the additional below 6.0. Wa	ed from l in the raffic the nedial e er was l) as rep ne ditcherms.	n the water poore stockpile brough the are earthworks in flowing out of ported on July with a reinfor Preliminary pality monitori	ooling in the that was lee at the to response of the east ly 11th. The proced bern of the results at the thick that the thick	he area being ime. to Spill e runoff n and at the		
U	Drainage to tundra ADDITIONAL INFORMATION, COMM On August 31st, dur	The state of the s			A Company of the Comp		N/A SPILLED PRODUCT AND CONTAMINATED MATER N observed run off from the				
J	FACTORS AFFECTING SPILL OR R	ECOVERY	DESCRIBE AN	Charles As a Committee of	gh ditch ICE REQUIRED		HAZARIDS TO PERSO	NS, PROPERTY O	R EQUIPMENT		
1	N/A SPILL SOURCE Crusher Pad		N/A SPILL CAUSE		ah ditah		N/A AREA OF CONTAMINA N/A	ATION IN SOLIARE	METHES		
Н	Surface Water SECOND PRODUCT SPILLED (IF A	PPLICABLE	Unknov	vn	OGRAMS OR CUBIC I		N/A U.N. NUMBER				
G	N/A PRODUCT SPILLED		N/A		OGRÁMS OR CUBIC I		U.N. NUMBER				
F	Baffinland Iron Mine		2275 Mi	iddle Ro		ite 300,	Oakville, ON	L6H 0C3	4.3		
E	74	NUTES 18	SECONDS 3	30	DEGREES 79 DRESS OR OFFICE LI	OCATION	MINUTES 16	SECONDS	35		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED Mary River Mine Site, Baffin Island, NU LATITUDE					UNAVUT	□ ADJACENT JURISI	DICTION OR OCE.	AN		
С	IOL - Commercial Le	ease: Q13C3		L DOMESTICAL	2AM-MRY13 REGION						
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۸	REPORT DATE: MONTH - DAY - YE	AR		REPORT		7.00	DICINAL SPILL DEDME	it.	IT LINE USE ONL		

Figure 2 – NT-NU Spill report

Appendix A Water Quality Results Summary

Summary of Analytical Results

	ALS Laboratory Sample ID			CP-SEEPAGE-1 ²	MS-C-C	MS-C-E	MS-C-C	MS-C-E	
	ALS ID		L2339962-1	L2339962-2	L2339830-1	L2340254-7	L2340254-5		
		Sample Date &	Time	8/31/2019 14:35:00 PM	8/31/2019 15:20:00 PM	9/1/2019 10:00:00 AM	9/2/2019 11:35:00 AM	9/2/2019 11:00:00 AM	
		QA/QC Sample	Туре	N/A	N/A	N/A	N/A	N/A	
	Units	LOR	MDMER Grab Sample Limits ¹						
Conductivity	umhos/cm	3	-	-	-	1280	1390	1240	
рН	pH units	0.1	6.0-9.5	5.85	8.01	7.91	7.99	7.94	
Total Suspended Solids	mg/L	2	30	2890	3	3.7	<2.0	4.0	
Total Dissolved Solids	mg/L	10	-	4850	1030	922	1030	885	
Turbidity	NTU	0.1	-	4500	1	1.71	0.58	0.96	
Ammonia, Total (as N)	mg/L	0.02	-	-	-	<0.010	<0.010	<0.010	
Nitrate (as N)	mg/L	0.02	-	-	-	9.27	16.7	11.3	
Oil and Grease, Total	mg/L	2	-	-	-	-	<2.0	<2.0	
Acute Lethality	-	-	Not acutely toxic	-	-	Not acutely toxic	-	-	

Notes:

 $^{^{1}\}mbox{Metal}$ and Diamond Mining Effluent Regulations - Schedule 4

²Field personnel indicated substrate entered bottle during sample collection due to low water level

Spill Report Number: 19-292



August 19, 2019

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 #19-292 Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

While completing a walk around the Waste Water Treatment Plant (WWTP) being commissioned in Milne Port, the water treatment operator discovered a biological foam overflow on the 380man camp pad, which upon initial investigation had originated from the irritation tank and migrated through the vent to the pad. Approximately 1.5m3 of the greywater / foam was released to the adjacent camp pad, impacting an area of approximately 7m2. The release is >500m from Phillips Creek and was confined to the immediate WWTP pad.

Immediate and Follow-Up Action:

The operator added an anti-foaming agent to the tank which started to dissipate the foam immediately, arresting the spill. The foam was removed with a vacuum truck and transported to the Polishing Waste Stabilization Pond.

Recommendations:

Continued and increased frequency of routine inspections of the 380M WWTP to mitigate the potential for future releases from occurring, and the rerouting of the irritation vent to a secondary holding tank has been actioned.

Current Status:

The irritation tank vent has been routed into the sludge tank to prevent a future foam over from reaching the environment and is operating as designed.

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:

William Bowden

Environmental Superintendent

Bell Barder

Reviewed by:

Vern Shaver

Project Site Manager

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

cc. Grant Goddard, Sylvain Proulx, Tim Sewell, Shawn Stevens, Connor Devereaux, Gerald Rogers, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).



Photo 1. Irritation tank vent foam over location



Photo 2. Foam over spill on 380M WWTP Pad



Photo 3. 380M WWTP Pad after spill clean up

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

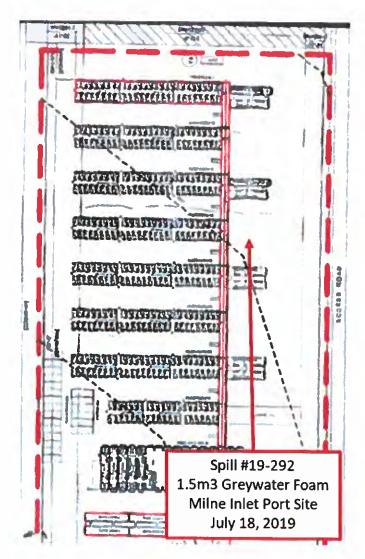


Figure 1. Map of spill location







NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR \$PILL REPORT LINE TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca

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Α	07-19-2019	-19-2019		19:00		XORIGINAL SPILL REI	PORT.	REPORT NUMBER	
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G	ANY CONTRACTOR INVOLVED				R OFFICE LOCATION				
<u>u</u>	Horizon North								
	Greywater / Foam		Approx.		GRAMS OR CUBIC MET	N/A		·-	
H	SECOND PRODUCT SPILLED (I	E ADDI MADI ES			GRAMS OR CUBIC MET	1000			
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-	FACTORS AFFECTING SPILL OF	R RECOVERY	DESCRIBE ANY		S REQUIRED		erwe ppr	OCDTV OR ECHIPMENT	
J	Congested Area		N/A			N/A			
	While completing								
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	REPORTED TO SPILL LINE BY	POSITION		EMPLOYE	=	LOCATION CALLING FI	HOM	TELEPHONE	
-	William Bowden	Env. Superin	tendent	Baffin		Mary River		416 364 8820	
М	Shawn Stevens	Manager of H	ISES	Baffin	· -	ALTERNATE CONTACT LOCATION	ŀ	Ext. 6016	
L			REPORT LIN						
IN	RECEIVED AT SPILL LINE BY	POSITION		EMPLOYE	1	LOCATION CALLED		REPORT LINE NUMBER	
-		STATION OPERATOR		<u> </u>		YELLOWKNIFE, NT		(867) 920-8130	
Ь.	ND AGENCY DEC DCCG DG		C ONEB OTC		KANCE IMINOR IM		FILE STAT	US OPEN OCLOSED	
-		CONTACT NAME		CONTA	CTTIME	REMARKS			
-	AD AGENCY								
FIR	ST SUPPORT AGENCY								
I SE	COND SUPPORT AGENCY								
320									

PAGE 1 OF ____

Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-317



September 8, 2019

Water Resources Officer
Nunavut Region
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 #19-317

Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

While completing daily tasks at the Milne Port Waste Water Treatment Plant (WWTP), the water treatment operator was notified of a sewage spill originating from the plant, upon investigation it was determined that sludge being pumped into the sludge press for dehydration had reached capacity and overflowed the press tank. This resulted in approximately 1 cubic meter of sewage sludge to spill onto the surrounding camp pad. The release was >100m from the closest water body and was confined to the immediate WWTP pad.

Immediate and Follow-Up Action:

The operator immediately turned off the valve and contacted the supervisor who initiated clean up of the spill. The sludge liquid was removed with a vacuum truck and pumped into totes and the contaminated gravel was removed and placed into Quatrex bags for disposal.

Recommendations:

It was recommended that the waste water treatment operator is present during the filling stage of the sludge pressing operations.

Current Status:

The sludge pressing operations continue with no further incidents.

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:

Connor Devereaux

Environmental Superintendent

Reviewed by:

James Martin

Site Services Superintendent

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

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Shawn Stevens, William Bowden, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).



Photo 1. Sewage spill before clean up



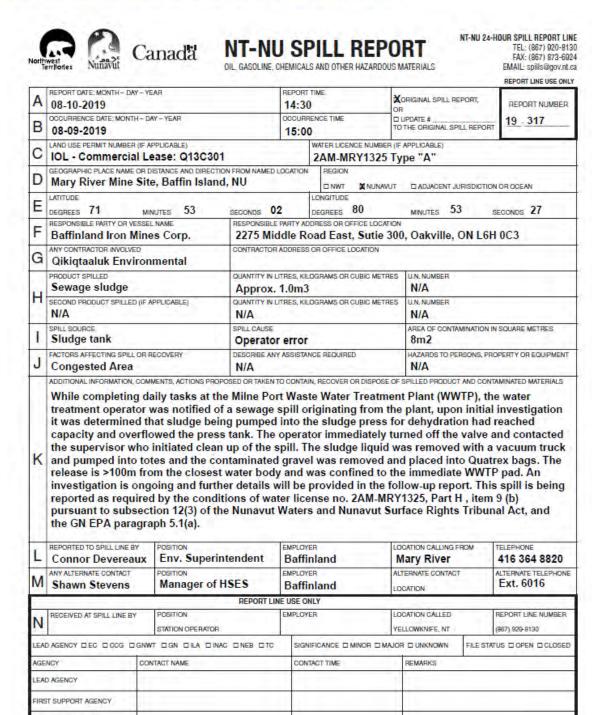
Photo 2. Sewage spill following clean up





Figure 1. Map of spill location





PAGE 1 OF

Figure 2. Baffinland NT NU spill report

SECOND SUPPORT AGENCY

Spill Report Number: 19-323



September 11, 2019

Water Resources Officer
Nunavut Region
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 #19-323 Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On August 12, 2019 while completing daily tasks at the Port Site 380 person camp, the Horizon North waste water treatment plant operator observed lift station LGM-883 discharging sewage from the enclosed housing. The operator halted all flow to the lift station and notified their supervisor of the release. Crews were dispatched to complete clean up of the affected area. All contaminated gravel was removed and placed into Quatrex bags. The release was >100m from the closest water body and is confined to the immediate camp pad.

Immediate and Follow-Up Action:

All flow to the lift station was immediately halted to prevent any further release while the cause was investigated. Upon investigation it was determined that additional sewage was added to the lift station by a vac truck which resulted in the system reaching capacity and overflowing.

Recommendations:

Only sewage from the wing is to flow into the lift station with no additional sewage to be added to the system.

Current Status:

No further additional sewage has been added to the lift station. The lift station is currently operating as designed.

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:

Connor Devereaux

Environmental Superintendent

Come Time

Reviewed by:

Roy Bader

For Marlon Coakley

Marlon Coakley Hatch Site Manager

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

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Shawn Stevens, William Bowden, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).





Photo 1. Lift station LGM-883



Photo 2. Spill location following clean up

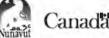




Figure 1. Map of spill location







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

A	REPORT DATE: MONTH - DAY - 1	EAR		REPORT		Xo	RIGINAL SPILL RE	PORT,	REPORT NUMBER
•	08-13-2019 OCCURRENCE DATE: MONTH-	DAV VEAD		21:00	ENCETIME:	OR	PDATE #		1 120 200 200 200 200 200 200 200 200 20
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_	LAND USE PERMIT NUMBER (IF	the second secon	5		WATER LICENCE NUM	Arran Maria	and the second		
9	IOL - Commercial L				2AM-MRY13	25 Ty	pe "A"		
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F	Baffinland Iron Min		2275 Mi	ddle Ro	DRESS OR OFFICE LO Dad East, Suit	te 300	, Oakville, O	ON L6H	0C3
G	TIOTIZOTI HOTH		CONTRACTO	R ADDRESS	OR OFFICE LOCATIO	N			
	PRODUCT SPILLED	and the second second		OGRAMS OR CUBIC N	METRES	U.N. NUMBER			
П	Sewage sludge		Арргох				N/A		
	SECOND PRODUCT SPILLED (IF	APPLICABLE)	N/A	LITRES, KILI	OGRAMS OR CUBIC N	METRES	U.N, NUMBER		
	SPILL SOURCE		SPILL CAUSE					MINATION IN	SQUARE METRES
1	Lift station		Overflo	W			8m2		
J	FACTORS AFFECTING SPILL OR Congested Area	RECOVERY	N/A	Y ASSISTAN	NCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR EQUIPMEN		
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Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-326



September 15, 2019

Jonathan Mesher, Water Resource Officer Nunavut Field Operations Crown Indigenous Relations and Northern Affairs Canada Iqaluit Office Box 100 Iqaluit, NU X0A 0H0 Monika Trottier, Enforcement Officer Curtis Didham, Enforcement Officer Environment and Climate Change Canada 933 Mivvik Street Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #19-326, Reported on August 17, 2019, Mary River Project - Water Licence No. 2AM-MRY1325

On August 16 2019, at approximately 14:00, on inspection of the Crusher Ore Stockpile Facility, it was observed that clear cold (6C) water was flowing out of the toe of the crusher pad where it meets the tundra. The collection ditches were dry at the time of discovery. The source of the clear cold water exiting the crusher pad berm is presently undetermined. Golder Associates Inc. were engaged for external expert advice following the discovery of the seep to advise on the source. There is no indication at this time that the water is sourced from the Crusher Pad Sedimentation Pond. This investigation is still ongoing. The pH and temperature of the observed seep has differed from the chemistry of water resident within the Crusher Sedimentation pond. The prolonged dry, warm conditions of summer at site leading up to and during the occurrence potentially contributed to the observed seep. The observed seeping water occurred on IOL located > 1km from Sheardown Lake tributary, the nearest fish bearing waters.

ID	Location
MS-06-SEEPAGE1 /CP-SEEPAGE-3	N 71° 18' 38" W 79° 16' 49"

Full suite analytical monitoring was actioned on August 16 upon discovery of the water exiting the toe of the crusher pad berm. Water samples were taken from the seep location at the toe of the berm (MS-06-Seepage1/CP-Seepage-3) as well as at the nearest down gradient Water Licence SNP site (MS-C-E) just upstream of fish bearing waters. It was determined that both sample locations on August 16th were compliant with Metal and Diamond Mining Effluent Regulations (MDMER) and Baffinland's Water Licence No. 2AM-MRY1325 criteria (Table 1). An Acute Lethality toxicity test was taken at MS-C-E, which demonstrated non-lethal results.

Follow up general chemistry and metals monitoring was conducted on August 31 of the ongoing seep location. The results were compliant with applicable regulatory criteria with the exception of the TSS criteria under Water licence 2AM-MRY1325 (TSS 23.8 mg/L). However, the low flow conditions and substrate of the tundra at the seep location result in poor sampling conditions, resulting in elevated TSS measurements from disturbance of the substrate during sampling that could not be mitigated by sampling technique. This occurrence has been observed from field personnel.

Appendix A outlines water quality results from monitoring conducted at the release locations and the downstream Water License location. Appendix B includes the Certificates of Analyses (COAs) for these sampling events.



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

Prepared by:

Reviewed by:

William Bowden

Bell Bonder

Environmental Superintendent

Christopher Murray

Environmental and Regulatory Compliance Manager

Attach: Photos, Map, NT-NU Spill Report, Water Quality Results, Certificates of Analyses

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Shawn Stevens, William Bowden, Francois Gaudreau, Christopher Murray, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC), Curtis Didham (ECCC).



Photo 1. August 16th, 2019 – MS-06-SEEPAGE1/CP-SEEPAGE-3 sample location.



Photo 2. September 15th, 2019 – MS-06-SEEPAGE1/CP-SEEPAGE-3 sample location.





Photo 3. August 16th, 2019 – MS-06-SEEPAGE1/CP-SEEPAGE-3 sample location.



Photo 4. September 15th, 2019 – MS-06-SEEPAGE1/CP-SEEPAGE-3 sampling location.





Photo 5. August 16th, 2019 – Dry ditch above seepage location.



Photo 6. September 14th, 2019 – Water sample from MS-06-SEEPAGE1/CP-SEEPAGE-3 location.





Photo 7. September 15th, 2019 – Dry ditch above seepage location.





Figure 1 – Overview map of spill location







Canada

NT-NU SPILL REPORT

NT-NU 24-HOUR SPILL REPORT LINE TEL! (867) 920-8130

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca

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Figure 2 – NT-NU Spill report

Appendix A Water Quality Results Summary

Table 1- Summary of Analytical Results

		Sample ID			MS-06-SEEPAGE1 ¹	MS-C-E	CP-SEEPAGE-3 ¹
		ALS Laboratory Sample	: ID	L2330787	L2330787	L2339962	
		Sample Date & Time			8/16/2019 18:40:00 PM	8/16/2019 20:00:00 PM	8/31/2019 12:45:00 PM
		QA/QC Sample Type			N/A	N/A	N/A
	Units	LOR	MDMER Grab Sample Limits ²	Water Licence Criteria ³			
рН	pH units	0.1	6.0 - 9.5	6.0 - 9.5	6.77	8.00	7.05
Total Suspended Solids	mg/L	2	30	15	12.8	<2.0	23.8
Arsenic	mg/L	0.001	1	0.5	<0.0010	<0.0010	<0.0010
Copper	mg/L	0.01	0.6	0.3	<0.010	<0.010	<0.010
Lead	mg/L	0.0005	0.4	0.2	0.00066	<0.00050	0.00056
Nickel	mg/L	0.005	1	0.5	0.119	<0.0050	0.106
Zinc	mg/L	0.03	1	0.5	<0.030	<0.030	<0.030

Notes:

¹Samples MS-06-SEEPAGE1 and CP-SEEPAGE-3 are taken from the same sampling location

²Metal and Diamond Mining Effluent Regulations - Schedule 4

³Type A Water Licence (2AM-MRY1325 - Amend. 1)

Appendix B Certificates of Analyses



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 16-AUG-19

Report Date: 09-SEP-19 07:36 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

 Lab Work Order #:
 L2330787

 Project P.O. #:
 4500057496

 Job Reference:
 MS-06 WT

C of C Numbers: Legal Site Desc:

Comments: ADDITIONAL 19-AUG-19 10:40

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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L2330787 CONTD....

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2330787-1 MS-C-E Sampled By: ML/BR/LM on 16-AUG-19 @ 20:00 Water Water							
Physical Tests							
Conductivity	1250		3.0	umhos/cm		20-AUG-19	R4760530
Hardness (as CaCO3)	671		1.3	mg/L		21-AUG-19	11110000
pH	8.00		0.10	pH units		17-AUG-19	R4757984
Total Suspended Solids	<2.0		2.0	mg/L			R4758002
Total Dissolved Solids	962		20	mg/L		17-AUG-19	
Turbidity	0.44		0.10	NTU		17-AUG-19	R4757986
Anions and Nutrients	0.44		0.10	IVIO		17 700 13	114757500
Acidity (as CaCO3)	3.6		1.0	mg/L		22-AUG-19	R4765263
Alkalinity, Total (as CaCO3)	156		10	mg/L		20-AUG-19	
Ammonia, Total (as N)	<0.010		0.010	mg/L		20-AUG-19	R4761973
Chloride (CI)	43.9		0.50	mg/L		20-AUG-19	R4762548
Fluoride (F)	0.048		0.020	mg/L		20-AUG-19	
Nitrate (as N)	9.02		0.020	mg/L		20-AUG-19	R4762548
Total Kjeldahl Nitrogen	0.23		0.020	mg/L	20-AUG-19	21-AUG-19	
,	<0.0030			_	20-AUG-19	21-AUG-19	
Phosphorus, Total			0.0030	mg/L	20-AUG-19		
Sulfate (SO4) Cyanides	482		0.30	mg/L		20-AUG-19	R4762548
Cyanide, Total	<0.0020		0.0020	mg/L		20-AUG-19	R4759942
Organic / Inorganic Carbon	<0.0020		0.0020	IIIg/L		20-700-19	N47 39942
Dissolved Carbon Filtration Location	LAB	PEHR				20-AUG-19	R4761739
Dissolved Organic Carbon	3.73		0.50	mg/L	20-AUG-19	21-AUG-19	R4762500
Total Organic Carbon	3.09		0.50	mg/L	207.00 10	20-AUG-19	
Total Metals	0.00		0.00	1119/12		207100 10	14701040
Aluminum (Al)-Total	<0.050	DLHC	0.050	mg/L	21-AUG-19	21-AUG-19	R4762053
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Barium (Ba)-Total	0.0446	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19		R4762053
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	21-AUG-19	21-AUG-19	
Cadmium (Cd)-Total	<0.00050	DLHC	0.000050	mg/L	21-AUG-19	21-AUG-19	R4762053
Calcium (Ca)-Total	113	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	
Cesium (Cs)-Total	<0.00010	DLHC	0.00010	mg/L	21-AUG-19	21-AUG-19	
Chromium (Cr)-Total		DLHC		•			
,	<0.0050	DLHC	0.0050	mg/L	21-AUG-19	21-AUG-19	R4762053
Cobalt (Co)-Total	<0.0010		0.0010	mg/L	21-AUG-19	21-AUG-19	
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	21-AUG-19	21-AUG-19	
Iron (Fe)-Total	<0.10	DLHC	0.10	mg/L	21-AUG-19	21-AUG-19	R4762053
Lead (Pb)-Total	<0.00050	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	
Lithium (Li)-Total	<0.010	DLHC	0.010	mg/L	21-AUG-19	21-AUG-19	
Magnesium (Mg)-Total	103	DLHC	0.050	mg/L	21-AUG-19	21-AUG-19	R4762053
Manganese (Mn)-Total	0.0055	DLHC	0.0050	mg/L	21-AUG-19	21-AUG-19	R4762053
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		21-AUG-19	R4762089

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

L2330787 CONTD....

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2330787-1 MS-C-E Sampled By: ML/BR/LM on 16-AUG-19 @ 20:00 Matrix: Water							
Total Metals							
Molybdenum (Mo)-Total	0.00241	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Nickel (Ni)-Total	<0.0050	DLHC	0.0050	mg/L	21-AUG-19	21-AUG-19	R4762053
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	R4762053
Potassium (K)-Total	5.86	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	R4762053
Rubidium (Rb)-Total	0.0102	DLHC	0.0020	mg/L	21-AUG-19	21-AUG-19	R4762053
Selenium (Se)-Total	0.00082	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Silicon (Si)-Total	2.2	DLHC	1.0	mg/L	21-AUG-19	21-AUG-19	R4762053
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Sodium (Na)-Total	22.9	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	R4762053
Strontium (Sr)-Total	0.064	DLHC	0.010	mg/L	21-AUG-19	21-AUG-19	R4762053
Sulfur (S)-Total	173	DLHC	5.0	mg/L	21-AUG-19	21-AUG-19	R4762053
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	21-AUG-19		R4762053
Thallium (TI)-Total	<0.00010	DLHC	0.00010	mg/L	21-AUG-19	21-AUG-19	
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Titanium (Ti)-Total	<0.0030	DLHC	0.0030	mg/L	21-AUG-19	21-AUG-19	
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Uranium (U)-Total	0.0140	DLHC	0.00010	mg/L	21-AUG-19		R4762053
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	21-AUG-19	21-AUG-19	
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	21-AUG-19	21-AUG-19	R4762053
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	21-AUG-19	21-AUG-19	R4762053
Dissolved Metals	E.E. 6					00 4110 40	D 4750070
Dissolved Mercury Filtration Location	FIELD					20-AUG-19	
Dissolved Metals Filtration Location	FIELD	חוווכ	0.050	/I	20 110 10	20-AUG-19	
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	20-AUG-19		R4762029
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	
Arsenic (As)-Dissolved	<0.0010		0.0010	mg/L	20-AUG-19	20-AUG-19	
Barium (Ba)-Dissolved Beryllium (Be)-Dissolved	0.0447 <0.0010	DLHC DLHC	0.0010 0.0010	mg/L mg/L	20-AUG-19 20-AUG-19	20-AUG-19 20-AUG-19	R4762029
Bismuth (Bi)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19 20-AUG-19	20-AUG-19 20-AUG-19	
Boron (B)-Dissolved	<0.10	DLHC	0.00030	mg/L	20-AUG-19		R4762029
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.000050	mg/L	20-AUG-19	20-AUG-19	
Calcium (Ca)-Dissolved Calcium (Ca)-Dissolved	110	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	
Cesium (Cs)-Dissolved	<0.00010	DLHC	0.00010	mg/L	20-AUG-19	20-AUG-19	
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	20-AUG-19	20-AUG-19	
Cobalt (Co)-Dissolved	<0.0010	DLHC	0.0030	mg/L	20-AUG-19	20-AUG-19	
Copper (Cu)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19		R4762029
Iron (Fe)-Dissolved	<0.10	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	
Lithium (Li)-Dissolved	<0.010	DLHC	0.00030	mg/L	20-AUG-19		R4762029
Magnesium (Mg)-Dissolved	96.2	DLHC	0.050	mg/L	20-AUG-19	20-AUG-19	

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

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2330787-1 MS-C-E Sampled By: ML/BR/LM on 16-AUG-19 @ 20:00 Matrix: Water							
Dissolved Metals							
Manganese (Mn)-Dissolved	<0.0050	DLHC	0.0050	mg/L	20-AUG-19	20-AUG-19	R4762029
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	20-AUG-19	20-AUG-19	R4759841
Molybdenum (Mo)-Dissolved	0.00266	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Nickel (Ni)-Dissolved	<0.0050	DLHC	0.0050	mg/L	20-AUG-19	20-AUG-19	R4762029
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Potassium (K)-Dissolved	5.70	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Rubidium (Rb)-Dissolved	0.0100	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	R4762029
Selenium (Se)-Dissolved	0.00067	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Silicon (Si)-Dissolved	2.10	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Sodium (Na)-Dissolved	21.3	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Strontium (Sr)-Dissolved	0.063	DLHC	0.010	mg/L	20-AUG-19	20-AUG-19	R4762029
Sulfur (S)-Dissolved	171	DLHC	5.0	mg/L	20-AUG-19	20-AUG-19	R4762029
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	R4762029
Thallium (TI)-Dissolved	<0.00010	DLHC	0.00010	mg/L	20-AUG-19	20-AUG-19	R4762029
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	20-AUG-19	20-AUG-19	R4762029
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Uranium (U)-Dissolved	0.0140	DLHC	0.00010	mg/L	20-AUG-19	20-AUG-19	R4762029
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	20-AUG-19	20-AUG-19	R4762029
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	20-AUG-19	20-AUG-19	R4762029
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	R4762029
Radiological Parameters							
Ra-226	0.012		0.0081	Bq/L	27-AUG-19	04-SEP-19	R4780785
L2330787-2 MS-06-SEEPAGE1 Sampled By: ML/BR/LM on 16-AUG-19 @ 18:40 Matrix: Water							
Physical Tests							
Conductivity	4240		3.0	umhos/cm		20-AUG-19	R4760530
Hardness (as CaCO3)	2870		1.3	mg/L		21-AUG-19	
рН	6.77		0.10	pH units		17-AUG-19	
Total Suspended Solids	12.8		2.0	mg/L		17-AUG-19	R4758002
Total Dissolved Solids	4420		20	mg/L		17-AUG-19	R4758289
Turbidity	14.6		0.10	NTU		17-AUG-19	R4757986
Anions and Nutrients							
Acidity (as CaCO3)	9.4		1.0	mg/L		22-AUG-19	
Alkalinity, Total (as CaCO3)	87		10	mg/L		20-AUG-19	
Ammonia, Total (as N)	4.05	DLHC	0.50	mg/L		20-AUG-19	
Chloride (CI)	69.2	DLDS	2.5	mg/L		20-AUG-19	
Fluoride (F)	<0.10	DLDS	0.10	mg/L		20-AUG-19	
Nitrate (as N)	62.5	DLDS	0.10	mg/L		20-AUG-19	R4762548

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

L2330787 CONTD.... PAGE 5 of 10

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2330787-2 MS-06-SEEPAGE1 Sampled By: ML/BR/LM on 16-AUG-19 @ 18:40 Water							
Anions and Nutrients							
Total Kjeldahl Nitrogen	4.87		0.15	mg/L	20-AUG-19	21-AUG-19	R4762150
Phosphorus, Total	0.019	DLM	0.015	mg/L	20-AUG-19	21-AUG-19	R4762388
Sulfate (SO4)	2790	DLDS	1.5	mg/L		20-AUG-19	R4762548
Cyanides							
Cyanide, Total	0.0189		0.0020	mg/L		20-AUG-19	R4759942
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB	PEHR				20-AUG-19	R4761739
Dissolved Organic Carbon	3.68		0.50	mg/L	20-AUG-19	21-AUG-19	R4762500
Total Organic Carbon	3.89		0.50	mg/L		20-AUG-19	R4761943
Total Metals							
Aluminum (AI)-Total	0.531	DLHC	0.050	mg/L	21-AUG-19	21-AUG-19	R4762053
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Barium (Ba)-Total	0.0224	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Boron (B)-Total	0.14	DLHC	0.10	mg/L	21-AUG-19	21-AUG-19	R4762053
Cadmium (Cd)-Total	0.00105	DLHC	0.000050	mg/L	21-AUG-19	21-AUG-19	R4762053
Calcium (Ca)-Total	272	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	R4762053
Cesium (Cs)-Total	0.00017	DLHC	0.00010	mg/L	21-AUG-19	21-AUG-19	R4762053
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	21-AUG-19	21-AUG-19	R4762053
Cobalt (Co)-Total	0.118	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	21-AUG-19	21-AUG-19	R4762053
Iron (Fe)-Total	0.88	DLHC	0.10	mg/L	21-AUG-19	21-AUG-19	R4762053
Lead (Pb)-Total	0.00066	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Lithium (Li)-Total	0.047	DLHC	0.010	mg/L	21-AUG-19	21-AUG-19	R4762053
Magnesium (Mg)-Total	566	DLHC	0.050	mg/L	21-AUG-19	21-AUG-19	R4762053
Manganese (Mn)-Total	31.9	DLHC	0.050	mg/L	21-AUG-19	21-AUG-19	R4762053
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		21-AUG-19	R4762089
Molybdenum (Mo)-Total	0.00265	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Nickel (Ni)-Total	0.119	DLHC	0.0050	mg/L	21-AUG-19	21-AUG-19	R4762053
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	R4762053
Potassium (K)-Total	26.9	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	R4762053
Rubidium (Rb)-Total	0.0285	DLHC	0.0020	mg/L	21-AUG-19	21-AUG-19	R4762053
Selenium (Se)-Total	0.00915	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	
Silicon (Si)-Total	4.5	DLHC	1.0	mg/L	21-AUG-19	21-AUG-19	R4762053
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	21-AUG-19	21-AUG-19	R4762053
Sodium (Na)-Total	55.8	DLHC	0.50	mg/L	21-AUG-19	21-AUG-19	1
Strontium (Sr)-Total	0.468	DLHC	0.010	mg/L	21-AUG-19	21-AUG-19	R4762053
Sulfur (S)-Total	981	DLHC	5.0	mg/L	21-AUG-19	21-AUG-19	
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	21-AUG-19	21-AUG-19	
Thallium (TI)-Total		DLHC	0.0020	•	21-AUG-19	21-AUG-19	
manium (m-10tal	0.00026	טרוזע	0.00010	mg/L	21-AUG-19	21-AUG-19	154/62053

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

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2330787-2 MS-06-SEEPAGE1 Sampled By: ML/BR/LM on 16-AUG-19 @ 18:40 Water Water							
Total Metals							
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Titanium (Ti)-Total	0.0255	DLHC	0.0030	mg/L	21-AUG-19	21-AUG-19	R4762053
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	21-AUG-19	21-AUG-19	R4762053
Uranium (U)-Total	0.0743	DLHC	0.00010	mg/L	21-AUG-19	21-AUG-19	R4762053
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	21-AUG-19	21-AUG-19	R4762053
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	21-AUG-19	21-AUG-19	R4762053
Zirconium (Zr)-Total Dissolved Metals	<0.0020	DLHC	0.0020	mg/L	21-AUG-19	21-AUG-19	R4762053
Dissolved Mercury Filtration Location	FIELD					20-AUG-19	R4759672
Dissolved Metals Filtration Location	FIELD					20-AUG-19	R4760152
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	20-AUG-19	20-AUG-19	R4762029
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Arsenic (As)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Barium (Ba)-Dissolved	0.0208	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Beryllium (Be)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Bismuth (Bi)-Dissolved	<0.00050	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Boron (B)-Dissolved	0.15	DLHC	0.10	mg/L	20-AUG-19	21-AUG-19	R4762029
Cadmium (Cd)-Dissolved	0.000978	DLHC	0.000050	mg/L	20-AUG-19	20-AUG-19	R4762029
Calcium (Ca)-Dissolved	272	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Cesium (Cs)-Dissolved	0.00013	DLHC	0.00010	mg/L	20-AUG-19	20-AUG-19	R4762029
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	20-AUG-19	20-AUG-19	R4762029
Cobalt (Co)-Dissolved	0.113	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Copper (Cu)-Dissolved	<0.0020	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	R4762029
Iron (Fe)-Dissolved	<0.10	DLHC	0.10	mg/L	20-AUG-19	20-AUG-19	R4762029
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Lithium (Li)-Dissolved	0.043	DLHC	0.010	mg/L	20-AUG-19	20-AUG-19	R4762029
Magnesium (Mg)-Dissolved	533	DLHC	0.050	mg/L	20-AUG-19	20-AUG-19	R4762029
Manganese (Mn)-Dissolved	30.8	DLHC	0.050	mg/L	20-AUG-19	20-AUG-19	R4762029
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	20-AUG-19	20-AUG-19	R4759841
Molybdenum (Mo)-Dissolved	0.00270	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Nickel (Ni)-Dissolved	0.114	DLHC	0.0050	mg/L	20-AUG-19	20-AUG-19	R4762029
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Potassium (K)-Dissolved	26.4	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Rubidium (Rb)-Dissolved	0.0272	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	R4762029
Selenium (Se)-Dissolved	0.00967	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Silicon (Si)-Dissolved	3.51	DLHC	0.50	mg/L	20-AUG-19	20-AUG-19	R4762029
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	20-AUG-19	20-AUG-19	R4762029
Sodium (Na)-Dissolved	52.7	DLHC	0.50	mg/L	20-AUG-19		R4762029
Strontium (Sr)-Dissolved	0.469	DLHC	0.010	mg/L	20-AUG-19	20-AUG-19	R4762029
Sulfur (S)-Dissolved	981	DLHC	5.0	mg/L	20-AUG-19	20-AUG-19	R4762029

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2330787-2 MS-06-SEEPAGE1							
Sampled By: ML/BR/LM on 16-AUG-19 @ 18:40 Matrix: Water							
Dissolved Metals							
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	R4762029
Thallium (TI)-Dissolved	0.00025	DLHC	0.00010	mg/L	20-AUG-19	20-AUG-19	
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	20-AUG-19	20-AUG-19	R4762029
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	20-AUG-19	20-AUG-19	R4762029
Uranium (U)-Dissolved	0.0746	DLHC	0.00010	mg/L	20-AUG-19	20-AUG-19	R4762029
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	20-AUG-19	20-AUG-19	R4762029
Zinc (Zn)-Dissolved	0.015	DLHC	0.010	mg/L	20-AUG-19	20-AUG-19	R4762029
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	20-AUG-19	20-AUG-19	R4762029
Radiological Parameters							
Ra-226	0.11		0.0063	Bq/L	27-AUG-19	04-SEP-19	R4780785
* Refer to Referenced Information for Qualifiers (if any) and							

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Aluminum (AI)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Boron (B)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Iron (Fe)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Molybdenum (Mo)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Rubidium (Rb)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Tungsten (W)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2330787-1, -2
Matrix Spike	Barium (Ba)-Total	MS-B	L2330787-1, -2
Matrix Spike	Boron (B)-Total	MS-B	L2330787-1, -2
Matrix Spike	Calcium (Ca)-Total	MS-B	L2330787-1, -2
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2330787-1, -2
Matrix Spike	Potassium (K)-Total	MS-B	L2330787-1, -2
Matrix Spike	Silicon (Si)-Total	MS-B	L2330787-1, -2
Matrix Spike	Sodium (Na)-Total	MS-B	L2330787-1, -2
Matrix Spike	Strontium (Sr)-Total	MS-B	L2330787-1, -2
Matrix Spike	Sulfur (S)-Total	MS-B	L2330787-1, -2

Sample Parameter Qualifier key listed:

Campic i ara	motor equamor key noted.
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).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHR	Parameter Exceeded Recommended Holding Time On Receipt: Proceed With Analysis As Requested.

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-WT Water Alkalinity, Total (as CaCO3) EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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).

CN-TOT-WT Water Cyanide, Total ISO 14403-2

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

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Reference Information

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-VA Water Conductivity Screen (Internal Use APHA 2510

Qualitative analysis of conductivity wher had uired during preparation of other tests - e.g. TDS, metals, etc.

EC-SCREEN-WT Water Conductivity Screen (Internal Use **APHA 2510**

Only)

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

APHA 2510 B Water Conductivity

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**

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 Dissolved Mercury in Water by EPA 1631E (mod) Water

CVAAS

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)

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 APHA 3030B/6020A (mod)

ICPMS

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 EPA 200.2/6020A (mod) Water Total Metals in Water by CRC

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.

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

NO3-IC-WT Water Nitrate in Water by IC EPA 300.1 (mod)

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

P-T-COL-WT 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 deteremined colourimetrically

after persulphate digestion of the sample.

Water APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

RA226-MMER-FC Water Ra226 by Alpha Scint, MDC=0.01 EPA 903.1

Bq/L

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

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

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Reference Information

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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-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D

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.

by a standard reference suspension arises the same conditions. Sample readings are obtained from a representati

** 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
FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2330787

Report Date: 09-SEP-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACY-PCT-VA Batch R476526	Water 3							
WG3140871-4 DUP Acidity (as CaCO3)		L2330787-1 3.6	3.5		mg/L	2.8	20	22-AUG-19
WG3140871-3 LCS Acidity (as CaCO3)			105.0		%		85-115	22-AUG-19
WG3140871-1 MB Acidity (as CaCO3)			1.4		mg/L		2	22-AUG-19
ALK-WT	Water							
Batch R476053 WG3137872-4 DUP Alkalinity, Total (as Ca		WG3137872-3 267	275		mg/L	2.9	20	20-AUG-19
WG3137872-2 LCS Alkalinity, Total (as Ca	CO3)		100.6		%		85-115	20-AUG-19
WG3137872-1 MB Alkalinity, Total (as Ca	CO3)		<10		mg/L		10	20-AUG-19
CL-IC-N-WT	Water							
Batch R476254		1 0004005 4						
WG3137786-18 DUP Chloride (CI)		L2331265-1 30.1	30.1		mg/L	0.1	20	20-AUG-19
WG3137786-17 LCS Chloride (CI)			102.5		%		90-110	20-AUG-19
WG3137786-16 MB Chloride (CI)			<0.50		mg/L		0.5	20-AUG-19
WG3137786-19 MS Chloride (CI)		L2331265-1	98.9		%		75-125	20-AUG-19
CN-TOT-WT	Water							
Batch R475994								
WG3137779-3 DUP Cyanide, Total		L2331126-1 <0.20	<0.20	RPD-NA	mg/L	N/A	20	20-AUG-19
WG3137779-2 LCS Cyanide, Total			91.7		%		80-120	20-AUG-19
WG3137779-1 MB Cyanide, Total			<0.0020		mg/L		0.002	20-AUG-19
WG3137779-4 MS Cyanide, Total		L2331126-1	92.0		%		70-130	20-AUG-19
DOC-WT	Water							



Workorder: L2330787 Report Date: 09-SEP-19 Page 2 of 17

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DOC-WT	Water							
Batch R4762500 WG3138466-3 DUP Dissolved Organic Carbo	on	L2330787-1 3.73	4.62	J	mg/L	0.89	1	21-AUG-19
WG3138466-2 LCS Dissolved Organic Carbo	on		114.8		%		80-120	21-AUG-19
WG3138466-1 MB Dissolved Organic Carbo	on		<0.50		mg/L		0.5	21-AUG-19
WG3138466-4 MS Dissolved Organic Carbo	on	L2330787-1	109.8		%		70-130	21-AUG-19
EC-WT	Water							
Batch R4760530								
WG3137872-4 DUP Conductivity		WG3137872-3 995	997		umhos/cm	0.2	10	20-AUG-19
WG3137872-2 LCS Conductivity			100.6		%		90-110	20-AUG-19
WG3137872-1 MB Conductivity			<3.0		umhos/cm		3	20-AUG-19
F-IC-N-WT	Water							
Batch R4762548								
WG3137786-18 DUP Fluoride (F)		L2331265-1 0.689	0.693		mg/L	0.6	20	20-AUG-19
WG3137786-17 LCS Fluoride (F)			103.8		%		90-110	20-AUG-19
WG3137786-16 MB Fluoride (F)			<0.020		mg/L		0.02	20-AUG-19
WG3137786-19 MS Fluoride (F)		L2331265-1	99.99		%		75-125	20-AUG-19
HG-D-CVAA-WT	Water							
Batch R4759841 WG3137728-4 DUP Mercury (Hg)-Dissolved		WG3137728-3 <0.000050	<0.000005	C RPD-NA	mg/L	N/A	20	20-AUG-19
WG3137728-2 LCS Mercury (Hg)-Dissolved			98.0		%		80-120	20-AUG-19
WG3137728-1 MB Mercury (Hg)-Dissolved			<0.000005	GC .	mg/L		0.000005	20-AUG-19
WG3137728-6 MS Mercury (Hg)-Dissolved		WG3137728-5	97.3		%		70-130	20-AUG-19
HG-T-CVAA-WT	Water							



Workorder: L2330787 Report Date: 09-SEP-19 Page 3 of 17

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WT	Water							
Batch R4762089 WG3138765-4 DUP Mercury (Hg)-Total		WG3138765-3 <0.0000050	<0.0000050	C RPD-NA	mg/L	N/A	20	21-AUG-19
WG3138765-2 LCS Mercury (Hg)-Total			98.7		%		80-120	21-AUG-19
WG3138765-1 MB Mercury (Hg)-Total			<0.0000050	2	mg/L		0.000005	21-AUG-19
WG3138765-6 MS Mercury (Hg)-Total		WG3138765-5	90.2		%		70-130	21-AUG-19
MET-D-CCMS-WT	Water							
Batch R4762029								
WG3138130-4 DUP Aluminum (Al)-Dissolved		WG3138130-3 < 0.50	<0.50	RPD-NA	mg/L	N/A	20	20-AUG-19
Antimony (Sb)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-AUG-19
Arsenic (As)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-AUG-19
Barium (Ba)-Dissolved		0.036	0.033		mg/L	9.3	20	20-AUG-19
Beryllium (Be)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-AUG-19
Bismuth (Bi)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-AUG-19
Boron (B)-Dissolved		20.4	17.4		mg/L	16	20	20-AUG-19
Cadmium (Cd)-Dissolved	d	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-AUG-19
Calcium (Ca)-Dissolved		158	158		mg/L	0.5	20	20-AUG-19
Cesium (Cs)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	20-AUG-19
Chromium (Cr)-Dissolved	d	<0.050	< 0.050	RPD-NA	mg/L	N/A	20	20-AUG-19
Cobalt (Co)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-AUG-19
Copper (Cu)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	20-AUG-19
Iron (Fe)-Dissolved		<1.0	<1.0	RPD-NA	mg/L	N/A	20	20-AUG-19
Lead (Pb)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	20-AUG-19
Lithium (Li)-Dissolved		0.37	0.38		mg/L	4.0	20	20-AUG-19
Magnesium (Mg)-Dissolv	red	20.1	20.1		mg/L	0.1	20	20-AUG-19
Manganese (Mn)-Dissolv	ved .	0.068	0.063		mg/L	7.6	20	20-AUG-19
Molybdenum (Mo)-Disso	lved	0.640	0.641		mg/L	0.1	20	20-AUG-19
Nickel (Ni)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-AUG-19
Phosphorus (P)-Dissolve	ed	<5.0	<5.0	RPD-NA	mg/L	N/A	20	20-AUG-19
Potassium (K)-Dissolved		29.1	29.3		mg/L	0.8	20	20-AUG-19
Rubidium (Rb)-Dissolved	I	0.026	0.025		mg/L	3.5	20	20-AUG-19
Selenium (Se)-Dissolved		0.0060	0.0069		mg/L	14	20	20-AUG-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Meta Mate	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Silicon (Si)-Dissolved	MET-D-CCMS-WT	Water							
Silicon (Si)-Dissolved	Batch R4762029								
Silver (Ag)-Dissolved					DDD MA	ma/l	N1/A	20	00 4110 40
Sodium (Na)-Dissolved						•			
Strontium (Sr)-Dissolved 4.29 4.23 mg/L 1.4 20 20-AUG-19 Sulfur (S)-Dissolved 224 224 mg/L 0.1 20 20-AUG-19 Tellurium (Te)-Dissolved <0.020					RPD-NA	•			
Sulfur (S)-Dissolved 224 224 mg/L 0.1 20 20-AUG-19 Tellurium (Te)-Dissolved <0.020	` ,	ı				•			
Tellurium (Te)-Dissolved	,	•				•			
Thallium (TI)-Dissolved	` '	1			DDD MA	•			
Thorium (Th)-Dissolved	,	1				•			
Tin (Sn)-Dissolved									
Titanium (Ti)-Dissolved <0.030 <0.030 RPD-NA mg/L N/A 20 20-AUG-19 Tungsten (W)-Dissolved 0.030 0.031 mg/L 1.8 20 20-AUG-19 Uranium (U)-Dissolved 0.0011 0.0010 mg/L 8.1 20 20-AUG-19 Vanadium (V)-Dissolved <0.050	` ,					•			
Tungsten (W)-Dissolved 0.030 0.031 mg/L 1.8 20 20-AUG-19 Uranium (U)-Dissolved 0.0011 0.0010 mg/L 8.1 20 20-AUG-19 Vanadium (V)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 20-AUG-19 Zinc (Zn)-Dissolved <0.010 <0.10 RPD-NA mg/L N/A 20 20-AUG-19 Zirconium (Zr)-Dissolved <0.020 <0.020 RPD-NA mg/L N/A 20 20-AUG-19 Zirconium (Zr)-Dissolved <0.020 <0.020 RPD-NA mg/L N/A 20 20-AUG-19 WG3138130-2 LCS Aluminum (Al)-Dissolved 100.2 % 80-120 20-AUG-19 Artimony (Sb)-Dissolved 97.6 % 80-120 20-AUG-19 Arsenic (As)-Dissolved 98.5 % 80-120 20-AUG-19 Barium (Ba)-Dissolved 102.0 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 103.3 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.8 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19 20-AUG-1	,					•			
Uranium (U)-Dissolved 0.0011 0.0010 mg/L 8.1 20 20-AUG-19 Vanadium (V)-Dissolved <0.050	()				RPD-NA				
Vanadium (V)-Dissolved <0.050 <0.050 RPD-NA mg/L N/A 20 20-AUG-19 Zinc (Zn)-Dissolved <0.10	3 ()					•			
Zinc (Zn)-Dissolved <0.10 <0.10 RPD-NA mg/L N/A 20 20-AUG-19 Zirconium (Zr)-Dissolved <0.020 <0.020 RPD-NA mg/L N/A 20 20-AUG-19 WG3138130-2 LCS Mg-120 20-AUG-19 Antimony (Sb)-Dissolved 97.6 % 80-120 20-AUG-19 Arsenic (As)-Dissolved 98.5 % 80-120 20-AUG-19 Barium (Ba)-Dissolved 98.5 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 99.4 %	` '					•			
Zirconium (Zr)-Dissolved <0.020 RPD-NA mg/L N/A 20 20-AUG-19 WG3138130-2 LCS Aluminum (Al)-Dissolved 100.2 % 80-120 20-AUG-19 Antimony (Sb)-Dissolved 97.6 % 80-120 20-AUG-19 Arsenic (As)-Dissolved 98.5 % 80-120 20-AUG-19 Barium (Ba)-Dissolved 102.0 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120	` ,					•			
WG3138130-2 LCS Aluminum (Al)-Dissolved 100.2 % 80-120 20-AUG-19 Antimony (Sb)-Dissolved 97.6 % 80-120 20-AUG-19 Arsenic (As)-Dissolved 98.5 % 80-120 20-AUG-19 Barium (Ba)-Dissolved 102.0 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cf)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.4 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 99.3 % 80-120 20-AUG-19 Lead (Pb)-D	,					•			
Aluminum (Al)-Dissolved 100.2 % 80-120 20-AUG-19 Antimony (Sb)-Dissolved 97.6 % 80-120 20-AUG-19 Arsenic (As)-Dissolved 98.5 % 80-120 20-AUG-19 Barium (Ba)-Dissolved 102.0 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Casium (Cs)-Dissolved 100.3 % 80-120 20-AUG-19 Chomium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 100.3 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19		1	<0.020	<0.020	RPD-NA	mg/L	N/A	20	20-AUG-19
Antimony (Sb)-Dissolved 97.6 % 80-120 20-AUG-19 Arsenic (As)-Dissolved 98.5 % 80-120 20-AUG-19 Barium (Ba)-Dissolved 102.0 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 100.3 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.4 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 99.8 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19		d		100.2		%		80-120	20-AUG-19
Arsenic (As)-Dissolved 98.5 % 80-120 20-AUG-19 Barium (Ba)-Dissolved 102.0 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.4 % 80-120 20-AUG-19 Lopper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Lopper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	` '			97.6					
Barium (Ba)-Dissolved 102.0 % 80-120 20-AUG-19 Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 80-120 20-AUG-19	Arsenic (As)-Dissolved								
Beryllium (Be)-Dissolved 92.6 % 80-120 20-AUG-19 Bismuth (Bi)-Dissolved 96.9 % 80-120 20-AUG-19 Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.4 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 80-120 20-AUG-19	Barium (Ba)-Dissolved					%			
Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Beryllium (Be)-Dissolved	i		92.6		%			
Boron (B)-Dissolved 95.3 % 80-120 20-AUG-19 Cadmium (Cd)-Dissolved 99.4 % 80-120 20-AUG-19 Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Bismuth (Bi)-Dissolved			96.9		%		80-120	20-AUG-19
Calcium (Ca)-Dissolved 99.4 % 80-120 20-AUG-19 Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Boron (B)-Dissolved			95.3		%		80-120	
Cesium (Cs)-Dissolved 103.3 % 80-120 20-AUG-19 Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Cadmium (Cd)-Dissolve	d		99.4		%		80-120	20-AUG-19
Chromium (Cr)-Dissolved 100.3 % 80-120 20-AUG-19 Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Calcium (Ca)-Dissolved			99.4		%		80-120	20-AUG-19
Cobalt (Co)-Dissolved 99.4 % 80-120 20-AUG-19 Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Cesium (Cs)-Dissolved			103.3		%		80-120	20-AUG-19
Copper (Cu)-Dissolved 99.3 % 80-120 20-AUG-19 Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Chromium (Cr)-Dissolve	d		100.3		%		80-120	20-AUG-19
Iron (Fe)-Dissolved 105.5 % 80-120 20-AUG-19 Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Cobalt (Co)-Dissolved			99.4		%		80-120	20-AUG-19
Lead (Pb)-Dissolved 99.8 % 80-120 20-AUG-19 Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Copper (Cu)-Dissolved			99.3		%		80-120	20-AUG-19
Lithium (Li)-Dissolved 90.5 % 80-120 20-AUG-19	Iron (Fe)-Dissolved			105.5		%		80-120	20-AUG-19
	Lead (Pb)-Dissolved			99.8		%		80-120	20-AUG-19
Magnesium (Mg)-Dissolved 98.0 % 80-120 20-AUG-19	Lithium (Li)-Dissolved			90.5		%		80-120	20-AUG-19
	Magnesium (Mg)-Dissol	ved		98.0		%		80-120	20-AUG-19



Workorder: L2330787 Report Date: 09-SEP-19 Page 5 of 17

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R47620	29							
WG3138130-2 LC					0/			
Manganese (Mn)-Dis			101.7		%		80-120	20-AUG-19
Molybdenum (Mo)-Di			103.1		%		80-120	20-AUG-19
Nickel (Ni)-Dissolved			100.4		%		80-120	20-AUG-19
Phosphorus (P)-Diss			103.0		%		80-120	20-AUG-19
Potassium (K)-Disso			101.9		%		80-120	20-AUG-19
Rubidium (Rb)-Disso			104.7		%		80-120	20-AUG-19
Selenium (Se)-Disso			98.1		%		80-120	20-AUG-19
Silicon (Si)-Dissolved			104.7		%		60-140	20-AUG-19
Silver (Ag)-Dissolved			103.3		%		80-120	20-AUG-19
Sodium (Na)-Dissolv			99.0		%		80-120	20-AUG-19
Strontium (Sr)-Dissol	lved		100.6		%		80-120	20-AUG-19
Sulfur (S)-Dissolved			100.6		%		80-120	20-AUG-19
Tellurium (Te)-Dissol			97.3		%		80-120	20-AUG-19
Thallium (TI)-Dissolv			98.8		%		80-120	20-AUG-19
Thorium (Th)-Dissolv	/ed		98.7		%		80-120	20-AUG-19
Tin (Sn)-Dissolved			100.8		%		80-120	20-AUG-19
Titanium (Ti)-Dissolv	red		98.6		%		80-120	20-AUG-19
Tungsten (W)-Dissol	ved		100.7		%		80-120	20-AUG-19
Uranium (U)-Dissolve	ed		101.8		%		80-120	20-AUG-19
Vanadium (V)-Dissol	ved		100.5		%		80-120	20-AUG-19
Zinc (Zn)-Dissolved			98.2		%		80-120	20-AUG-19
Zirconium (Zr)-Disso	lved		99.7		%		80-120	20-AUG-19
WG3138130-1 MB Aluminum (Al)-Disso			<0.0050		mg/L		0.005	20-AUG-19
Antimony (Sb)-Disso			<0.00010		mg/L		0.0001	20-AUG-19
Arsenic (As)-Dissolve			<0.00010		mg/L		0.0001	20-AUG-19
Barium (Ba)-Dissolve	ed		<0.00010		mg/L		0.0001	20-AUG-19
Beryllium (Be)-Dissol			<0.00010		mg/L		0.0001	20-AUG-19
Bismuth (Bi)-Dissolve			<0.000050)	mg/L		0.00005	20-AUG-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	20-AUG-19
Cadmium (Cd)-Disso	olved		<0.000005	SC .	mg/L		0.000005	20-AUG-19
Calcium (Ca)-Dissolv			< 0.050		mg/L		0.05	20-AUG-19
Cesium (Cs)-Dissolv			<0.000010)	mg/L		0.00001	20-AUG-19
Chromium (Cr)-Disso			<0.00050		mg/L		0.0005	20-AUG-19
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Workorder: L2330787 Report Date: 09-SEP-19 Page 6 of 17

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R47620	29							
WG3138130-1 MB Cobalt (Co)-Dissolve			<0.00010		mg/L		0.0001	20-AUG-19
Copper (Cu)-Dissolve	ed		<0.00020		mg/L		0.0002	20-AUG-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	20-AUG-19
Lead (Pb)-Dissolved			<0.000050)	mg/L		0.00005	20-AUG-19
Lithium (Li)-Dissolved	d		<0.0010		mg/L		0.001	20-AUG-19
Magnesium (Mg)-Dis	solved		<0.0050		mg/L		0.005	20-AUG-19
Manganese (Mn)-Dis	solved		<0.00050		mg/L		0.0005	20-AUG-19
Molybdenum (Mo)-Di	ssolved		<0.000050)	mg/L		0.00005	20-AUG-19
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	20-AUG-19
Phosphorus (P)-Diss	olved		<0.050		mg/L		0.05	20-AUG-19
Potassium (K)-Dissol	ved		<0.050		mg/L		0.05	20-AUG-19
Rubidium (Rb)-Disso	lved		<0.00020		mg/L		0.0002	20-AUG-19
Selenium (Se)-Dissol	lved		<0.000050)	mg/L		0.00005	20-AUG-19
Silicon (Si)-Dissolved	I		<0.050		mg/L		0.05	20-AUG-19
Silver (Ag)-Dissolved			<0.000050)	mg/L		0.00005	20-AUG-19
Sodium (Na)-Dissolve	ed		< 0.050		mg/L		0.05	20-AUG-19
Strontium (Sr)-Dissol	ved		<0.0010		mg/L		0.001	20-AUG-19
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	20-AUG-19
Tellurium (Te)-Dissol	ved		<0.00020		mg/L		0.0002	20-AUG-19
Thallium (TI)-Dissolve	ed		<0.000010)	mg/L		0.00001	20-AUG-19
Thorium (Th)-Dissolv	red		<0.00010		mg/L		0.0001	20-AUG-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	20-AUG-19
Titanium (Ti)-Dissolve	ed		<0.00030		mg/L		0.0003	20-AUG-19
Tungsten (W)-Dissol	ved		<0.00010		mg/L		0.0001	20-AUG-19
Uranium (U)-Dissolve	ed		<0.000010)	mg/L		0.00001	20-AUG-19
Vanadium (V)-Dissol	ved		<0.00050		mg/L		0.0005	20-AUG-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	20-AUG-19
Zirconium (Zr)-Dissol	ved		<0.00020		mg/L		0.0002	20-AUG-19
WG3138130-5 MS Aluminum (Al)-Dissol	ved	WG3138130-6	N/A	MS-B	%		-	20-AUG-19
Antimony (Sb)-Dissol	ved		90.9		%		70-130	20-AUG-19
Arsenic (As)-Dissolve	ed		90.6		%		70-130	20-AUG-19
Barium (Ba)-Dissolve	ed		N/A	MS-B	%		-	20-AUG-19
Beryllium (Be)-Dissol	ved		89.5		%		70-130	20-AUG-19



Workorder: L2330787 Report Date: 09-SEP-19 Page 7 of 17

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R47620)29							
WG3138130-5 MS		WG3138130-			0.6			
Bismuth (Bi)-Dissolv			89.0		%		70-130	20-AUG-19
Boron (B)-Dissolved			N/A	MS-B	%		-	20-AUG-19
Cadmium (Cd)-Diss			93.3		%		70-130	20-AUG-19
Calcium (Ca)-Dissol			N/A	MS-B	%		-	20-AUG-19
Chromium (Cr)-Diss			83.5		%		70-130	20-AUG-19
Cobalt (Co)-Dissolve			93.1		%		70-130	20-AUG-19
Copper (Cu)-Dissolv	ved .		91.1		%		70-130	20-AUG-19
Iron (Fe)-Dissolved			N/A	MS-B	%		-	20-AUG-19
Lead (Pb)-Dissolved	I		92.0		%		70-130	20-AUG-19
Lithium (Li)-Dissolve	ed		N/A	MS-B	%		-	20-AUG-19
Magnesium (Mg)-Di	ssolved		N/A	MS-B	%		-	20-AUG-19
Manganese (Mn)-Di	ssolved		N/A	MS-B	%		-	20-AUG-19
Molybdenum (Mo)-D	issolved		N/A	MS-B	%		-	20-AUG-19
Nickel (Ni)-Dissolve	d		87.4		%		70-130	20-AUG-19
Phosphorus (P)-Dis	solved		100.1		%		70-130	20-AUG-19
Potassium (K)-Disso	olved		N/A	MS-B	%		-	20-AUG-19
Rubidium (Rb)-Disse	olved		N/A	MS-B	%		-	20-AUG-19
Selenium (Se)-Disso	olved		94.3		%		70-130	20-AUG-19
Silicon (Si)-Dissolve	d		N/A	MS-B	%		-	20-AUG-19
Silver (Ag)-Dissolve	d		70.4		%		70-130	20-AUG-19
Sodium (Na)-Dissol	/ed		N/A	MS-B	%		-	20-AUG-19
Strontium (Sr)-Disso	olved		N/A	MS-B	%		-	20-AUG-19
Sulfur (S)-Dissolved			N/A	MS-B	%		-	20-AUG-19
Tellurium (Te)-Disso	olved		88.7		%		70-130	20-AUG-19
Thallium (TI)-Dissolv	/ed		90.5		%		70-130	20-AUG-19
Thorium (Th)-Dissol			91.6		%		70-130	20-AUG-19
Tin (Sn)-Dissolved			95.2		%		70-130	20-AUG-19
Titanium (Ti)-Dissol	ved		88.8		%		70-130	20-AUG-19
Tungsten (W)-Disso	lved		N/A	MS-B	%		-	20-AUG-19
Uranium (U)-Dissolv			N/A	MS-B	%		-	20-AUG-19
Vanadium (V)-Disso			94.7	-	%		70-130	20-AUG-19
Zirconium (Zr)-Disso			93.3		%		70-130	20-AUG-19
(, _51000	· 2 -		00.0		. .		70-100	20 A00-18

MET-T-CCMS-WT Water



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4762053								
WG3138585-4 DUP		WG3138585-			/I			
Aluminum (Al)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	21-AUG-19
Antimony (Sb)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-AUG-19
Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-AUG-19
Barium (Ba)-Total		0.0206	0.0208		mg/L	1.3	20	21-AUG-19
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-AUG-19
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-AUG-19
Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	21-AUG-19
Cadmium (Cd)-Total		<0.000050	0.000051	RPD-NA	mg/L	N/A	20	21-AUG-19
Calcium (Ca)-Total		92.9	93.8		mg/L	0.9	20	21-AUG-19
Chromium (Cr)-Total		1.21	1.22		mg/L	0.9	20	21-AUG-19
Cesium (Cs)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-AUG-19
Cobalt (Co)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-AUG-19
Copper (Cu)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-AUG-19
Iron (Fe)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	21-AUG-19
Lead (Pb)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-AUG-19
Lithium (Li)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	21-AUG-19
Magnesium (Mg)-Total		18.7	18.7		mg/L	0.0	20	21-AUG-19
Manganese (Mn)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	21-AUG-19
Molybdenum (Mo)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-AUG-19
Nickel (Ni)-Total		0.0069	0.0066		mg/L	4.4	20	21-AUG-19
Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	21-AUG-19
Potassium (K)-Total		4.22	4.23		mg/L	0.1	20	21-AUG-19
Rubidium (Rb)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	21-AUG-19
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-AUG-19
Silicon (Si)-Total		3.1	3.1		mg/L	1.0	20	21-AUG-19
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	21-AUG-19
Sodium (Na)-Total		136	137		mg/L	0.7	20	21-AUG-19
Strontium (Sr)-Total		0.154	0.157		mg/L	1.8	20	21-AUG-19
Sulfur (S)-Total		10.4	10.6		mg/L	2.2	25	21-AUG-19
Thallium (TI)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	21-AUG-19
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	21-AUG-19
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	21-AUG-19
Tin (Sn)-Total		<0.0010	<0.0010		mg/L			21-AUG-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4762053								
WG3138585-4 DUP Tin (Sn)-Total		WG3138585- <0.0010	3 <0.0010	RPD-NA	mg/L	N/A	20	21-AUG-19
Titanium (Ti)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	21-AUG-19
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	21-AUG-19
Uranium (U)-Total		0.00073	0.00072		mg/L	1.1	20	21-AUG-19
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	21-AUG-19
Zinc (Zn)-Total		<0.030	< 0.030	RPD-NA	mg/L	N/A	20	21-AUG-19
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	21-AUG-19
WG3138585-2 LCS Aluminum (Al)-Total			101.6		%		80-120	21-AUG-19
Antimony (Sb)-Total			103.4		%		80-120	21-AUG-19
Arsenic (As)-Total			99.5		%		80-120	21-AUG-19
Barium (Ba)-Total			100.9		%		80-120	21-AUG-19
Beryllium (Be)-Total			97.4		%		80-120	21-AUG-19
Bismuth (Bi)-Total			99.2		%		80-120	21-AUG-19
Boron (B)-Total			95.6		%		80-120	21-AUG-19
Cadmium (Cd)-Total			100.1		%		80-120	21-AUG-19
Calcium (Ca)-Total			99.0		%		80-120	21-AUG-19
Chromium (Cr)-Total			101.0		%		80-120	21-AUG-19
Cesium (Cs)-Total			99.99		%		80-120	21-AUG-19
Cobalt (Co)-Total			101.0		%		80-120	21-AUG-19
Copper (Cu)-Total			101.0		%		80-120	21-AUG-19
Iron (Fe)-Total			105.7		%		80-120	21-AUG-19
Lead (Pb)-Total			100.7		%		80-120	21-AUG-19
Lithium (Li)-Total			96.9		%		80-120	21-AUG-19
Magnesium (Mg)-Total			101.1		%		80-120	21-AUG-19
Manganese (Mn)-Total			100.8		%		80-120	21-AUG-19
Molybdenum (Mo)-Total	I		101.6		%		80-120	21-AUG-19
Nickel (Ni)-Total			100.3		%		80-120	21-AUG-19
Phosphorus (P)-Total			101.8		%		70-130	21-AUG-19
Potassium (K)-Total			100.8		%		80-120	21-AUG-19
Rubidium (Rb)-Total			100.4		%		80-120	21-AUG-19
Selenium (Se)-Total			98.1		%		80-120	21-AUG-19
Silicon (Si)-Total			104.6		%		60-140	21-AUG-19



Workorder: L2330787 Report Date: 09-SEP-19 Page 10 of 17

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4762053								
WG3138585-2 LCS			100.0		0/			
Silver (Ag)-Total			100.6		%		80-120	21-AUG-19
Sodium (Na)-Total			101.8		%		80-120	21-AUG-19
Strontium (Sr)-Total			98.3		%		80-120	21-AUG-19
Sulfur (S)-Total			99.7		%		80-120	21-AUG-19
Thallium (TI)-Total			98.8		%		80-120	21-AUG-19
Tellurium (Te)-Total			95.6		%		80-120	21-AUG-19
Thorium (Th)-Total			100.2		%		70-130	21-AUG-19
Tin (Sn)-Total			100.9		%		80-120	21-AUG-19
Titanium (Ti)-Total			98.8		%		80-120	21-AUG-19
Tungsten (W)-Total			100.7		%		80-120	21-AUG-19
Uranium (U)-Total			101.9		%		80-120	21-AUG-19
Vanadium (V)-Total			102.4		%		80-120	21-AUG-19
Zinc (Zn)-Total			101.3		%		80-120	21-AUG-19
Zirconium (Zr)-Total			98.4		%		80-120	21-AUG-19
WG3138585-1 MB			0.0050		,,		2 225	
Aluminum (Al)-Total			<0.0050		mg/L		0.005	21-AUG-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	21-AUG-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	21-AUG-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	21-AUG-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	21-AUG-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	21-AUG-19
Boron (B)-Total			<0.010		mg/L		0.01	21-AUG-19
Cadmium (Cd)-Total			<0.000005	SC .	mg/L		0.000005	21-AUG-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	21-AUG-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	21-AUG-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	21-AUG-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	21-AUG-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	21-AUG-19
Iron (Fe)-Total			<0.010		mg/L		0.01	21-AUG-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	21-AUG-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	21-AUG-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	21-AUG-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	21-AUG-19
Molybdenum (Mo)-Total			<0.000050)	mg/L		0.00005	21-AUG-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4762053								
WG3138585-1 MB Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04 4110 40
Phosphorus (P)-Total			<0.050		mg/L		0.0003	21-AUG-19 21-AUG-19
Potassium (K)-Total			<0.050		mg/L		0.05	
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	21-AUG-19 21-AUG-19
Selenium (Se)-Total			<0.00020		mg/L		0.0002	
Silicon (Si)-Total			<0.10		mg/L		0.00003	21-AUG-19
Silver (Ag)-Total			<0.000050		mg/L		0.00005	21-AUG-19
Sodium (Na)-Total			<0.050		mg/L		0.05	21-AUG-19
Strontium (Sr)-Total			<0.0010		•		0.001	21-AUG-19
Sulfur (S)-Total			<0.50		mg/L mg/L		0.50	21-AUG-19
Thallium (TI)-Total			<0.00010		mg/L		0.00001	21-AUG-19
Tellurium (Te)-Total			<0.000010		mg/L		0.00001	21-AUG-19
Thorium (Th)-Total			<0.00020		mg/L		0.0002	21-AUG-19 21-AUG-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	
Titanium (Ti)-Total			<0.00010		mg/L		0.0001	21-AUG-19
Tungsten (W)-Total			<0.00030		mg/L		0.0003	21-AUG-19
Uranium (U)-Total			<0.00010		mg/L		0.0001	21-AUG-19 21-AUG-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	21-AUG-19 21-AUG-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	21-AUG-19 21-AUG-19
Zirconium (Zr)-Total			<0.0030		mg/L		0.0002	
` ,		WC2420E0E 6	<0.00020		mg/L		0.0002	21-AUG-19
WG3138585-5 MS Aluminum (Al)-Total		WG3138585-6	107.1		%		70-130	21-AUG-19
Antimony (Sb)-Total			103.3		%		70-130	21-AUG-19
Arsenic (As)-Total			99.0		%		70-130	21-AUG-19
Barium (Ba)-Total			N/A	MS-B	%		-	21-AUG-19
Beryllium (Be)-Total			102.0		%		70-130	21-AUG-19
Bismuth (Bi)-Total			88.2		%		70-130	21-AUG-19
Boron (B)-Total			N/A	MS-B	%		-	21-AUG-19
Cadmium (Cd)-Total			95.4		%		70-130	21-AUG-19
Calcium (Ca)-Total			N/A	MS-B	%		-	21-AUG-19
Chromium (Cr)-Total			103.6		%		70-130	21-AUG-19
Cesium (Cs)-Total			99.9		%		70-130	21-AUG-19
Cobalt (Co)-Total			100.3		%		70-130	21-AUG-19
Copper (Cu)-Total			95.7		%		70-130	21-AUG-19



Workorder: L2330787 Report Date: 09-SEP-19 Page 12 of 17

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4762053								
WG3138585-5 MS		WG3138585-6			0/			
Iron (Fe)-Total			109.9		%		70-130	21-AUG-19
Lead (Pb)-Total			92.0		%		70-130	21-AUG-19
Lithium (Li)-Total			103.9		%		70-130	21-AUG-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	21-AUG-19
Manganese (Mn)-Total			102.6		%		70-130	21-AUG-19
Molybdenum (Mo)-Total			107.0		%		70-130	21-AUG-19
Nickel (Ni)-Total			95.5		%		70-130	21-AUG-19
Phosphorus (P)-Total			107.3		%		70-130	21-AUG-19
Potassium (K)-Total			N/A	MS-B	%		-	21-AUG-19
Rubidium (Rb)-Total			100.3		%		70-130	21-AUG-19
Selenium (Se)-Total			95.7		%		70-130	21-AUG-19
Silicon (Si)-Total			N/A	MS-B	%		-	21-AUG-19
Silver (Ag)-Total			94.5		%		70-130	21-AUG-19
Sodium (Na)-Total			N/A	MS-B	%		-	21-AUG-19
Strontium (Sr)-Total			N/A	MS-B	%		-	21-AUG-19
Sulfur (S)-Total			N/A	MS-B	%		-	21-AUG-19
Thallium (TI)-Total			91.1		%		70-130	21-AUG-19
Tellurium (Te)-Total			92.0		%		70-130	21-AUG-19
Thorium (Th)-Total			98.6		%		70-130	21-AUG-19
Tin (Sn)-Total			100.7		%		70-130	21-AUG-19
Titanium (Ti)-Total			106.3		%		70-130	21-AUG-19
Tungsten (W)-Total			99.9		%		70-130	21-AUG-19
Uranium (U)-Total			99.2		%		70-130	21-AUG-19
Vanadium (V)-Total			108.3		%		70-130	21-AUG-19
Zinc (Zn)-Total			96.7		%		70-130	21-AUG-19
Zirconium (Zr)-Total			103.7		%		70-130	21-AUG-19
NH3-F-WT	Water							
Batch R4761973								
WG3138000-11 DUP Ammonia, Total (as N)		L2329749-1 <0.010	<0.010	DDD NA	ma/l	NI/A	20	20 410 40
		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-AUG-19
WG3138000-10 LCS Ammonia, Total (as N)			93.4		%		85-115	20-AUG-19
WG3138000-9 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	20-AUG-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT Batch R4761973 WG3138000-12 MS	Water	L2329749-1						
Ammonia, Total (as N) NO3-IC-WT	Water		94.1		%		75-125	20-AUG-19
WG3137786-18 DUP Nitrate (as N)		L2331265-1 0.226	0.227		mg/L	0.7	20	20-AUG-19
WG3137786-17 LCS Nitrate (as N) WG3137786-16 MB			101.8		%		90-110	20-AUG-19
Nitrate (as N) WG3137786-19 MS Nitrate (as N)		L2331265-1	<0.020 98.1		mg/L %		0.02 75-125	20-AUG-19 20-AUG-19
P-T-COL-WT Batch R4762388	Water							
WG3138454-3 DUP Phosphorus, Total WG3138454-2 LCS		L2330787-1 <0.0030	<0.0030	RPD-NA	mg/L	N/A	20	21-AUG-19
Phosphorus, Total WG3138454-1 MB			100.1		%		80-120 0.003	21-AUG-19
Phosphorus, Total WG3138454-4 MS Phosphorus, Total		L2330787-1	92.8		mg/L %		70-130	21-AUG-19 21-AUG-19
PH-BF	Water							
Batch R4757984 WG3135635-2 DUP pH		L2330787-1 8.00	8.01	J	pH units	0.01	0.2	17-AUG-19
WG3135635-1 LCS pH			7.01		pH units		6.9-7.1	17-AUG-19
SO4-IC-N-WT	Water							
Batch R4762548 WG3137786-18 DUP Sulfate (SO4)		L2331265-1 29.9	29.8		mg/L	0.0	20	20-AUG-19
WG3137786-17 LCS Sulfate (SO4)			103.0		%		90-110	20-AUG-19
WG3137786-16 MB Sulfate (SO4)			<0.30		mg/L		0.3	20-AUG-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT	Water							
Batch R4762548								
WG3137786-19 MS Sulfate (SO4)		L2331265-1	99.2		%		75-125	20-AUG-19
SOLIDS-TDS-BF	Water							
Batch R4758289								
WG3135644-3 DUP Total Dissolved Solids		L2330788-4 1970	1970		mg/L	0.2	20	17-AUG-19
WG3135644-2 LCS Total Dissolved Solids			103.2		%		85-115	17-AUG-19
WG3135644-1 MB Total Dissolved Solids			<20		mg/L		20	17-AUG-19
SOLIDS-TSS-BF	Water							
Batch R4758002								
WG3135636-3 DUP Total Suspended Solids		L2330787-1 <2.0	<2.0	RPD-NA	mg/L	N/A	25	17-AUG-19
WG3135636-2 LCS Total Suspended Solids			100.2		%		85-115	17-AUG-19
WG3135636-1 MB Total Suspended Solids			<2.0		mg/L		2	17-AUG-19
TKN-WT	Water							
Batch R4762150								
WG3138211-3 DUP Total Kjeldahl Nitrogen		L2330244-1 0.29	0.36	J	mg/L	0.07	0.3	21-AUG-19
WG3138211-2 LCS Total Kjeldahl Nitrogen			102.8		%		75-125	21-AUG-19
WG3138211-1 MB Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	21-AUG-19
WG3138211-4 MS Total Kjeldahl Nitrogen		L2330244-1	103.3		%		70-130	21-AUG-19
TOC-WT	Water							
Batch R4761943								
WG3138127-3 DUP Total Organic Carbon		L2330787-1 3.09	3.14		mg/L	1.7	20	20-AUG-19
WG3138127-2 LCS Total Organic Carbon			97.6		%		80-120	20-AUG-19
WG3138127-1 MB Total Organic Carbon			<0.50		mg/L		0.5	20-AUG-19



Workorder: L2330787

Report Date: 09-SEP-19

Page 15 of 17

Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TOC-WT		Water							
Batch R4	761943								
WG3138127-4 Total Organic C	MS Carbon		L2330787-1	97.1		%		70-130	20-AUG-19
TURBIDITY-BF		Water							
Batch R4	757986								
WG3135638-3	DUP		L2330788-4						
Turbidity			3.83	3.98		NTU	3.8	15	17-AUG-19
WG3135638-2 Turbidity	LCS			109.0		%		85-115	17-AUG-19
WG3135638-1 Turbidity	МВ			<0.10		NTU		0.1	17-AUG-19

Workorder: L2330787 Report Date: 09-SEP-19

Baffinland Iron Mine's Corporation (Oakville) Client: Page 16 of 17

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

Contact: William Bowden/Connor Devereaux

Legend:

ALS Control Limit (Data Quality Objectives) Limit

DUP **Duplicate**

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

Matrix Spike Duplicate MSD

Average Desorption Efficiency ADE

MB Method Blank

Internal Reference Material IRM CRM Certified Reference Material Continuing Calibration Verification CCV 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.

Workorder: L2330787 Report Date: 09-SEP-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Page 17 of 17

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Organic / Inorganic Carbon							
Dissolved Organic Carbon							
	1	16-AUG-19 20:00	20-AUG-19 21:00	3	4	days	EHT
	2	16-AUG-19 18:40	20-AUG-19 21:00	3	4	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 L2330787 were received on 16-AUG-19 23:00.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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



Ft. Collins, Colorado LIMS Version: 6.907 Page 1 of 1

Thursday, September 05, 2019

Rick Hawthorne
ALS Environmental
60 Northland Rd, Unit 1
Waterloo Canada, ON N2V 2B8

Re: ALS Workorder: 1908486

Project Name:

Project Number: L2330787

Dear Mr. Hawthorne:

Two water samples were received from ALS Environmental, on 8/21/2019. The samples were scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental

Katie M. OBrien

Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environme	ntal – Fort Collins
7.20	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1908486

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1908486

Client Name: ALS Environmental

Client Project Name:

Client Project Number: L2330787 Client PO Number: L2330787

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L2330787-1	1908486-1		WATER	16-Aug-19	_
L2330787-2	1908486-2		WATER	16-Aug-19	

Date Printed: Thursday, September 05, 2019

WATERLOO



Subcontract Request Form

1908 484

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA

225 COMMERCE DRIVE FORT COLLINS,CO 80524

	report and invoice: PO# <u>L23</u> be provided with your final resu	<i>130787</i> lts.	
Please see enclosed 2 san	nple(s) in 2 Container(s	5)	
SAMPLE NUMBER ANALYTI	ICAL REQUIRED	DATE SAMPLED DUE DATE	Priority Fiag
L2330787-1 MS-C-E Ra226 by	Alpha Scint, MDC=0.01 Bq/L (RA226	8/ 16/ 2019 5-MMER-FC 1) 9/6/2019	E
L2330787-2 MS-06-SEEPAGE1 Ra226 by	Alpha Scint, MDC=0.01 Bq/L (RA226	8/ 16/ 2019 5-MMER-FC 1) 9/6/2019	E
Subcontract Info Contact: Analysis and reporting info contact:	Mary-Lynn Pike (519) 886-691 Rick Hawthorne 60 NORTHLAND ROAD, UNIT 1 WATERLOO,ON N2V 2B8 Phone: (519) 886-6910		alsglobal.com
Please email confirmation of rece	ipt to: Rick.Hawthor	ne@alsglobal.com	
Shipped By: Received By: Verified By:	Date Shipped: Sold 19/57 State Received Date Verified:	:	
	Temperature:		

Sample Integrity Issues:



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Water LOO	Workorder No:	190	842	SQ.		
Project Manager: KMO	Initials: K 🥰	Date:	8:-:	22.19	- -	
1. Are airbills / shipping documents present and/or removable?			DROP OFF	YES) NO	
2. Are custody seals on shipping containers intact?			NONE	YES	NO *	
3. Are custody seals on sample containers intact?		7	NÔNE	YES	NO *	
4. Is there a COC (chain-of-custody) present?				YES	NO*	
Is the COC in agreement with samples received? (IDs, dates, matrix, requested analyses, etc.)	times, # of samples, #	of conta	iners,	YES (NO	
6. Are short-hold samples present?				YES	NO	1
7. Are all samples within holding times for the requested analy	ses?			YES	NO *	
8. Were all sample containers received intact? (not broken or l	eaking)			YES	NO *	
9 Is there sufficient sample for the requested analyses?				YES) NO *	
10. Are all samples in the proper containers for the requested an	alyses?		-	YES	NO *	
11. Are all aqueous samples preserved correctly, if required? (ex	(cluding volatiles)		N/A	YES	NO *	
12. Are all aqueous non-preserved samples pH 4-9?			N/A) YES	NO *	
Are all samples requiring no headspace (VOC, GRO, RSK/N > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	MEE, radon) free of b	ubbles	N/A	YES	NO	
14. Were the samples shipped on ice?				YES) NO	
15. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*:	#1 (#3)	#4	RAD	YES	NO	ļ
Cooler #: Temperature (°C): No. of custody seals on cooler: No. of custody seals on cooler: External μR/hr reading: Background μR/hr reading: Were external μR/hr readings ≤ two times background and within DOT acceptance	criteria? YES/NO/NA	(If no, see	Form 008.)			
* Please provide details here for NO responses to gray boxes, above - 5) Sanual I Tom on bottle = Sample 2 tomon bottle			M & cont	inue w/ log	Ü Stc	9
All client bo If applicable, was the client contacted? YES / NO / NA Contact: Project Manager Signature / Date:	ottle ID's vs ALS lal	o ID's do	uble-ch Date/Tii			}

Form 201r27.xls (02/11/2019)

*IR Gun #1, VWR SN 170560549 *IR Gun #3, VWR SN 170647571 *IR Gun #4, Oakton, SN 2372220101-0002

EXF	PRESS WORLDWIDE WPX	_DHL_
From :	ALS Environmental Ed Hill 60 Northland Rd Unit 1	Origin: YHM
	NZV 286 WATERLOO ON Canada	Contact: +15198866910
To:	ALS Environmental Fort Colline Sample Login 225 Commerce Drive	Contact: Sample Login + 18004431511
<u>L</u>	80524 FORT COLLINS CO United States of America	
	US – DEN – D	EN .
C		Dey Yims
lef:	11.0,11.60	Poe/Bhet Weight Place 12.6 lbs 1/1
		Contents: Water Sample
	(2L)US90524 + 49000001	

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 05-Sep-19

 Project:
 L2330787
 Work Order:
 1908486

 Sample ID:
 L2330787-1
 Lab ID:
 1908486-1

Legal Location: Matrix: WATER

Collection Date: 8/16/2019 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Em	anation - Method 903.1	SOF	P 783	Prep	Date: 8/27/2019	PrepBy: JXH
Ra-226	0.012 (+/- 0.0069)		0.0081	BQ/I	NA	9/4/2019 12:38
Carr: BARIUM	89		40-110	%REC	DL = NA	9/4/2019 12:38

AR Page 1 of 3 **8 of 11**

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 05-Sep-19

 Project:
 L2330787
 Work Order:
 1908486

 Sample ID:
 L2330787-2
 Lab ID:
 1908486-2

 Legal Location:
 Matrix:
 WATER

Collection Date: 8/16/2019 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Ema	nation - Method 903.1	SOF	P 783	Prep	Date: 8/27/2019	PrepBy: JXH
Ra-226	0.11 (+/- 0.029)		0.0063	BQ/I	NA	9/4/2019 12:38
Carr: BARIUM	96.9		40-110	%REC	DI = NA	9/4/2019 12:38

AR Page 2 of 3 **9 of 11**

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 05-Sep-19

Project: L2330787 **Work Order:** 1908486

Sample ID: L2330787-2 Lab ID: 1908486-2 Legal Location: Matrix: WATER

Collection Date: 8/16/2019 Percent Moisture:

Report Dilution
Analyses Result Qual Limit Units Factor Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested

MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

- B Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
- E Analyte concentration exceeds the upper level of the calibration range.
- J Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
- A A tentatively identified compound is a suspected aldol-condensation product.
- X The analyte was diluted below an accurate quantitation level.
- * The spike recovery is equal to or outside the control criteria used.
- + The relative percent difference (RPD) equals or exceeds the control criteria.
- G A pattern resembling gasoline was detected in this sample.
- D A pattern resembling diesel was detected in this sample.
- M A pattern resembling motor oil was detected in this sample.
- C A pattern resembling crude oil was detected in this sample.
- 4 A pattern resembling JP-4 was detected in this sample.
- 5 A pattern resembling JP-5 was detected in this sample.
- H Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- dieselmineral spirits
- motor oil
- Stoddard solvent
- bunker C

Client: ALS Environmental

Work Order: 1908486 **Project:** L2330787

Date: 9/5/2019 7:49:2

QC BATCH REPORT

Batch ID: R	E190827-2-1	In	strument ID Alp	ha Scin		Method: R	adium-226	by Rado	on Emanation				
LCS	Sample ID:	RE190827-2				Units: BQ/I			Analysi	Analysis Date: 9/4/2019 12:38			
Client ID:			Run IE	D: RE190827 -	2A			I	Prep Date: 8/27	/2019	DF:	NA	
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qua
Ra-226			1.61 (+/- 0.403)	0.00994	1.72		93.5	67-120					Р
Carr: BARIL	JM		15700		16410		95.5	40-110					
LCSD	Sample ID:	RE190827-2				U	nits: BQ/I		Analysi	s Date: 9	/4/2019	12:38	
Client ID:			Run II	D: RE190827 -	2A			I	Prep Date: 8/27	/2019	DF:	NA	
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qua
Ra-226			1.64 (+/- 0.411)	0.00879	1.72		95.3	67-120		1.61	0.05	2.1	Р
Carr: BARIL	JM		16100		16350		98.3	40-110		15700			
МВ	Sample ID:	RE190827-2				U	nits: BQ/I		Analysi	s Date: 9	/4/2019	12:02	
Client ID:			Run IE	D: RE190827 -	2A			I	Prep Date: 8/27	/2019	DF:	NA	
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qua
Ra-226			0.0044 (+/- 0.0044)	0.0064									U
Carr: BARIL	JM		15700		16350		95.8	40-110					

QC Page: 1 of 1



AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, ON NOB 2JO Tel. (519) 763-4412 Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna EPS 1/RM/14 Page 1 of 2

Work Order: 240059 Sample Number: 60350

SAMPLE IDENTIFICATION

Company:

ALS Laboratory Group, Waterloo

Date Collected: Time Collected: 2019-08-16

Location:

Waterloo ON

20:00

Job Number:

L2330787-1

Date Received:

Substance:

MS-C-E L2330787-1

2019-08-20 11:30

Sampling Method:

Grab

Time Received: Temperature on Receipt: 8.0 °C

Sampled By: KB/ML

Sample Description: Clear, colourless, odourless

Date Tested:

2019-08-20

Test Method:

Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment

Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

	48-HOUR TEST RESULTS	
Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species:

Organism Batch:

Daphnia magna Dm19-16

Time to First Brood: Average Brood Size: 8.6 days 39.5 young

Culture Mortality:

1.7% (previous 7 days)

TEST CONDITIONS

Sample Treatment: pH Adjustment:

None None Number of Replicates:

3 10

Pre-aeration Rate:

~30 mL/min/L

Organisms / Replicate: Organisms / Test Level:

30

Pre-aeration Time:

30 minutes None

Organism Loading Rate: Impaired Control Organisms: 0.0%

15.0 mL/organism

Test Aeration: Hardness Adjustment:

None

Test Method Deviation(s):

None

REFERENCE TOXICANT DATA

Toxicant: Date Tested: Sodium Chloride 2019-08-20

Historical Mean LC50: Warning Limits (\pm 2SD):

6.4 g/L5.7 - 7.2 g/L

LC50: 95% Confidence Limits: $6.4 \, g/L$ 6.2 - 6.6 g/L

Organism Batch: Analyst(s):

Dm19-16 RK, AW, NM

Statistical Method:

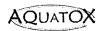
Spearman-Kärber

COMMENTS

All test validity criteria as specified in the test method were satisfied.

Date:

Approved By:



TOXICITY TEST REPORT

Daphnia magna

EPS 1/RM/14

Page 2 of 2

Work Order: 240059 Sample Number: 60350

TEST DATA

	Initial Water	· Chemistr	y (100%):	рН 8.1	Dissolved O ₂ (mg/L) 10.5	Conductivity (µmhos/cm) 1314	Temperature (°C) 20.0	O ₂ Saturation (%)* 121	Hardness (as CaCO ₃ 710 mg/L
				0 HC	URS			- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	
Date & Time Analyst(s):	2019-08-20 RK/AW	13:50							
Concentration (%)	Replicate	Dead	Immobile	рН	Dissolved O ₂	Conductivity	Temperature	O ₂ Saturation (%)*	Hardness
100	A	0	0	8.1	9.3	1319	20.0	105	710
100	В	0	0	8.1	9.3	1319	20.0	105	710
100	C	0	0	8.1	9.3	1319	20.0	105	710
Control	A	0	0	8.6	8.8	791	20.0	100	210
Control	В	0	0	8.6	8.8	791	20.0	100	210
Control	C	0	0	8.6	8.8	791	20.0	100	210
Notes:									
			WAYA FARE OF THE STATE OF THE S	24 H	OURS				
Date & Time Analyst(s):	2019-08-21 RK/AW	13:50							
Concentration (%)	Replicate	Dead	Immobile	pН	Dissolved O ₂	Conductivity			
100	Α		0	_	_	_	20.0		
100	В	-	0	_	_	_	20.0		
100	С	-	0		_	****	20.0		
Control	Α	_	0	_		_	20.0		
Control	В	-	0	_	-	_	20.0		
Control	C	-	0	_	_	N2788	20.0		
Notes:									
				48 H	OURS				
Date & Time Analyst(s):	2019-08-22 SV/NM (SV)	13:50							
Concentration (%)	Replicate	Dead	Immobile	pН			Temperature		
100	Α	0	0	8.4	8.3	1317	20.0		
100	В	0	0	8.4	8.4	1321	20.0		
100	C	0	0	8.4	8.3	1318	20.0		
Control	Α	0	0	8.5	8.5	800	20.0		
Control	В	0	0	8.5	8.5	798	20.0		
Control	С	0	0	8.5	8.5	800	20.0		
Notes:									

Number immobile does not include number dead.

- = not measured/not required

* adjusted for temperature and barometric pressure

Test Data Reviewed By:

JL

Date:

2019-08-22



AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, ON NOB 2JO Tel. (519) 763-4412 Fax. (519) 763-4419

TOXICITY TEST REPORT

Rainbow Trout EPS 1/RM/13 Page 1 of 2

Work Order: Sample Number: 240059 60350

SAMPLE IDENTIFICATION

Company:

ALS Laboratory Group, Waterloo

Date Collected:

2019-08-16

Location:

Waterloo ON

Time Collected:

Job Number:

L2330787-1

Date Received:

20:00 2019-08-20

Substance:

MS-C-E L2330787-1

Time Received:

11:30

Sampling Method:

Grab

Temperature on Receipt:

8.0 °C

Sampled By:

KB/ML

Date Tested:

2019-08-20

Sample Description:

Clear, colourless, odourless

Test Method(s):

Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout.

Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007 and February

2016 amendments), with deviation(s) as noted.

o	6.	HO	HR	TEST	RESHI	TC

	90-HOUR TEST RESULTS		
 Substance	Effect	Value	
Control	Mean Impairment	0.0 %	-
	Mean Mortality	0.0 %	
100%	Mean Impairment	0.0 %	
	Mean Mortality	0.0 %	

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism:

Oncorhynchus mykiss

Average Fork Length (± 2 SD): 49.6 mm (± 12.1)

Organism Batch: Control Sample Size: T19-15

Range of Fork Lengths: Average Wet Weight (\pm 2 SD): 1.20 g (\pm 0.83)

38 - 56 mm

Cumulative stock tank mortality rate: 0% (previous 7 days)

10

Range of Wet Weights:

0.48 - 1.77 g

Control organisms showing stress: 0 (at test completion)

Organism Loading Rate:

 0.7 g/L^1

TEST CONDITIONS

Sample Treatment: pH Adjustment:

None None

Volume Tested (L): Number of Replicates: 17

Test Aeration: Pre-aeration/Aeration Rate: Yes

Organisms Per Replicate:

1 10

 $6.5 \pm 1 \text{ mL/min/L}$

Organisms Per Test Level:

10

Total Pre-Aeration Time:

115 minutes

Test Method Deviation(s):

Yes (see 'COMMENTS')

REFERENCE TOXICANT DATA

Toxicant: Organism Batch: Potassium Chloride T19-15

Date Tested: Historical Mean LC50: 2019-08-09 3755 mg/L

LC50: 95% Confidence Limits:

4086 mg/L 3752 - 4449 mg/L

Warning Limits (\pm 2SD): Analyst(s):

3139 - 4492 mg/L ALC, SV, TA

Statistical Method:

Spearman-Kärber

COMMENTS

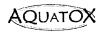
¹Noted Deviation(s): Due to technical error, the maximum organism loading rate of 0.5 g/L was exceeded. Since test validity criteria were satisfied, it is unlikely that this deviation had a significant impact on the outcome of the test, and the test is considered to be valid. There were no other unusual conditions or deviations from the test method.

•All test validity criteria as specified in the test method were satisfied.

Date:

Approved B

Accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA)



TOXICITY TEST REPORT Rainbow Trout

EPS 1/RM/13 Page 2 of 2

Work Order: 240059 Sample Number: 60350

TEST DATA

			IESI	DATA			
			pН	Dissolved O ₂ (mg/L)	Conductivity (µmhos/cm)	Temperature (°C)	O ₂ Saturation (%)*
Initial Water Ch	nemistry (100%)	:	7.7	9.9	1352	14.0	104
After 30 min pr	e-aeration:		7.3	9.9	1364	14.5	104
•			0 H	OURS			
Date & Time Analyst(s):	2019-08-20 FS/MJT	15:25					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	O ₂ Saturation*
100% Control	0	0 0	7.4 8.0	9.2 9.2	1366 862	15.5 16.0	99 99
	U	U	0.0	9.2	802	10.0	77
Notes:							
			24 H	OURS			
Date & Time Analyst(s):	2019-08-21 TA	15:25					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	8.1	_	_	15.0	
Control	0	0	_	_	-	15.0	
Notes:							
			48 H	OURS			
Date & Time Analyst(s):	2019-08-22 TA	15:25					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	8.1	-		15.0	
Control	0	0	_	_	-	15.0	
Notes:							
			72 H	OURS			
Date & Time Analyst(s):	2019-08-23 TA	15:25					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	8.1			15.0	
Control	0	0		-		15.0	
Notes:							
			96 H	OURS			
Date & Time Analyst(s):	2019-08-24 TL	15:25					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	8.2	9.5	1358	14.5	
Control	0	0	8.1	9.3	820	14.5	
Notes:							
"-" = not measur	-						
	d does not include					eviewed By :	JL
adjusted for tem	perature and baro	metric pressure			Date:	2019	9-08-24

CHAIN OF CUSTODY RECORD





Shipping Address: AquaT B-11 N Puslind

dress: AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 Fax:

Fax: (519) 763-4419

cllent: ALS Environmental c/o Baffinland Iron Mine

Quote # (2019): 162705399-19

Phone: (519) 886-6910

Affiliation: Baffinland Iron Mine / ALS Environmental

P.O. Number: 4500057496 Field Sampler Name (print): KB/ML Custody Relinquished by: Megan Lacarte Date/Time Shipped: 17-Aug-19/14:00

Sample Storage (prior to shipping):

Fax: (519) 886-9047

contact: Rick Hawthorne (ALS) / Martina Rendas (Aquatox)

Sample Method and Volume	# of Containers and Volume	2 x 10L Carbov								
Sam	ds1Đ Gomposite	5	+	-	-	-	-	-		+-
Γ	Ofher (please specify below)				T			T	\vdash	†-
	Pseudokirchnenella subcapitata Growth		-	-						
	Гетпа тіпог Growth									
rested	Ceriodaphnia dubia Survival & Reproduction									
es Requ	Fathead Minnow Survival & Growth									
Analyses Requested	Daphnia magna LC50									
	Daphnia magna Single Concentration	>								
	Rainbow Trout LC50									
L	Rainbow Trout Single Concentration	>								
	Temp. on arrival	80°								
	AquaTox. Temp.on	088.09								
Sample Identification		MS-C-E (2330787-1								
	Time Collected (e.g. 14:30, 24 hr clock)	20:00								
	Date Collected (yyyy-mm-dd)	2019-08-16 20:00								

For Lab Use Only Received by MOH/CG-/NM Date: MOH/CG-/NM Date: MU30 Time: MU30 Storage Location:

Please list any special requests or instructions.

Report Distribution: bimcore@alsglobal.com, rick.hawthorne@alsglobal.com Rush TAT wt Daily updates.\PH required.

Standard COC rev 3 2016 09 01



Subcontract Request Form

L2330787

Subcontract To:

AQUATOX TESTING AND CONSULTING

NOTES: Please reference on final report and invoice: PO#

ALS requires QC data to be provided with your final results.

11B NICHOLAS BEAVER ROAD RR3 GUELPH,ON N1H 6H9

Please see enclosed	1 san	nple(s) in	0	Container(s))		
SAMPLE NUMBER	ANALYTI	CAL REQU	IRED		DATE	SAMPLED DUE DATE	Priority Flag
L2330787-1 MS-C-E					8/ 16/		E
	Special Re	equest Aqu	iatox (SP	ECIAL REQUEST2-		8/26/2019	_
	Special Re	equést Agu	iatox (SP	ECIAL REQUEST-A	QT 14)	8/26/2019	
Subcontract Info Contact:		Mary-Ly	nn Pike	(519) 886-6910)	v (1) v	
Analysis and reporting info	contact:	Rick Ha	wthorne				
				ROAD, UNIT 1			
			-	N2V 2B8			
		Phone:	(519)	886-6910	Email: Ri	ck.Hawthorne@als	global.com
Please email confirmation	n of recei	ipt to:	F	Rick.Hawthorn	e@alsglob	al.com	
Shipped By:			<u> </u>	Date Shipped:			
Received By:				Date Received:			
Verified By:				Date Verified:			
				Temperature:			

S) Environmental

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

Canada Toll Free: 1 800 668 9878

L2330787-COFC

COC Number: 15 -

	www.alsglobal.com											14		54 82 :						
Report To	Contact and company	name below will app	ear on the final repo	rt		Report Format	/ Distribution			-		, coi	vfirm al	E&P TA	Ts with	your AM	l - surcha	rges w	ill apply	
Company:	Baffinland Iron Mines C	orp.			Select Report F	ormat: 🔽 PDF	☑ EXCEL ☑ E	DD (DIGITAL)		Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply					harges apply					
Contact:	Wiliam Bowden and Cor	nor Devereaux			Quality Control	(QC) Report with F	Report 🗹 YES	□ NO	> g (g)	4 (day [P	4] 🗆		Ç	1	Busi	ness d	ay [E	1]	
Phone:	647-253-0596 EXT 601	6			☐Compare Result	s to Criteria on Report -	provide details bek	ow if box checked	Pess I	3 (day [P	3) 🗆		SE SE	s	Same	Day, V	Veek	end or	v
	Company address below w	ill appear on the final	report		Select Distribut	ion: 🔽 email	☐ MAIL ☐	FAX	8 4	2 (day [P	2] 🗆		E E		Statu	tory h	olida	y [E0]	<u> </u>
Street:	2275 Upper Middle Rd.	E., Suite #300			Email 1 or Fax	bimcore@alsglob	al.com			Date ar	nd Time	Required for	all E8	P TATS	Mars.		Ę.	30-310	nm-yy t	n Janana
City/Province:	Oakville, ON				Email 2			_	For tes	ts that ca	an not be	performed acc	ording	to the se	rvice lev	rel selec	ted, you	will be	contacted.	
Postal Code:	L6H 0C3				Email 3				Analysis Request											
Invoice To	Same as Report To	✓ YES [□ NO			Invoice Di	stribution			Indi	cate Filte	red (F), Pres	erved (P) or Fift	ered ar	nd Pres	erved (F	/P) bel	ow	_
	Copy of Invoice with Rep	oort 🗌 YES 🛭	√ NO		Select Invoice I	Distribution: 🔽 EM	AIL MAIL	☐ FAX	F/P											
Company:					Email 1 or Fax	ap@baffinland.co	m		П				T							
Contact:					Email 2	commercial@baff	inland.com]			ł						- 1		و
	Project In	formation			A STATE OF	and Gas Require	d Fields (client	iuse) 💮 👢 👢				İ	Ì							Number of Containers
ALS Account #	# / Quote #: 2	3642 /Q42455			AFE/Cost Center:		PO#									1		-		jug B
Job #:	MS-06 WT				Major/Minor Code:		Routing Code:	:						1				1		၂ မွ
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LSD:	-				Location:				1			- 1								Ē
ALS Lab Wo	rk Order # (lab use only)L2330787			ALS Contact:		Sampler:	ML/BR/LM	BIM-MMER-WT											2
ALS Sample #	Sam	ole Identification	and/or Coordi	inates		Date	Time	Samula Tuna	1 ≩	m 3					1			ı	1	
(lab use only)	(This	description will	appear on the re	eport)		(dd-mmm-yy)	(hh:mm)	Sample Type	B	Group										
1	MS-C-E					16-Aug-19	20:00	Water	E0	E1										11
2	MS-06-SEEPAGE1					16-Aug-19	18:40	Water	E0											9
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				Alama / C-			tion on the day	a down liet bolow	3.785.1	L aeridi.ed	linemoré dist	SAMPLE*	CONI	DITION	AS R	ECE	VED (ab us	se only)	
Drinking	g Water (DW) Samples ¹ (client use)	Special instruc	tions / Sp		add on report by clic stronic COC only)	cking on the droj	p-down list below	Froz	en	5 - 146 M M				Tr- 4/11 / 1/11 .	rvatio	EAT COURT OF	all all a services of	□ N	• U
Are samples tal	ken from a Regulated DW S	ystem?			· · · · · · · · · · · · · · · · · · ·				-1	acks		Ice Cube	ь	_						_
	ES INO	-]							ing Init	_		-			•-	-		_	_
Are samples for	r human drinking water use	?							- \$ 4.	INIIT	IAL CO	LER TEMPE	RATU	RES °C		apara de Alberta	FINAL	COOL	ER TEMPI	RATURES *C
1	res 🗹 No											4C				1	7) 1	/		
		EASE (client use	<u>i.</u>			INITIAL SHIPME	NT RECEPTION	l (lab use only)	. ALTER 16	Normal Heritage	W. Santa		INAL	SHIP	JENT	RÉC	EPTIO	N (lat	use onl	N F4+45 45
Released By:		Date: 16-Aug-19		Time:	Received by:		Date: Aug 16,		Time		Rece	ived by:		11	0	Dat	e:	0	-19	Time: 45
	İ			22:15					11pr	n	l			711		لمرا	U^{2}	- B	-17	1/0/43



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 04-SEP-19

Report Date: 05-SEP-19 11:42 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2339962 Project P.O. #: 4500057496

Job Reference: CRUSHER PAD PERIMETER

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



L2339962 CONTD.... PAGE 1 of 4 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339962-5 CP-SEEPAGE-3 Sampled Bv: CP/RH/AZ on 31-AUG-19 @ 12:45							
Sampled By: CP/RH/AZ on 31-AUG-19 @ 12:45 Matrix: WATER							
Physical Tests							
Conductivity	3880		3.0	umhos/cm		04-SEP-19	R4783364
рН	7.05		0.10	pH units		02-SEP-19	
Total Suspended Solids	23.8		2.0	mg/L		03-SEP-19	
Total Dissolved Solids	4020		20	mg/L		03-SEP-19	
Turbidity	7.82		0.10	NTU		03-SEP-19	
Anions and Nutrients	1.02		0.10	1410		01-021-19	114701777
Ammonia, Total (as N)	11.3	DLHC	0.50	mg/L		04-SEP-19	R4783457
Total Metals	11.0		0.00	9/ _		3.323	1,47,00407

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

L2339962 CONTD.... PAGE 2 of 4 Version: FINAL

			D.L.		Extracted	Analyzed	Batch
339962-5 CP-SEEPAGE-3 mpled By: CP/RH/AZ on 31-AUG-19 @ 12:45 atrix: WATER							
otal Metals							
Aluminum (Al)-Total	0.466	DLHC	0.050	mg/L	04-SEP-19	04-SEP-19	R4783321
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R4783321
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R4783321
Barium (Ba)-Total	0.0176	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R4783321
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R4783321
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	04-SEP-19	04-SEP-19	R4783321
Boron (B)-Total	0.14	DLHC	0.10	mg/L	04-SEP-19	04-SEP-19	R4783321
Cadmium (Cd)-Total	0.000961	DLHC	0.000050	mg/L	04-SEP-19	04-SEP-19	R4783321
Calcium (Ca)-Total	243	DLHC	0.50	mg/L	04-SEP-19	04-SEP-19	R4783321
Cesium (Cs)-Total	0.00017	DLHC	0.00010	mg/L	04-SEP-19	04-SEP-19	R4783321
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	04-SEP-19	04-SEP-19	R4783321
Cobalt (Co)-Total	0.106	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R478332
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	04-SEP-19	04-SEP-19	R478332
Iron (Fe)-Total	0.81	DLHC	0.10	mg/L	04-SEP-19	04-SEP-19	R478332
Lead (Pb)-Total	0.00056	DLHC	0.00050	mg/L	04-SEP-19	04-SEP-19	R478332
Lithium (Li)-Total	0.054	DLHC	0.010	mg/L	04-SEP-19	04-SEP-19	R478332
Magnesium (Mg)-Total	524	DLHC	0.050	mg/L	04-SEP-19	04-SEP-19	R478332
Manganese (Mn)-Total	27.5	DLHC	0.050	mg/L	04-SEP-19	04-SEP-19	R478332
Molybdenum (Mo)-Total	0.00457	DLHC	0.00050	mg/L	04-SEP-19	04-SEP-19	R478332
Nickel (Ni)-Total	0.106	DLHC	0.0050	mg/L	04-SEP-19	04-SEP-19	R478332
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	04-SEP-19	04-SEP-19	R478332
Potassium (K)-Total	28.4	DLHC	0.50	mg/L	04-SEP-19	04-SEP-19	R478332
Rubidium (Rb)-Total	0.0268	DLHC	0.0020	mg/L	04-SEP-19	04-SEP-19	R478332
Selenium (Se)-Total	0.00801	DLHC	0.00050	mg/L	04-SEP-19	04-SEP-19	R478332
Silicon (Si)-Total	4.0	DLHC	1.0	mg/L	04-SEP-19	04-SEP-19	R478332
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	04-SEP-19	04-SEP-19	R478332
Sodium (Na)-Total	52.9	DLHC	0.50	mg/L	04-SEP-19	04-SEP-19	R478332
Strontium (Sr)-Total	0.432	DLHC	0.010	mg/L	04-SEP-19	04-SEP-19	R478332
Sulfur (S)-Total	895	DLHC	5.0	mg/L	04-SEP-19	04-SEP-19	R478332
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	04-SEP-19	04-SEP-19	R478332
Thallium (TI)-Total	0.00017	DLHC	0.00010	mg/L	04-SEP-19	04-SEP-19	R478332
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R478332
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R478332
Titanium (Ti)-Total	0.0238	DLHC	0.0030	mg/L	04-SEP-19	04-SEP-19	R478332
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	04-SEP-19	04-SEP-19	R478332
Uranium (U)-Total	0.130	DLHC	0.00010	mg/L	04-SEP-19	04-SEP-19	R478332
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	04-SEP-19	04-SEP-19	R478332
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	04-SEP-19	04-SEP-19	R478332
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	04-SEP-19	04-SEP-19	R478332

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

L2339962 CONTD....

PAGE 3 of 4
Version: FINAL

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Aluminum (Al)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Barium (Ba)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Boron (B)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Calcium (Ca)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Cobalt (Co)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Copper (Cu)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Iron (Fe)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Lithium (Li)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Manganese (Mn)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Nickel (Ni)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Potassium (K)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Rubidium (Rb)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Silicon (Si)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Sodium (Na)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Strontium (Sr)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Sulfur (S)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Uranium (U)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Zinc (Zn)-Total	MS-B	L2339962-3, -4, -5
Matrix Spike	Ammonia, Total (as N)	MS-B	L2339962-3, -4, -5

Sample Parameter Qualifier key listed:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
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-SCREEN-WT	Water	Conductivity Screen (Internal Use Only)	APHA 2510	
Qualitative analysis of	f conductivity v	where required during preparation of other	r tests - e.g. TDS, metals, etc.	
EC-WT Water samples can b	Water e measured di	Conductivity rectly by immersing the conductivity cell	APHA 2510 B into the sample.	

MET-T-CCMS-WT 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.

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.

Reference Information

L2339962 CONTD....
PAGE 4 of 4
Version: FINAL

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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2339962 Report Date: 05-SEP-19 Page 1 of 8

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Machin R478384 W35151116-4 DUP W35151116-5 1930 193	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MG3151116-1	EC-WT	Water							
MG3151116-1	Batch R4783364	ļ							
MG3151116-1 MB MG3151116-1 MB MG3151116-1 MB MG3151116-1 MB MG3151116-1 MB MG3151116-1 MB MG3151118-1 MB MG3151189-4 MB MG3151189-4 MB MG3151399-4 MB MG3						umhos/cm	0.3	10	04-SEP-19
MET-T-CCMS-VT Water Wat				100.3		%		90-110	04-SEP-19
Batch R4783321 WG3151399-4 DUP WG3151399-3 Aluminum (Al)-Total 3.97 4.13 mg/L 4.1 20 04-SEP-19 Antimorny (Sb)-Total <0.010				<3.0		umhos/cm		3	04-SEP-19
WG3151399-4 DUP WG3151399-3 Aluminum (Al)-Total 3.97 4.13 mg/L 4.1 20 04-SEP-19 Antimony (Sb)-Total <0.010	MET-T-CCMS-WT	Water							
Aluminum (Al)-Total 3.97 4.13 mg/L 4.1 20 04-SEP-19 Antimory (Sb)-Total <0.010 <0.010 RPD-NA mg/L N/A 20 04-SEP-19 Arsenic (As)-Total <0.010 <0.010 RPD-NA mg/L N/A 20 04-SEP-19 Barium (Ba)-Total <0.033 0.034 mg/L 5.1 20 04-SEP-19 Beryllium (Be)-Total <0.010 <0.010 RPD-NA mg/L N/A 20 04-SEP-19 Bismuth (Bi)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 04-SEP-19 Boron (B)-Total <1.0 <1.0 RPD-NA mg/L N/A 20 04-SEP-19 Cadmium (Cd)-Total <1.0 <1.0 RPD-NA mg/L N/A 20 04-SEP-19 Chromium (Cr)-Total <0.050 <0.050 RPD-NA mg/L N/A 20 04-SEP-19 Chromium (Cr)-Total <0.050 <0.050 RPD-NA mg/L <	Batch R4783321								
Antimony (Sb)-Total						/I		00	
Arsenic (As)-Total <0.010 <0.010 RPD-NA mg/L N/A 20 04-SEP-19 Barium (Ba)-Total 0.033 0.034 mg/L 5.1 20 04-SEP-19 Beryllium (Be)-Total <0.010						-			
Barium (Ba)-Total 0.033 0.034 mg/L 5.1 20 04-SEP-19 Beryllium (Be)-Total <0.010						· ·			
Beryllium (Be)-Total <0.010 <0.010 RPD-NA mg/L N/A 20 04-SEP-19 Bismuth (Bi)-Total <0.0050					RPD-NA	_			
Bismuth (Bi)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 04-SEP-19 Boron (B)-Total <1.0						-			
Boron (B)-Total <1.0 <1.0 RPD-NA mg/L N/A 20 04-SEP-19 Cadmium (Cd)-Total 0.00081 0.00105 J mg/L 0.00024 0.001 04-SEP-19 Calcium (Ca)-Total 101 101 101 mg/L 0.4 20 04-SEP-19 Chromium (Cr)-Total <0.050						-			
Cadmium (Cd)-Total 0.00081 0.00105 J mg/L 0.00024 0.001 04-SEP-19 Calcium (Ca)-Total 101 101 mg/L 0.4 20 04-SEP-19 Chromium (Cr)-Total <0.050									
Calcium (Ca)-Total 101 101 mg/L 0.4 20 04-SEP-19 Chromium (Cr)-Total <0.050					RPD-NA	_	N/A	20	04-SEP-19
Chromium (Cr)-Total <0.050 <0.050 RPD-NA mg/L N/A 20 04-SEP-19 Cesium (Cs)-Total <0.0010					J		0.00024	0.001	04-SEP-19
Cesium (Cs)-Total < 0.0010 < 0.0010 RPD-NA mg/L N/A 20 04-SEP-19 Cobalt (Co)-Total 1.64 1.72 mg/L 4.4 20 04-SEP-19 Copper (Cu)-Total < 0.10				101		mg/L	0.4	20	04-SEP-19
Cobalt (Co)-Total 1.64 1.72 mg/L 4.4 20 04-SEP-19 Copper (Cu)-Total <0.10	Chromium (Cr)-Total		<0.050	< 0.050	RPD-NA	mg/L	N/A	20	04-SEP-19
Copper (Cu)-Total <0.10 <0.10 RPD-NA mg/L N/A 20 04-SEP-19 Iron (Fe)-Total 850 876 mg/L 3.0 20 04-SEP-19 Lead (Pb)-Total <0.0050	Cesium (Cs)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-SEP-19
Iron (Fe)-Total 850 876 mg/L 3.0 20 04-SEP-19 Lead (Pb)-Total <0.0050	Cobalt (Co)-Total		1.64	1.72		mg/L	4.4	20	04-SEP-19
Lead (Pb)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 04-SEP-19 Lithium (Li)-Total 0.19 0.18 mg/L 7.1 20 04-SEP-19 Magnesium (Mg)-Total 1040 1090 mg/L 4.7 20 04-SEP-19 Manganese (Mn)-Total 73.1 74.9 mg/L 2.4 20 04-SEP-19 Molybdenum (Mo)-Total <0.0050	Copper (Cu)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	04-SEP-19
Lithium (Li)-Total 0.19 0.18 mg/L 7.1 20 04-SEP-19 Magnesium (Mg)-Total 1040 1090 mg/L 4.7 20 04-SEP-19 Manganese (Mn)-Total 73.1 74.9 mg/L 2.4 20 04-SEP-19 Molybdenum (Mo)-Total <0.0050	Iron (Fe)-Total		850	876		mg/L	3.0	20	04-SEP-19
Magnesium (Mg)-Total 1040 1090 mg/L 4.7 20 04-SEP-19 Manganese (Mn)-Total 73.1 74.9 mg/L 2.4 20 04-SEP-19 Molybdenum (Mo)-Total <0.0050	Lead (Pb)-Total		<0.0050	< 0.0050	RPD-NA	mg/L	N/A	20	04-SEP-19
Manganese (Mn)-Total 73.1 74.9 mg/L 2.4 20 04-SEP-19 Molybdenum (Mo)-Total <0.0050	Lithium (Li)-Total		0.19	0.18		mg/L	7.1	20	04-SEP-19
Molybdenum (Mo)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 04-SEP-19 Nickel (Ni)-Total 1.52 1.56 mg/L 3.0 20 04-SEP-19 Phosphorus (P)-Total <5.0	Magnesium (Mg)-Total		1040	1090		mg/L	4.7	20	04-SEP-19
Nickel (Ni)-Total 1.52 1.56 mg/L 3.0 20 04-SEP-19 Phosphorus (P)-Total <5.0	Manganese (Mn)-Total		73.1	74.9		mg/L	2.4	20	04-SEP-19
Phosphorus (P)-Total <5.0 <5.0 RPD-NA mg/L N/A 20 04-SEP-19 Potassium (K)-Total 11.6 12.0 mg/L 3.6 20 04-SEP-19 Rubidium (Rb)-Total 0.039 0.045 mg/L 15 20 04-SEP-19 Selenium (Se)-Total 0.0068 0.0055 J mg/L 0.0013 0.01 04-SEP-19	Molybdenum (Mo)-Tota	al	<0.0050	< 0.0050	RPD-NA	mg/L	N/A	20	04-SEP-19
Potassium (K)-Total 11.6 12.0 mg/L 3.6 20 04-SEP-19 Rubidium (Rb)-Total 0.039 0.045 mg/L 15 20 04-SEP-19 Selenium (Se)-Total 0.0068 0.0055 J mg/L 0.0013 0.01 04-SEP-19	Nickel (Ni)-Total		1.52	1.56		mg/L	3.0	20	04-SEP-19
Rubidium (Rb)-Total 0.039 0.045 mg/L 15 20 04-SEP-19 Selenium (Se)-Total 0.0068 0.0055 J mg/L 0.0013 0.01 04-SEP-19	Phosphorus (P)-Total		<5.0	<5.0	RPD-NA	mg/L	N/A	20	04-SEP-19
Selenium (Se)-Total 0.0068 0.0055 J mg/L 0.0013 0.01 04-SEP-19	Potassium (K)-Total		11.6	12.0		mg/L	3.6	20	04-SEP-19
* * * * * * * * * * * * * * * * * * * *	Rubidium (Rb)-Total		0.039	0.045		mg/L	15	20	04-SEP-19
Silicon (Si)-Total <10 <10 RPD-NA mg/L N/A 20 04-SEP-19	Selenium (Se)-Total		0.0068	0.0055	J	mg/L	0.0013	0.01	04-SEP-19
	Silicon (Si)-Total		<10	<10	RPD-NA	mg/L	N/A	20	04-SEP-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4783321								
WG3151399-4 DUP		WG3151399-3	0.0050					
Silver (Ag)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	04-SEP-19
Sodium (Na)-Total		8.8	9.2		mg/L	3.6	20	04-SEP-19
Strontium (Sr)-Total		0.20	0.21		mg/L	2.8	20	04-SEP-19
Sulfur (S)-Total		2070	2090		mg/L	1.1	25	04-SEP-19
Thallium (TI)-Total		0.0016	0.0017		mg/L	3.2	20	04-SEP-19
Tellurium (Te)-Total		<0.020	<0.020	RPD-NA	mg/L	N/A	20	04-SEP-19
Thorium (Th)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	25	04-SEP-19
Tin (Sn)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-SEP-19
Titanium (Ti)-Total		<0.030	<0.030	RPD-NA	mg/L	N/A	20	04-SEP-19
Tungsten (W)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	04-SEP-19
Uranium (U)-Total		0.0030	0.0030		mg/L	0.5	20	04-SEP-19
Vanadium (V)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	04-SEP-19
Zinc (Zn)-Total		0.32	0.35		mg/L	6.9	20	04-SEP-19
Zirconium (Zr)-Total		<0.020	<0.020	RPD-NA	mg/L	N/A	20	04-SEP-19
WG3151399-2 LCS								
Aluminum (Al)-Total			109.6		%		80-120	04-SEP-19
Antimony (Sb)-Total			104.5		%		80-120	04-SEP-19
Arsenic (As)-Total			103.6		%		80-120	04-SEP-19
Barium (Ba)-Total			100.5		%		80-120	04-SEP-19
Beryllium (Be)-Total			103.0		%		80-120	04-SEP-19
Bismuth (Bi)-Total			100.8		%		80-120	04-SEP-19
Boron (B)-Total			100.3		%		80-120	04-SEP-19
Cadmium (Cd)-Total			100.4		%		80-120	04-SEP-19
Calcium (Ca)-Total			98.9		%		80-120	04-SEP-19
Chromium (Cr)-Total			104.6		%		80-120	04-SEP-19
Cesium (Cs)-Total			99.8		%		80-120	04-SEP-19
Cobalt (Co)-Total			100.2		%		80-120	04-SEP-19
Copper (Cu)-Total			100.8		%		80-120	04-SEP-19
Iron (Fe)-Total			99.9		%		80-120	04-SEP-19
Lead (Pb)-Total			104.1		%		80-120	04-SEP-19
Lithium (Li)-Total			106.1		%		80-120	04-SEP-19
Magnesium (Mg)-Total			111.3		%		80-120	04-SEP-19
Manganese (Mn)-Total			106.2		%		80-120	04-SEP-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4783321								
WG3151399-2 LCS Molybdenum (Mo)-Total			98.0		%		80-120	04-SEP-19
Nickel (Ni)-Total			102.5		%		80-120	04-SEP-19
Phosphorus (P)-Total			105.1		%		70-130	04-SEP-19
Potassium (K)-Total			109.8		%		80-120	04-SEP-19
Rubidium (Rb)-Total			102.6		%		80-120	04-SEP-19
Selenium (Se)-Total			100.3		%		80-120	04-SEP-19
Silicon (Si)-Total			108.8		%		60-140	04-SEP-19
Silver (Ag)-Total			99.6		%		80-120	04-SEP-19
Sodium (Na)-Total			109.3		%		80-120	04-SEP-19
Strontium (Sr)-Total			104.9		%		80-120	04-SEP-19
Sulfur (S)-Total			104.1		%		80-120	04-SEP-19
Thallium (TI)-Total			101.1		%		80-120	04-SEP-19
Tellurium (Te)-Total			95.8		%		80-120	04-SEP-19
Thorium (Th)-Total			99.0		%		70-130	04-SEP-19
Tin (Sn)-Total			102.1		%		80-120	04-SEP-19
Titanium (Ti)-Total			103.7		%		80-120	04-SEP-19
Tungsten (W)-Total			102.0		%		80-120	04-SEP-19
Uranium (U)-Total			102.3		%		80-120	04-SEP-19
Vanadium (V)-Total			105.5		%		80-120	04-SEP-19
Zinc (Zn)-Total			96.1		%		80-120	04-SEP-19
Zirconium (Zr)-Total			97.5		%		80-120	04-SEP-19
WG3151399-1 MB								
Aluminum (Al)-Total			<0.0050		mg/L		0.005	04-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	04-SEP-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	04-SEP-19
Bismuth (Bi)-Total			<0.00005	0	mg/L		0.00005	04-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	04-SEP-19
Cadmium (Cd)-Total			<0.00000	50	mg/L		0.000005	04-SEP-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	04-SEP-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	04-SEP-19
Cesium (Cs)-Total			<0.00001		mg/L		0.00001	04-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-SEP-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4783321								
WG3151399-1 MB			0.0040				0.004	
Copper (Cu)-Total			<0.0010		mg/L		0.001 0.01	04-SEP-19
Iron (Fe)-Total			<0.010		mg/L			04-SEP-19
Lead (Pb)-Total			<0.000050		mg/L		0.00005	04-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005 0.0005	04-SEP-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	04-SEP-19
Molybdenum (Mo)-Total			<0.00050		mg/L			04-SEP-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-SEP-19
Phosphorus (P)-Total Potassium (K)-Total			<0.050		mg/L		0.05	04-SEP-19
Rubidium (Rb)-Total			<0.050		mg/L		0.05 0.0002	04-SEP-19
, ,			<0.00020		mg/L		0.0002	04-SEP-19
Selenium (Se)-Total Silicon (Si)-Total			<0.000050 <0.10		mg/L		0.00003	04-SEP-19
Silver (Ag)-Total			<0.000050		mg/L		0.00005	04-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.00003	04-SEP-19
Strontium (Sr)-Total			<0.0010		mg/L mg/L		0.001	04-SEP-19
Sulfur (S)-Total			<0.50		mg/L		0.50	04-SEP-19
Thallium (TI)-Total			<0.00010		mg/L		0.00001	04-SEP-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	04-SEP-19
Thorium (Th)-Total			<0.00020		mg/L		0.0002	04-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-SEP-19
Titanium (Ti)-Total			<0.00010		mg/L		0.0003	04-SEP-19 04-SEP-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	04-SEP-19
Uranium (U)-Total			<0.00010		mg/L		0.00001	04-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-SEP-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	04-SEP-19
WG3151399-5 MS		WG3151399-3	10.00020		9/=		0.0002	04-3E1 -19
Aluminum (Al)-Total		1100101000	N/A	MS-B	%		-	04-SEP-19
Antimony (Sb)-Total			104.7		%		70-130	04-SEP-19
Arsenic (As)-Total			101.9		%		70-130	04-SEP-19
Barium (Ba)-Total			N/A	MS-B	%		-	04-SEP-19
Beryllium (Be)-Total			112.8		%		70-130	04-SEP-19
Bismuth (Bi)-Total			103.8		%		70-130	04-SEP-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4783321								
WG3151399-5 MS		WG3151399-			0/			
Boron (B)-Total			N/A	MS-B	%		-	04-SEP-19
Cadmium (Cd)-Total			107.8		%		70-130	04-SEP-19
Calcium (Ca)-Total			N/A	MS-B	%		-	04-SEP-19
Chromium (Cr)-Total			106.7		%		70-130	04-SEP-19
Cesium (Cs)-Total			104.1		%		70-130	04-SEP-19
Cobalt (Co)-Total			N/A	MS-B	%		=	04-SEP-19
Copper (Cu)-Total			N/A	MS-B	%		-	04-SEP-19
Iron (Fe)-Total			N/A	MS-B	%		-	04-SEP-19
Lead (Pb)-Total			104.9		%		70-130	04-SEP-19
Lithium (Li)-Total			N/A	MS-B	%		-	04-SEP-19
Magnesium (Mg)-Total			N/A	MS-B	%		=	04-SEP-19
Manganese (Mn)-Total			N/A	MS-B	%		-	04-SEP-19
Molybdenum (Mo)-Total			103.2		%		70-130	04-SEP-19
Nickel (Ni)-Total			N/A	MS-B	%		-	04-SEP-19
Phosphorus (P)-Total			81.4		%		70-130	04-SEP-19
Potassium (K)-Total			N/A	MS-B	%		=	04-SEP-19
Rubidium (Rb)-Total			N/A	MS-B	%		=	04-SEP-19
Selenium (Se)-Total			102.5		%		70-130	04-SEP-19
Silicon (Si)-Total			N/A	MS-B	%		-	04-SEP-19
Silver (Ag)-Total			97.7		%		70-130	04-SEP-19
Sodium (Na)-Total			N/A	MS-B	%		-	04-SEP-19
Strontium (Sr)-Total			N/A	MS-B	%		=	04-SEP-19
Sulfur (S)-Total			N/A	MS-B	%		=	04-SEP-19
Thallium (TI)-Total			102.4		%		70-130	04-SEP-19
Tellurium (Te)-Total			87.5		%		70-130	04-SEP-19
Thorium (Th)-Total			93.3		%		70-130	04-SEP-19
Tin (Sn)-Total			102.0		%		70-130	04-SEP-19
Titanium (Ti)-Total			72.0		%		70-130	04-SEP-19
Tungsten (W)-Total			93.1		%		70-130	04-SEP-19
Uranium (U)-Total			N/A	MS-B	%		-	04-SEP-19
Vanadium (V)-Total			104.0		%		70-130	04-SEP-19
Zinc (Zn)-Total			N/A	MS-B	%		-	04-SEP-19
Zirconium (Zr)-Total			89.5		%		70-130	04-SEP-19



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Workorder: L2339962 Report Date: 05-SEP-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	Water							_
Batch R4783457								
WG3151843-23 DUP Ammonia, Total (as N)		L2340550-1 0.469	0.465		mg/L	0.8	20	04-SEP-19
WG3151843-22 LCS Ammonia, Total (as N)			99.3		%		85-115	04-SEP-19
WG3151843-21 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	04-SEP-19
WG3151843-24 MS Ammonia, Total (as N)		L2340550-1	N/A	MS-B	%		-	04-SEP-19
PH-BF	Water							
Batch R4781648								
WG3149671-2 DUP pH		L2339730-1 8.29	8.30	J	pH units	0.01	0.2	02-SEP-19
WG3149671-1 LCS pH			7.01		pH units		6.9-7.1	02-SEP-19
SOLIDS-TDS-BF	Water							
Batch R4781901								
WG3150505-3 DUP Total Dissolved Solids		L2339733-1 1690	1680		mg/L	0.4	20	03-SEP-19
WG3150505-2 LCS Total Dissolved Solids			96.1		%		85-115	03-SEP-19
WG3150505-1 MB Total Dissolved Solids			<20		mg/L		20	03-SEP-19
SOLIDS-TSS-BF	Water							
Batch R4781863								
WG3150469-3 DUP		L2339730-2						
Total Suspended Solids		124	125		mg/L	0.4	25	03-SEP-19
WG3150469-2 LCS Total Suspended Solids			99.2		%		85-115	03-SEP-19
WG3150469-1 MB Total Suspended Solids			<2.0		mg/L		2	03-SEP-19
TURBIDITY-BF	Water							
Batch R4781777								
WG3150397-9 DUP Turbidity		L2339732-1 9.48	9.50		NTU	0.2	15	01-SEP-19
WG3150397-8 LCS Turbidity			104.0		%		85-115	01-SEP-19
WG3150397-7 MB								



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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-BF	Water							
Batch R4781777 WG3150397-7 MB Turbidity			<0.10		NTU		0.1	01-SEP-19

Page 8 of 8

Workorder: L2339962 Report Date: 05-SEP-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

S) Environmental

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

L2339962-COFC

COC Number: 15 -

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Canada Toll Free: 1 800 668 9878

	www.alsglobal.com						_														
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Spill Report Number: 19-374



October 11, 2019

Water Resources Officer Nunavut Region 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 Igaluit, NU X0A 0H0

Re: Follow-up to Spill #19-374
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On September 11th 2019, during the routine nightly inspection at the 380man Milne Port Waste Water Treatment Plant (WWTP), the water treatment operator noticed that sewage was being released from the plant overflow piping system. Upon further investigation, it was determined that sewage and foam was being released from both the aeration tank and grates on the plant floor onto the 380man camp pad. It was estimated that approximately 2m³ of sewage was released. At the time of the incident, the system was experiencing peak/high influent flows. The release is >500m from Phillips Creek and was confined to the immediate WWTP pad.

Immediate and Follow-Up Action:

The operator added an anti-foaming agent to the tank which started to dissipate the foam and sewage and prevent further release. A detailed investigation was conducted and the spilled material was contained, cleaned-up and area remediated.

Recommendations:

Continued and increased frequency of routine inspections of the 380M WWTP to mitigate the potential for future releases from occurring. Baffinland has brought a specialist in to further assess the design of WWTP system and is examining options for installation of an additional buffer tank to prevent future overflow spills from occurring.

Current Status:

Currently the plant is operating as designed.

Alu Ho

Should you require further information or clarification on the above noted spill, please feel free to contact Connor Devereaux at (647) 253- 0596 x6016 or Shawn Stevens at (647) 253- 0596 x 6006.

Shawn Stevens

Manager Health, Safety, Environment and Security

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

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).





Photo 1. Sept 11th spill before clean up.



Photo 2. Sept 11th spill 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

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Figure 2. Baffinland NT NU spill report

Spill Report Number: 19-391



October 19, 2019

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

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

Re: Follow-up to Spill # 19-391

Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On September 19, 2019, during inspection at the Sailivik Waste Water Treatment Plant (WWTP) at the Mary River Mine Site, it was observed that a sea container was slowly dripping water with an odour onto the camp pad. Upon further investigation, it was determined that the sea container was storing WWTP pressed cake that was contained within individual sealed plastic bags. Select bags had broken and released waste water to the floor of the sea container which then migrated through damaged areas of the sea container floor. The release was greater than 150m from Sheardown Lake NW and was confined to the immediate WWTP pad.

Immediate and Follow-Up Action:

The sea container was emptied of pressed cake bags and the waste water cleaned up. A new lined sea container was sourced for containment. The soil under and adjacent to the sea container was remediated and placed in quatrex bags for storage to be backhauled for disposal offsite. Follow up sampling confirmed remediation.

Recommendations:

Initiated use of lined sea container and quatrex bags to provide tertiary containment of the WWTP cake bags. Routine inspections of the Sailivik WWTP to mitigate the potential for future releases from occurring.

Current Status:

The tertiary sea containment system is operating as intended.

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:

Connor Devereaux

Environmental Superintendent

Reviewed b

Vern Shaver

Project Site Manager

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

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Francois Gaudreau, Shawn Stevens, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).





Photo #1 September 19th Before Clean Up



Photo #2 September 21st Spill Cleaned Up





Photo #3 September 21st Spill Cleaned Up



Photo #4 September 21st Tertiary Containment

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

Baffinland



Figure 1. Map of spill location







NT-NU SPILL REPORT

DIL. 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

	STREET, ST.	· ·	012, 070001110, 0	TI, III OF ALO	7110 0111010			REPORT LINE USE ONLY	
	REPORT DATE MONTH - DAY	Y-YEAR		REPORT I	IME	MODICINIAL SOLL DO	XORIGINAL SPILL REPORT,		
A	09-20-2019			13:00		OR	.r Orrs,	REPORT NUMBER	
В	OCCURRENCE DATE, MONTH	I - DAY - YEAR		OCCURRE	NCETIME	TO THE ORIGINAL SP	LL REPORT	19 391	
	09-19-2019 LAND USE PERMIT NUMBER			15:00	WATER LICENCE NUMBE	DUE ADDITION OF THE			
C	IOL - Commercia	•			2AM-MRY1325				
<u> </u>		OR DISTANCE AND DIRECTIO	N FROM NAMED L		REGION	, 1) pc , 1			
D		Site, Baffin Island			DINWT MINUNA	/UT ADJACENT JU	JRISDICTION	OR OCEAN	
	LATITUDE			I	ONGITUDE				
E	DEGREES 71	MINUTES 18			DEGREES 79	MINUTES 18	3 s	ECONDS 04	
F	RESPONSIBLE PARTY OR VE		RESPONSIBLE	PARTY ADD	RESS OR OFFICE LOCA	TION		002	
Г	Baffinland Iron M		ONFROM NAMED LOCAL INTERPRETATION SECONDS 53 RESPONSIBLE PART 2275 Middle CONTRACTOR ADDR CUANTITY INLITRES Approximation OUANTITY INLITRES N/A SPILL CAUSE Inadequate DESCRIBE ANY ASS N/A POSED OR TAKEN TO CO Vaste Water Truy dripping wat that the seacan diplastic bags. The migrated the seing being more lease is >1km tails will be protions of water Interpretate in the Nunavut Water The Nunavut Water The Nunavut Water The SE REPORT LINE US EMF		-	OIA FOL	3H 0G3		
G	ANY CONTRACTOR INVOLVE Horizon North	D	CONTRACTOR	ADDHESS (OR OFFICE LOCATION				
	PRODUCT SPILLED		QUANTITY IN LI	TRES KILO	GRAMS OR CUBIC MET	RES UN NUMBER			
	Grev Water				N/A				
H	SECOND PRODUCT SPILLED	(IF APPLICABLE)	QUANTITY IN LI	TRES, KILC	GRAMS OR CUBIC MET	RES UN NUMBER			
	N/A		N/A			N/A			
	SPILL SOURCE		0. 42 0.12 0.			7.0.27.01	AREA OF CONTAMINATION IN SQUARE METRES		
I	WWTP processed					50m2			
J	FACTORS AFFECTING SPILL Seacan	OR RECOVERY	ASSISTAN	CIE REQUIRED	·	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT N/A			
_		N/A FORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAIN.							
K	release clean up is ongoing. The release is >1km from the fish bearing waters and is confined to the immediate WWTP pad. 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	William Bowden	POSITION Env. Superint	endent Baffinland		LOCATION CALLING FROM Mary River		TELEPHONE 416 364 8820		
_	ANY ALTERNATE CONTACT	POSITION				ALTERNATE CONTACT		LTERNATE TELEPHONE	
M	Shawn Stevens	Manager of H	ISES	Baffin	land	LOCATION		Ext. 6016	
			REPORT LINE	USE ON	LY				
I.	RECEIVED AT SPILL LINE BY	POSITION		EMPLOYE	A .	LOCATION CALLED	F	REPORT LINE NUMBER	
N					YELLOWKNIFE, NT	ELLOWKNIFE, NT (
LEA	DAGENCY DEC DCCG	GNWT GN GILA GINAG	DNEB DTC	SIGNIF	CANCE IMINOR IM	AJOR 🗆 UNKNOWN	FILE STATU	JS 🗆 OPEN 🗆 CLOSED	
AGE	NCY	CONTACT NAME		CONTA	CTTIME	REMARKS			
LEA	D AGENCY								
FIDS	ST SUPPORT AGENCY								
-				-					
-	OND SUPPORT AGENCY			-					

PAGE 1 OF ___



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: Connor Devereaux 2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 10-OCT-19

Report Date: 18-OCT-19 15:43 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2363308
Project P.O. #: 4500057496
Job Reference: MS-01B SOIL

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



L2363308 CONTD.... PAGE 2 of 6

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2363308-1 MS-01B-01 (TCLP) Sampled By: BC/BM on 08-OCT-19 @ 16:00 Matrix: SOIL							
Sample Preparation							
Initial pH	7.65		0.10	pH units		18-OCT-19	R4874206
Final pH	4.93		0.10	pH units		18-OCT-19	R4874206
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Barium (Ba)	<0.50		0.50	mg/L		18-OCT-19	R4874331
Boron (B)	<2.5		2.5	mg/L		18-OCT-19	R4874331
Cadmium (Cd)	<0.0050		0.0050	mg/L		18-OCT-19	R4874331
Chromium (Cr)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Lead (Pb)	0.067		0.050	mg/L		18-OCT-19	R4874331
Mercury (Hg)	<0.00010		0.00010	mg/L		18-OCT-19	R4873986
Selenium (Se)	<0.025		0.025	mg/L		18-OCT-19	R4874331
Silver (Ag)	<0.0050		0.0050	mg/L		18-OCT-19	R4874331
Uranium (U)	<0.25		0.25	mg/L		18-OCT-19	R4874331
Zinc (Zn)-Total	<1.0		1.0	mg/L		18-OCT-19	R4874331
L2363308-2 MS-01B-01 (BULK) Sampled By: BC/BM on 08-OCT-19 @ 16:00 Matrix: SOIL							
Physical Tests							
% Moisture	9.99		0.25	%	10-OCT-19	11-OCT-19	R4866924
Leachable Anions & Nutrients							
Ammonia as N	<10		10	mg/kg	11-OCT-19	15-OCT-19	R4868908
Total Kjeldahl Nitrogen	0.034		0.020	%	16-OCT-19	18-OCT-19	R4874384
Bacteriological Tests							
E. Coli	<10		10	CFU/g dwt	10-OCT-19		R4867462
Fecal Coliform	<10		10	CFU/g dwt		10-OCT-19	R4867490
Metals			_				
Phosphorus (P) L2363308-3 MS-01B-02 (TCLP) Sampled By: BC/BM on 08-OCT-19 @ 16:00 Matrix: SOIL	210		50	ug/g	17-OCT-19	17-OCT-19	R4872830
Sample Preparation							
Initial pH	6.56		0.10	pH units		18-OCT-19	R4874206
Final pH	4.95		0.10	pH units			R4874206
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Barium (Ba)	<0.50		0.50	mg/L		18-OCT-19	R4874331
Boron (B)	<2.5		2.5	mg/L		18-OCT-19	R4874331
Cadmium (Cd)	<0.0050		0.0050	mg/L		18-OCT-19	R4874331
Chromium (Cr)	<0.050		0.050	mg/L			R4874331
Lead (Pb)	0.060		0.050	mg/L			R4874331
Mercury (Hg)	<0.00010		0.00010	mg/L			R4873986
Selenium (Se)	<0.025		0.025	mg/L		18-OCT-19	R4874331
Silver (Ag)	<0.0050		0.0050	mg/L			R4874331
· -· (· · 3)	3.0000		0.0000	9, =		.5 551 15	

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

L2363308 CONTD.... PAGE 3 of 6

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2363308-3 MS-01B-02 (TCLP) Sampled By: BC/BM on 08-OCT-19 @ 16:00 Matrix: SOIL							
TCLP Metals							
Uranium (U)	<0.25		0.25	mg/L		18-OCT-19	R4874331
Zinc (Zn)-Total	<1.0		1.0	mg/L		18-OCT-19	
L2363308-4 MS-01B-02 (BULK) Sampled By: BC/BM on 08-OCT-19 @ 16:00 Matrix: SOIL	7.0			3			
Physical Tests							
% Moisture	8.59		0.25	%	10-OCT-19	11-OCT-19	R4866924
Leachable Anions & Nutrients							
Ammonia as N	<10		10	mg/kg	11-OCT-19	15-OCT-19	R4868908
Total Kjeldahl Nitrogen	<0.020		0.020	%	16-OCT-19	18-OCT-19	R4874384
Bacteriological Tests							
E. Coli	<10		10	CFU/g dwt	10-OCT-19	10-OCT-19	R4867462
Fecal Coliform Metals	<10		10	CFU/g dwt		10-OCT-19	R4867490
Phosphorus (P)	187		50	ug/g	17-OCT-19	17-OCT-19	R4873313
L2363308-5 MS-01B-03 (TCLP) Sampled By: BC/BM on 08-OCT-19 @ 16:15 Matrix: SOIL							
Sample Preparation							
Initial pH	8.69		0.10	pH units		18-OCT-19	R4874206
Final pH	4.97		0.10	pH units		18-OCT-19	R4874206
TCLP Metals							
Arsenic (As)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Barium (Ba)	<0.50		0.50	mg/L		18-OCT-19	R4874331
Boron (B)	<2.5		2.5	mg/L		18-OCT-19	R4874331
Cadmium (Cd)	<0.0050		0.0050	mg/L		18-OCT-19	R4874331
Chromium (Cr)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Lead (Pb)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Mercury (Hg)	<0.00010		0.00010	mg/L		18-OCT-19	R4873986
Selenium (Se)	<0.025		0.025	mg/L		18-OCT-19	R4874331
Silver (Ag)	<0.0050		0.0050	mg/L		18-OCT-19	R4874331
Uranium (U)	<0.25		0.25	mg/L		18-OCT-19	R4874331
Zinc (Zn)-Total	<1.0		1.0	mg/L		18-OCT-19	R4874331
L2363308-6 MS-01B-03 (BULK) Sampled By: BC/BM on 08-OCT-19 @ 16:15 Matrix: SOIL				· ·			
Physical Tests							
% Moisture	7.79		0.25	%	10-OCT-19	11-OCT-19	R4866924
Leachable Anions & Nutrients							
Ammonia as N	<10		10	mg/kg	11-OCT-19	15-OCT-19	R4868908
Total Kjeldahl Nitrogen	<0.020		0.020	%	16-OCT-19	18-OCT-19	R4874384
Bacteriological Tests				0=11/	40.00= ::		
E. Coli	<10		10	CFU/g dwt	10-OCT-19	10-OCT-19	R4867462

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

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Version: FINAL

L2363308-6 MS-01B-03 (BULK) Sampled By: BC/BM on 08-OCT-19 @ 16:15		Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Matrix: SOIL							
Bacteriological Tests							
Fecal Coliform	<10		10	CFU/g dwt		10-OCT-19	R4867490
Metals							
Phosphorus (P)	171		50	ug/g	17-OCT-19	17-OCT-19	R4873313
L2363308-7 MS-01B-04 (TCLP) Sampled By: BC/BM on 08-OCT-19 @ 16:20 Matrix: SOIL							
Sample Preparation							
Initial pH	8.46		0.10	pH units		18-OCT-19	R4874206
Final pH TCLP Metals	4.95		0.10	pH units		18-OCT-19	R4874206
Arsenic (As)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Barium (Ba)	<0.50		0.50	mg/L			R4874331
Boron (B)	<2.5		2.5	mg/L		18-OCT-19	R4874331
Cadmium (Cd)	<0.0050		0.0050	mg/L		18-OCT-19	R4874331
Chromium (Cr)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Lead (Pb)	<0.050		0.050	mg/L		18-OCT-19	R4874331
Mercury (Hg)	<0.00010		0.00010	mg/L		18-OCT-19	R4873986
Selenium (Se)	<0.025		0.025	mg/L			R4874331
Silver (Ag)	<0.0050		0.0050	mg/L		18-OCT-19	R4874331
Uranium (U)	<0.25		0.25	mg/L		18-OCT-19	R4874331
Zinc (Zn)-Total	<1.0		1.0	mg/L		18-OCT-19	R4874331
L2363308-8 MS-01B-04 (BULK) Sampled By: BC/BM on 08-OCT-19 @ 16:20 Matrix: SOIL							
Physical Tests							
% Moisture Leachable Anions & Nutrients	6.46		0.25	%	10-OCT-19	11-OCT-19	R4866924
Ammonia as N	<10		10	mg/kg	11-OCT-19	15-OCT-19	R4868908
Total Kjeldahl Nitrogen Bacteriological Tests	<0.020		0.020	%	16-OCT-19	18-OCT-19	R4874384
E. Coli	<10		10	CFU/g dwt	10-OCT-19	10-OCT-19	R4867462
Fecal Coliform Metals	<10		10	CFU/g dwt		10-OCT-19	R4867490
Phosphorus (P)	234		50	ug/g	17-OCT-19	17-OCT-19	R4873313

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

MS-01B SOIL

L2363308 CONTD....

Reference Information

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QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Ammonia as N	MS-B	L2363308-2, -4, -6, -8

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:

MET-TCLP-WT

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

EC-SOLID-MF-WT Soil E. coli on sludge or solid E3433

A biosolid sub-sample is transferred into buffered dilution water blank. The sample is manually shaken and an aliquot of the sample is then filtered through the membrane filter. The filter is then placed on mFC-BCIG agar and incubated at 44.5 - 0.2 "C for 24 - 2 hours. Method ID: WT-TM-1200. Results are reported on a dry weight basis. Moisture is required.

FC-SOLID-MF-WT Soil Fecal Coliform on sludge or solid SM 9222D

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

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

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

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

Metals in Soil by CRC ICPMS MFT-200 2-CCMS-WT EPA 200.2/6020A (mod)

Soil/sediment is dried, disaggregated, and sieved (2 mm). For tests intended to support Ontario regulations, the <2mm fraction is ground to pass through a 0.355 mm sieve. Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS.

Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

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

Leachate

Waste

O.Reg 347 TCLP Leachable Metals EPA 6020B

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

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

N-TOTKJ-COL-SK Soil Total Kjeldahl Nitrogen CSSS (2008) 22.2.3

The soil is digested with sulfuric acid in the presence of CuSO4 and K2SO4 catalysts. Ammonia in the soil extract is determined colrimetrically at 660

NH3-WT EPA 350.1 Soil Ammonia as N

Sample is distilled into a solution of boric acid and measured colorimetrically.

** 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
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

MS-01B SOIL

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Version: FINAL

Reference Information

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

mg/kg - milligrams per kilogram based on dry weight of sample mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid weight of sample mg/L - unit of concentration based on volume, parts per million. < - Less than.

D.L. - The reporting limit.

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

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

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

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



Workorder: L2363308 Report Date: 18-OCT-19 Page 1 of 5

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-SOLID-MF-WT Batch R4867462 WG3187992-3 DUP	Soil	L2363308-8						
E. Coli		<10	<10	RPD-NA	CFU/g dwt	N/A	65	10-OCT-19
WG3187992-1 MB E. Coli			<10		CFU/g dwt		10	10-OCT-19
FC-SOLID-MF-WT	Soil							
Batch R4867490 WG3188027-3 DUP Fecal Coliform		L2363308-2 <10	<10	RPD-NA	CFU/g dwt	N/A	50	10-OCT-19
WG3188027-1 MB Fecal Coliform			<10		CFU/g dwt		10	10-OCT-19
MET-200.2-CCMS-WT	Soil							
Batch R4872830								
WG3193015-2 CRM Phosphorus (P)		WT-CANMET-	TILL2 111.8		%		70-130	17-OCT-19
WG3193015-6 DUP Phosphorus (P)		WG3193015-5 756	737		ug/g	2.6	30	17-OCT-19
WG3193015-4 LCS Phosphorus (P)			111.9		%		80-120	17-OCT-19
WG3193015-1 MB Phosphorus (P)			<50		mg/kg		50	17-OCT-19
Batch R4873313								
WG3193009-2 CRM Phosphorus (P)		WT-CANMET-	TILL2 103.3		%		70-130	17-OCT-19
WG3193009-6 DUP Phosphorus (P)		WG3193009-5 730	796		ug/g	8.6	30	17-OCT-19
WG3193009-4 LCS Phosphorus (P)			99.8		%		80-120	17-OCT-19
WG3193009-1 MB Phosphorus (P)			<50		mg/kg		50	17-OCT-19
MOISTURE-WT	Soil							
Batch R4866924								
WG3187672-3 DUP % Moisture		L2363466-1 14.8	15.6		%	5.4	20	11-OCT-19
WG3187672-2 LCS % Moisture			100.9		%		90-110	11-OCT-19
WG3187672-1 MB % Moisture			<0.25		%		0.25	11-OCT-19



Workorder: L2363308 Report Date: 18-OCT-19

Page 2 of 5

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
N-TOTKJ-COL-SK	Soil							
Batch R4874384 WG3191369-1 DUP		L2364284-1						
Total Kjeldahl Nitrogen		4.99	4.82		%	3.4	20	18-OCT-19
WG3191369-2 IRM Total Kjeldahl Nitrogen		08-109_SOIL	105.6		%		80-120	18-OCT-19
WG3191369-3 LCS Total Kjeldahl Nitrogen			100.0		%		80-120	18-OCT-19
WG3191369-4 MB Total Kjeldahl Nitrogen			<0.020		%		0.02	18-OCT-19
NH3-WT	Soil							
Batch R4868908								
WG3189010-3 DUP Ammonia as N		L2363308-8 <10	<10	RPD-NA	mg/kg	N/A	20	15-OCT-19
WG3189010-2 LCS Ammonia as N			117.3		%		70-130	11-OCT-19
WG3189010-1 MB Ammonia as N			<10		mg/kg		10	11-OCT-19
WG3189010-4 MS Ammonia as N		L2363308-8	N/A	MS-B	%		_	15-OCT-19
HG-TCLP-WT	Waste							
Batch R4873986								
WG3194786-3 DUP Mercury (Hg)		L2363308-1 < 0.00010	<0.00010	RPD-NA	mg/L	N/A	50	18-OCT-19
WG3194786-2 LCS Mercury (Hg)			111.0		%		70-130	18-OCT-19
WG3194786-1 MB Mercury (Hg)			<0.00010		mg/L		0.0001	18-OCT-19
WG3194786-4 MS Mercury (Hg)		L2363308-1	112.7		%		50-140	18-OCT-19
MET-TCLP-EXTRA-WT	Waste							
Batch R4874331								
WG3194722-4 DUP Zinc (Zn)-Total		WG3194722-3 <1.0	<1.0	RPD-NA	mg/L	N/A	30	18-OCT-19
WG3194722-2 LCS Zinc (Zn)-Total			90.6		%		70-130	18-OCT-19
WG3194722-1 MB Zinc (Zn)-Total			<1.0		mg/L		1	18-OCT-19
WG3194722-5 MS		WG3194722-3						



Workorder: L2363308 Report Date: 18-OCT-19 Page 3 of 5

Baffinland Iron Mine's Corporation (Oakville) Client:

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-EXTRA-WT	Waste							
Batch R4874331 WG3194722-5 MS Zinc (Zn)-Total		WG3194722-3	90.2		%		70-130	18-OCT-19
MET-TCLP-WT	Waste							
Batch R4874331								
WG3194722-4 DUP Silver (Ag)		WG3194722-3 < 0.0050	<0.0050	RPD-NA	mg/L	N/A	50	18-OCT-19
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	18-OCT-19
Boron (B)		<2.5	<2.5	RPD-NA	mg/L	N/A	50	18-OCT-19
Barium (Ba)		<0.50	<0.50	RPD-NA	mg/L	N/A	50	18-OCT-19
Cadmium (Cd)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	50	18-OCT-19
Chromium (Cr)		<0.050	<0.050	RPD-NA	mg/L	N/A	50	18-OCT-19
Lead (Pb)		0.067	0.067		mg/L	0.4	50	18-OCT-19
Selenium (Se)		<0.025	<0.025	RPD-NA	mg/L	N/A	50	18-OCT-19
Uranium (U)		<0.25	<0.25	RPD-NA	mg/L	N/A	50	18-OCT-19
WG3194722-2 LCS								
Silver (Ag)			93.2		%		70-130	18-OCT-19
Arsenic (As)			95.0		%		70-130	18-OCT-19
Boron (B)			87.0		%		70-130	18-OCT-19
Barium (Ba)			95.7		%		70-130	18-OCT-19
Cadmium (Cd)			94.6		%		70-130	18-OCT-19
Chromium (Cr)			95.3		%		70-130	18-OCT-19
Lead (Pb)			94.6		%		70-130	18-OCT-19
Selenium (Se)			93.6		%		70-130	18-OCT-19
Uranium (U)			94.2		%		70-130	18-OCT-19
WG3194722-1 MB Silver (Ag)			<0.0050		mg/L		0.005	18-OCT-19
Arsenic (As)			<0.050		mg/L		0.05	18-OCT-19
Boron (B)			<2.5		mg/L		2.5	18-OCT-19
Barium (Ba)			<0.50		mg/L		0.5	18-OCT-19
Cadmium (Cd)			<0.0050		mg/L		0.005	18-OCT-19
Chromium (Cr)			<0.050		mg/L		0.05	18-OCT-19
Lead (Pb)			<0.050		mg/L		0.05	18-OCT-19
Selenium (Se)			<0.025		mg/L		0.025	18-OCT-19
Uranium (U)			<0.25		mg/L		0.25	18-OCT-19



Workorder: L2363308

Report Date: 18-OCT-19

Page 4 of 5

Client:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT	Waste							
Batch R4874331								
WG3194722-5 MS		WG3194722-3						
Silver (Ag)			101.1		%		50-140	18-OCT-19
Arsenic (As)			95.6		%		50-140	18-OCT-19
Boron (B)			87.5		%		50-140	18-OCT-19
Barium (Ba)			94.6		%		50-140	18-OCT-19
Cadmium (Cd)			94.6		%		50-140	18-OCT-19
Chromium (Cr)			97.7		%		50-140	18-OCT-19
Lead (Pb)			95.9		%		50-140	18-OCT-19
Selenium (Se)			97.1		%		50-140	18-OCT-19
Uranium (U)			94.2		%		50-140	18-OCT-19

Page 5 of 5

Workorder: L2363308 Report Date: 18-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

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

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

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

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



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 14 -

D	www.aisgiobai.com				Panart Forms	t / Distribution	_					Ho	w (Rush	Turnaro	und Tir	ne (TAT)	is not	available i	or all tes	ts)
Report To	netfoliand lang title Co	- ALCEAN	Account 22G40	Select Repor			EDD (DIGITAL)	R	✓ Rev	oular (S	andard		7. O. rader	by 3 pm		-				
Company:	Baffinland Iron Mines Co	W	Account 23642		ol (QC) Report with I			1000										t ALS to	confirm T	AT
Contact:	William Bowden / Conno	1 100 100 100 100		The second secon	teport - provide details be		1 140	E	☐ Em	ergency	(1-2 b	us. days	if receiv	ed by 3p	m) 100	% surch	arge - (ontact AL	S to con	firm TAT
Address:	2275 Upper Middle Rd. I Oakville, ON, L6H 0C3	E., Suite #300		Select Distrib			FAX	E Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT E2 Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
Phone:	647-253-0596				x bimcore@alsqlob	-		1	_		_	or E2,8								
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Company:	оору от шталао шат тор			Email 1 or Fa	x ap@baffinland.co	m							2.7				1			
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	Project Ir	nformation			Oil and Gas Require	ed Fields (client	use)	Se	11		F					- 1				aine
ALS Quote #:	Q42455			Approver ID:		Cost Center:		. g		7.11	3-W		EV		- 1	111				ont
Job #:	MS-01B SOIL			GL Account:		Routing Code:		5			F.	E	0	1						ofo
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ALS Lab Wo	ALS Lab Work Order # (lab use only) L2363308 A			8 ALS Contac	ti.	Sampler:	BC/BM	LP-MET			Ammonia Nitrogen (NH3-WT)	Coli (EC-SQLID-MF-WT)	Coliforms							
ALS Sample # (lab use only)	1.25		tion and/or Coordi		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	12 4	TOTAL	TKN (T)	Total Ar	E. Coli	Fecal C			-				
	MS-01B-01				8-Oct-19	16:00	Soil	R	R	В	R	R	R		- 1.0				- 1	4
	MS-01B-02				8-Oct-19	16:10	Soil	R	R	R	R	R	В	100				14		4
	MS-01B-03				8-Oct-19	16:15	Soil	R	R	R	R	R	В	1					1-	4
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Are samples for	human drinking water us	e?						INI	TIAL C	OOLER	TEMPI	RATUR	RES °C	1	F	NAL CO	OLER	EMPER/	TURES	°C
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Released by: C	Connor Devereaux	Date: Oct 8, 2019	Time: 17:00	Received by:		Date:	Time:	Rec	eived	by:		×	P		Date:	OGO	15	ne: (7:	30
			10000		160	WITE LABORATO	VDV CODY VE	HOW	CHE	NIT CC	DV	-			,	A PM 0326e	v09 Front/0	January 2014	_	

Spill Report Number: 19-354



October 23, 2019

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 # 19-354
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On September 23, 2019, during routine marine monitoring in Milne Port a sheen was observed on the ocean's surface in the local area of the Freight Dock. Spill response procedures were initiated and vessels were dispatched to investigate. Upon initial investigation, no free product or point source was identified, however a sheen was observed to be localized around the Port's Freight Dock. The small sheen was observed rapidly dissipating from wave action. To contain the sheen, an oil absorbent boom was deployed around the east face of the Freight Dock. It is estimated that approximately 5 litres of an unknown hydrocarbon was observed impacting an approximate area of 500 m².

Immediate and Follow-Up Action:

An absorbent boom was deployed on the east side of the Freight Dock where the sheen was present providing containment. Appendix A outlines water quality results from monitoring conducted at the following locations:

Sample ID	Location
HC-01	17 W 0503935 7976652
HC-02	17 W 0504011 7976652

Recommendations:

Continue routine marine monitoring.

Current Status:

No further sheen has been observed in Milne Port.

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: Reviewed by:

Connor Devereaux Christopher Murray

Environmental Superintendent Environmental and Regulatory Compliance Manager

Attachments: Photos, Map, Baffinland NT-NU Spill Report, Water Quality Results, Certificates of Analyses

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Francois Gaudreau, Shawn Stevens, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC) Curtis Didham (ECCC).





Photo #1 September 23rd Sheen Containment

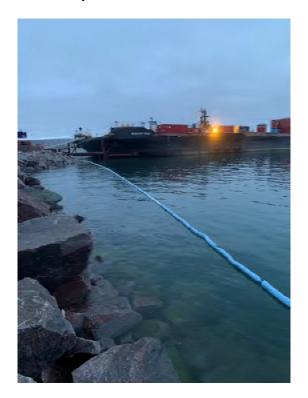


Photo #2 September 23rd Sheen Containment

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



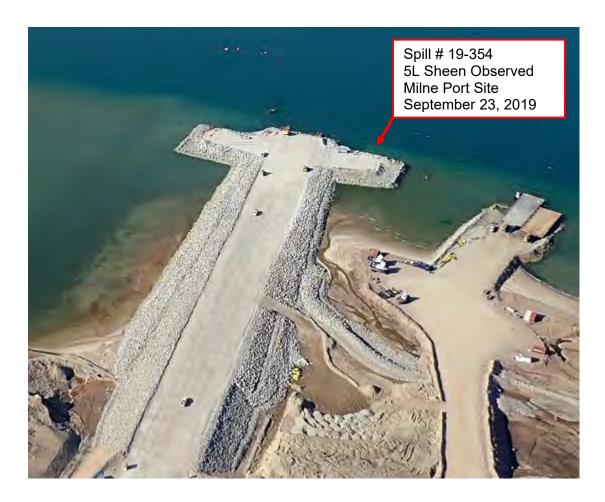


Figure 1. Map of spill location



FIRS	T SUPPORT AGENCY									
	AGENCY	2 34 24 A C C C			2000		73.55			
AGEN	AGENCY = EC = CCG = GNW	NTACT NAME	AC THEB TO		FICANCE = MINOR	□ WAJO	REMARKS	FILE STAT	TUS = OPEN = CLOSED	
	Jerusa Can Can Can	STATION OPERATOR		l laner	TO ALLOW THE TANK		ELLOWKNIFE, NT		(867) 920-8130	
N	RECEIVED AT SPILL LINE BY	POSITION		EMPLOYE		ic	OCATION CALLED		REPORT LINE NUMBER	
1.		managor or		INE USE ON		-	CATION		(#C/LE)	
N / 1	Shawn Stevens	Manager of	HSES	Baffin	Commence of the Commence of th		TERNATE CONTACT		6016	
L	William Bowden	Env. Superi	ntendent	Baffin		and the same of th	Mary River	ROM	416 364 8820	
K	spill on water ADDITIONAL INFORMATION, COM On September 23, 2 observed on the occ were initialized and product or point sor Port's Freight Dock around the East fac estimated that appr 500 m2, was release Milne Inlet or within provided in the follo Items 9 & 10. Arctic	ean's surface vessels were urce was iden dissipating rate of the Freigloximately 5 lited prior to boot the containmow-up report. POSITION	during routi in the local dispatched tified, how apidly from the Dock wh tres of an u om contains ent booms Reporting a	ine mari larea of d to inve ever a s wave a ere the inknown ment. N . The in as requi intion Ac	ne monitori the Freight estigate. Upo heen was o ction. An oil sheen was p hydrocarb o sheen wa- vestigation red by Wate t S. 5(1), and	ng in I Dock on init bserve I abso preser on, im s obser is once er Lice d Fish	Milne Inlet a Spill responsial investigated to be locally before the common the providing apacting an alternative the foliagoing and further EAM-Milleries Act su	minor onse pro- diced a was de contain approxi- llowing rther de RY1325 bsection	sheen was occedures no free iround the eployed nment. It is imate area of morning in etails will be i, Part H, on 34(1).	
1	FACTORS AFFECTING SPILL OR F	RECOVERY			CE REQUIRED		HAZARDS TO PE	RSONS, PRO	OPERTY OR EQUIPMENT	
1	N/A SPILL SOURCE	100					N/A AREA OF CONTA 500 m2	MINATION IN	SOUARE METRES	
75	hydrocarbons SECOND PRODUCT SPILLED (IF A	APPLICABLE)	Approx	. 5 litres			N/A			
G	Hatch PRODUCT SPILLED				GRAMS OR CUBIC		(IN NUMBER			
F	Baffinland Iron Mine		2275 Mi	iddle Ro		ite 30	0, Oakville,	ON L6H	1 0C3	
E	74	NUTES 53	BESPONDS 2	23	GREES 80	DOMESTICAL	uques 53	3	ONDS 04	
D	Mary River Milne In	let Site, Baffin	Island, NU		NWT X N	UNAVUT	= ADJACENT JU	RISDICTION	OROCEAN	
С	IOL - Commercial Le	TALL DESTROY			2AM-MRY1	325 Ty	/pe "A"			
В	09-23-2019 LAND USE PERMIT NUMBER (IF A	PPLICABLE)		17:00	WATER LICENCE NU		THE ORIGINAL SPI	LL REPORT		
A	09-24-2019 OCCURRENCE DATE: MONTH - D	AY-YEAR			NCE TIME	Of	UPDATE #	перопт NUMBER 19 - 354		
	00 04 0040			13:00				ORIGINAL SPILL REPORT,		



Appendix A Water Quality Results Summary



Summary of Analytical Results

Summary of Analytical Results	ALS Lab	ooratory Sample ID	HC-01	HC-02	нс-03
		ALS ID	L2355389-1	L2355389-2	L2355389-3
	Sampl	le Date & Time	9/23/2019 19:20:00 PM	9/23/2019 19:35:00 PM	9/23/2019 20:00:00 PM
	QA/Q	C Sample Type	N/A	N/A	N/A
	Units	LOR			
Physical Tests (Water)					
рН	pH units	0.1	7.52	7.79	7.83
Total Suspended Solids	mg/L	2	18.10	29.10	17.30
Total Dissolved Solids	mg/L	80	20800	22400	25800
Turbidity	NTU	0.1	0.41	0.31	0.23
Aggregate Organics (Water)					
Oil and Grease, Total	mg/L	2	<2.0	<2.0	<2.0
Volatile Organic Compounds (Water)					
Benzene	ug/L	0.5	<0.50	<0.50	<0.50
Ethylbenzene	ug/L	0.5	<0.50	<0.50	<0.50
Toluene	ug/L	0.5	<0.50	<0.50	<0.50
o-Xylene	ug/L 0.3		<0.30	<0.30	<0.30
m+p-Xylenes	ug/L	0.4	<0.40	<0.40	<0.40
Xylenes (Total)	ug/L	0.5	<0.50	<0.50	<0.50



Appendix B Certificate of Analyses



Baffinland Iron Mine's Corporation

(Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 27-SEP-19

Report Date: 02-OCT-19 14:04 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2355389 Project P.O. #: 4500057496

Job Reference: FREIGHT DOCK EXPLORE

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

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

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L2355389 CONTD.... PAGE 2 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2355389-1 HC-01 Sampled By: CD/LC on 23-SEP-19 @ 19:20 Matrix: WATER							
Physical Tests							
pH	7.52		0.10	pH units		27-SEP-19	R4849575
Total Suspended Solids	18.1		2.0	mg/L	30-SEP-19	01-OCT-19	R4851050
Total Dissolved Solids	20800	DLDS	80	mg/L	00 021 10	29-SEP-19	R4850389
Turbidity	0.41	2230	0.10	NTU	27-SEP-19		R4849001
Aggregate Organics	0.41		0.10	1410	27-021-15	27-0L1-15	114043001
Oil and Grease, Total	<2.0		2.0	mg/L	27-SEP-19	27-SEP-19	R4850795
Animal/Veg Oil & Grease	<2.0		2.0	mg/L		30-SEP-19	
Mineral Oil and Grease	<1.0		1.0	mg/L	27-SEP-19	27-SEP-19	R4850795
Volatile Organic Compounds	1						
Benzene	<0.50		0.50	ug/L		02-OCT-19	R4855849
Ethylbenzene	<0.50		0.50	ug/L		02-OCT-19	R4855849
Toluene	<0.50		0.50	ug/L		02-OCT-19	
o-Xylene	<0.30		0.30	ug/L		02-OCT-19	R4855849
m+p-Xylenes	<0.40		0.40	ug/L		02-OCT-19	R4855849
Xylenes (Total)	<0.50		0.50	ug/L		02-OCT-19	
Surrogate: 4-Bromofluorobenzene	95.6		70-130	%		02-OCT-19	R4855849
Surrogate: 1,4-Difluorobenzene	96.6		70-130	%		02-OCT-19	
Sampled By: CD/LC on 23-SEP-19 @ 19:35 Matrix: WATER							
Physical Tests							
pH	7.79		0.10	pH units		27-SEP-19	R4849575
Total Suspended Solids	29.1	DI DO	2.0	mg/L	30-SEP-19	01-OCT-19	R4851291
Total Dissolved Solids	22400	DLDS	80	mg/L	07.050.40	30-SEP-19	R4851707
Turbidity Aggregate Organics	0.31		0.10	NTU	27-SEP-19	27-SEP-19	R4849001
Oil and Grease, Total	<2.0		2.0	ma/l	27-SEP-19	27-SEP-19	R4850795
Animal/Veg Oil & Grease	<2.0		2.0	mg/L mg/L	21-325-19	30-SEP-19	K4650795
Mineral Oil and Grease	<1.0		1.0	_	27-SEP-19	27-SEP-19	R4850795
Volatile Organic Compounds	<1.0		1.0	mg/L	21-325-19	21-3LF-19	K4650795
Benzene	<0.50		0.50	ug/L		02-OCT-19	R4855849
Ethylbenzene	<0.50		0.50	ug/L		02-OCT-19	
Toluene	<0.50		0.50	ug/L		02-OCT-19	R4855849
o-Xylene	<0.30		0.30	ug/L		02-OCT-19	
m+p-Xylenes	<0.40		0.40	ug/L		02-OCT-19	
Xylenes (Total)	<0.50		0.50	ug/L		02-OCT-19	
Surrogate: 4-Bromofluorobenzene	95.8		70-130	%		02-OCT-19	R4855849
Surrogate: 1,4-Difluorobenzene	96.9		70-130	%			R4855849
L2355389-3 HC-03 Sampled By: CD/LC on 23-SEP-19 @ 20:00 Matrix: WATER							
Physical Tests							
pH	7.83		0.10	pH units		27-SEP-19	R4849575

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

L2355389 CONTD.... PAGE 3 of 5 Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2355389-3 HC-03							
Sampled By: CD/LC on 23-SEP-19 @ 20:00							
Matrix: WATER							
Physical Tests							
Total Suspended Solids	17.3		2.0	mg/L	30-SEP-19		R4851291
Total Dissolved Solids	25800	DLDS	80	mg/L			R4851707
Turbidity	0.23		0.10	NTU	27-SEP-19	27-SEP-19	R4849001
Aggregate Organics							
Oil and Grease, Total	<2.0		2.0	mg/L	27-SEP-19		R4850795
Animal/Veg Oil & Grease	<2.0		2.0	mg/L		30-SEP-19	
Mineral Oil and Grease	<1.0		1.0	mg/L	27-SEP-19	27-SEP-19	R4850795
Volatile Organic Compounds				,,			
Benzene	<0.50		0.50	ug/L			R4855849
Ethylbenzene	<0.50		0.50	ug/L			R4855849
Toluene	<0.50		0.50	ug/L		02-OCT-19	
o-Xylene	<0.30		0.30	ug/L		02-OCT-19	
m+p-Xylenes	<0.40		0.40	ug/L		02-OCT-19	R4855849
Xylenes (Total)	<0.50		0.50	ug/L		02-OCT-19	
Surrogate: 4-Bromofluorobenzene	95.4		70-130	%		02-OCT-19	R4855849
Surrogate: 1,4-Difluorobenzene	96.5		70-130	%		02-OCT-19	R4855849
* Peter to Peteronand Information for Qualifiers (if any) and	<u> </u>			L			

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

FREIGHT DOCK EXPLORE

L2355389 CONTD.... PAGE 4 of 5 Version: FINAL

Reference Information

Sample Parameter Qualifier key listed:

Qualifier Description

DLDS Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

Test Method References:

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

BTX-511-HS-WT Water BTEX by Headspace SW846 8260 (511)

BTX is determined by analyzing by headspace-GC/MS.

EC-SCREEN-WT Water Conductivity Screen (Internal Use **APHA 2510**

Only)

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

OGG-SPEC-CALC-WT Speciated Oil and Grease A/V Calc CALCULATION

Sample is extracted with hexane, sample speciation into mineral and animal/vegetable fractions is achieved via silica gel separation and is then

determined gravimetrically.

OGG-SPEC-WT Speciated Oil and Grease-APHA 5520 B Water

Gravimetric

The procedure involves an extraction of the entire water sample with hexane. Sample speciation into mineral and animal/vegetable fractions is

achieved via silica gel separation and is then determined gravimetrically.

PH-WT Water pΗ APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

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). Holdtime for samples under this regulation is 28 days

SOLIDS-TDS-WT **Total Dissolved Solids** Water APHA 2540C

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.

Suspended solids SOLIDS-TSS-WT 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 104-1°C for a minimum of

four hours or until a constant weight is achieved.

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.

XYLENES-SUM-CALC-Sum of Xylene Isomer CALCULATION Concentrations

Total xylenes represents the sum of o-xylene and m&p-xylene.

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

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

Laboratory Definition Code Laboratory Location

WT ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA

Chain of Custody Numbers:

FREIGHT DOCK EXPLORE

L2355389 CONTD....

Reference Information

PAGE 5 of 5 Version: FINAL

GLOSSARY OF REPORT TERMS

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

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

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

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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



Workorder: L2355389 Report Date: 02-OCT-19 Page 1 of 5

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTX-511-HS-WT	Water							
Batch R4	855849							
WG3178624-4 Benzene	DUP	WG3178624- 3 < 0.50	3 <0.50		ug/L	N1/A	20	00 OOT 40
Ethylbenzene		<0.50	<0.50	RPD-NA RPD-NA	ug/L	N/A N/A	30 30	02-OCT-19
m+p-Xylenes		<0.40	<0.40		ug/L	N/A	30	02-OCT-19
o-Xylene		<0.40	<0.30	RPD-NA	ug/L			02-OCT-19
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	02-OCT-19
	1.00	<0.50	<0.50	RPD-NA	ug/L	N/A	30	02-OCT-19
WG3178624-1 Benzene	LCS		109.0		%		70-130	02-OCT-19
Ethylbenzene			97.4		%		70-130	02-OCT-19
m+p-Xylenes			102.9		%		70-130	02-OCT-19
o-Xylene			98.8		%		70-130	02-OCT-19
Toluene			99.5		%		70-130	02-OCT-19
WG3178624-2 Benzene	MB		<0.50		ug/L		0.5	02-OCT-19
Ethylbenzene			<0.50		ug/L		0.5	02-OCT-19
m+p-Xylenes			<0.40		ug/L		0.4	02-OCT-19
o-Xylene			<0.30		ug/L		0.3	02-OCT-19
Toluene			<0.50		ug/L		0.5	02-OCT-19
Surrogate: 1,4-D	Difluorobenzene		96.7		%		70-130	02-OCT-19
Surrogate: 4-Bro	omofluorobenzene		96.9		%		70-130	02-OCT-19
WG3178624-5	MS	WG3178624-3	3					
Benzene			109.7		%		50-140	02-OCT-19
Ethylbenzene			96.4		%		50-140	02-OCT-19
m+p-Xylenes			100.8		%		50-140	02-OCT-19
o-Xylene			97.4		%		50-140	02-OCT-19
Toluene			98.8		%		50-140	02-OCT-19
OGG-SPEC-WT	Water							
Batch R4	850795							
WG3175235-2 Oil and Grease,	LCS Total		88.3		%		70.400	07.050.40
Mineral Oil and			88.3 76.6		%		70-130	27-SEP-19
	MB		70.0		/0		70-130	27-SEP-19
WG3175235-1 Oil and Grease,			<2.0		mg/L		2	27-SEP-19
Mineral Oil and			<1.0		mg/L		1	27-SEP-19
PH-WT	Water							



Workorder: L2355389 Report Date: 02-OCT-19

Page 2 of 5

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WT	Water							
Batch R4849575 WG3174669-4 DUP pH		WG3174669-3 7.99	7.88	J	pH units	0.11	0.2	27-SEP-19
WG3174669-2 LCS pH			7.01		pH units		6.9-7.1	27-SEP-19
SOLIDS-TDS-WT	Water							
Batch R4850389 WG3176301-3 DUP Total Dissolved Solids		L2353627-1 188	190		mg/L	1.1	20	29-SEP-19
WG3176301-2 LCS Total Dissolved Solids			102.6		%		85-115	29-SEP-19
WG3176301-1 MB Total Dissolved Solids			<10		mg/L		10	29-SEP-19
Batch R4851707 WG3176870-3 DUP Total Dissolved Solids		L2354699-1 321	316		mg/L	1.7	20	30-SEP-19
WG3176870-2 LCS Total Dissolved Solids			98.2		%		85-115	30-SEP-19
WG3176870-1 MB Total Dissolved Solids			<10		mg/L		10	30-SEP-19
SOLIDS-TSS-WT	Water							
Batch R4851050 WG3176530-3 DUP Total Suspended Solids		L2355079-2 2600	2630		mg/L	1.1	20	01-OCT-19
WG3176530-2 LCS Total Suspended Solids			101.1		%		85-115	01-OCT-19
WG3176530-1 MB Total Suspended Solids			<2.0		mg/L		2	01-OCT-19
Batch R4851291 WG3177356-3 DUP Total Suspended Solids		L2354541-1 2060	2180		mg/L	5.8	20	01-OCT-19
WG3177356-2 LCS Total Suspended Solids			99.7		%		85-115	01-OCT-19
WG3177356-1 MB Total Suspended Solids			<2.0		mg/L		2	01-OCT-19
TURBIDITY-WT	Water							



Workorder: L2355389

Report Date: 02-OCT-19

Page 3 of 5

Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-WT		Water							
Batch	R4849001								
WG3175100- Turbidity	3 DUP		L2354876-1 19.3	19.9		NTU	3.1	15	27-SEP-19
WG3175100- Turbidity	2 LCS			101.5		%		85-115	27-SEP-19
WG3175100- Turbidity	1 MB			<0.10		NTU		0.1	27-SEP-19

Workorder: L2355389 Report Date: 02-OCT-19

Baffinland Iron Mine's Corporation (Oakville) Client:

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

ALS Control Limit (Data Quality Objectives) Limit 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

Average Desorption Efficiency ADE

MB Method Blank

Internal Reference Material IRM CRM Certified Reference Material Continuing Calibration Verification CCV 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.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Page 4 of 5

Workorder: L2355389 Report Date: 02-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Turbidity							
•	1	23-SEP-19 19:20	27-SEP-19 14:07	48	91	hours	EHTR
	2	23-SEP-19 19:35	27-SEP-19 14:07	48	90	hours	EHTR
	3	23-SEP-19 20:00	27-SEP-19 14:07	48	90	hours	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 L2355389 were received on 27-SEP-19 10:30.

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

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

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

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

COC Number: 15 -

Canada Toll Free: 1 800 668 9878 www.alsglobal.com Report To Contact and company name below will appear on the final report Report Format / Distribution Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply Baffinland Iron Mines Corp. Company: Select Report Format: PDF EXCEL EDD (DIGITAL) Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply Contact: Wiliam Bowden and Connor Devereaux 4 day [P4] \Box 1 Business day [E1] П 647-253-0596 EXT 6016 Phone: Compare Results to Criteria on Report - provide details below if box checked 3 day [P3] Same Day, Weekend or Company address below will appear on the final report ☑ EMAIL ☐ MAIL ☐ FAX Select Distribution: 2 day [P2] Statutory holiday [E0] Street: 2275 Upper Middle Rd. E., Suite #300 Email 1 or Fax bimcore@alsglobal.com Date and Time Required for all E&P TATs: City/Province: Oakville, ON Email 2 bimww@alsglobal.com For tests that can not be performed according to the service level selected, you will be contacted. Postal Code: L6H 0C3 Email 3 **Analysis Request** Invoice To Same as Report To ☑ YES ☐ NO **Invoice Distribution** Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Copy of Invoice with Report ☐ YES 🗸 NO Select Invoice Distribution: FI EMAIL MAIL ☐ FAX Company: Email 1 or Fax ap@baffinland.com Contact: Email 2 commercial@baffinland.com of Containers Project Information Oil and Gas Required Fields (client use) ALS Account # / Quote #: 23642 /Q42455 AFE/Cost Center: PO# Job #: Freight Dock Explore Major/Minor Code Routing Code: PO / AFE: 4500057496 Requisitioner: SD: _ocation: Grease TDS, ALS Lab Work Order # (lab use only) ALS Contact: Sampler: CD/LC Sample Identification and/or Coordinates ALS Sample # Date and Time Sample Type (lab use only) (This description will appear on the report) Ĕ, (dd-mmm-yy) (hh:mm) ភ HC-01 23-Sep-19 19:20 Water R R R 6 HC-02 . 23-Sep-19 19:35 R R Water R 6 HC-03 23-Sep-19 20:00 Water R R R 6 Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below SAMPLE CONDITION AS RECEIVED (lab use only) Drinking Water (DW) Samples¹ (client use) (electronic COC only) SIF Observations Frozen Yes ш Are samples taken from a Regulated DW System? Ice Cubes Custody seal intact Yes П ce Packs П ☐ YES ☑ NO Cooling Initiated Are samples for human drinking water use? INIITIAL COOLER TEMPERATURES ℃ FINAL COOLER TEMPERATURES °C ☐ YES ☑ NO SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) FINAL SHIPMENT RECEPTION (lab use only) Released By: C. Devereaux Release Date: 24-Sep-19 Time: Received by: Date: Time: Received by: 15:00 REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Spill Report Number: 19-404



October 28, 2019

Water Resources Officer Nunavut Region Crown Indigenous Relations and Northern Affairs Canada Box 100 Igaluit, NU X0A 0H0 jonathan.mesher@canada.ca

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

Re: Follow-up to Spill #19-404 Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On September 28th 2019, the Waste Water Treatment Plant (WWTP) operator was notified that a spill was observed at the 380man Milne Port Waste Water Treatment Plant. The water treatment operator noticed that sewage foam from the aeration tank had overflowed onto the surrounding camp pad. At the time of the incident, the plant was experiencing a high volume of influent. It was estimated that approximately 3m3 of sewage was released. The release is >500m from Phillips Creek and was confined to the immediate WWTP pad.

Immediate and Follow-Up Action:

An anti-foaming agent was added to the aeration tank to dissipate the foam and prevent further release. The spilled material was contained, cleaned-up and area remediated. Baffinland retained a specialist to further assess the design of the WWTP system. As recommended by the specialist, an equalization tank has been installed and will be operational once commissioning is complete. Operators have received additional training to update their knowledge of the system, and to prevent further releases from occurring.

Recommendations:

Continued and increased frequency of routine inspections of the 380M WWTP to mitigate the potential for future releases from occurring.

Current Status:

Currently the plant is operating as designed.

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:

Connor Devereaux

Come Dem

Environmental Superintendent

Reviewed by:

Marlon Coakley Hatch Site Manager

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

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Francois Gaudreau, Christopher Murray (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC).





Photo 1. Sept 28th spill before clean up.



Photo 2. Sept 28th spill 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

PAGE 1 OF _

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spllis@gov.nt.ca

									REPORT LINE USE ONLY	
Α	REPORT DATE: MONTH - DAY - Y 09-28-2019			21:40)	OR		PORT,	REPORT NUMBER	
В	09-27-2019			21:55		TO	UPDATE # D THE ORIGINAL SPILL REPORT		19-404	
С	IOL - Commercial L	ease: Q13C30		WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"						
D	Mary River Mine Sit	and the state of t		LOCATION	□ NWT XNU	INAVUT	□ ADJACENT JUI	RISDICTION	OROCEAN	
E		inures 52	SECONDS 3		DEGREES 80		MINUTES 54	s	ECONDS 18	
F	RESPONSIBLE PARTY OR VESSE Baffinland Iron Mine		PESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION 2275 Middle Road East, Sutie 300, Oakville, ON L6H 0C3							
G	Horizon North			310000	S OR OFFICE LOCATION					
ш	Sewage		Approxi	imately	C Part / Company		N/A			
П	SECONO PRODUCT SPILLED (IF /	APPLICABLE)	N/A		LOGRAMS OR CUBIC N	METRES	N/A			
1	Aeration Tank		Increase	ed volu			Approxim	ately 40		
J	FACTORS AFFECTING SPILL OR F	RECOVERY	N/A	IY ASSISTAL	NCE REQUIRED		HAZARDS TO PERSONS, PROPERTY OR ENVIRONMEN N/A			
K	investigation, it was the surrounding car influent. An anti-foa further release. The Phillips Creek and i details will be provi conditions of water Nunavut Waters and	mp pad. At the aming agent we immediate ca is confined to ided in the following rock.	e time of the vas added to ause of the the immedi low-up repo AM-MRY132	e incide o the ac spill is iate WV ort. This 25, Part	ent the plant veration tank to still being inv VTP pad. An i s spill is being t H, item 9 (b)	was ex o diss vestiga investi g repo pursu	xperiencing lipate the fo ated. The re ligation is of orted as requ ant to subs	high veram and elease is ngoing uired by section	olume of prevent s >500m from and further y the 12(3) of the	
L	REPORTED TO SPILL LINE BY Connor Devereaux	POSITION Env. Superi	intendent		The second secon		OCATION CALLING FROM Mary River		TELEPHONE 416 364 8820	
M	ANY ALTERNATE CONTACT	POSITION Manager of		EMPLOY	1110111	ALT	ERNATE CONTACT	- /	Ext. 6016	
	onann strant	The state of the s	REPORT LI		escure, m	LCA	Anon		010 20 11	
	RECEIVED AT SPILL LINE BY	POSITION	116. 5111	EMPLOY		LOC	CATION CALLED	F	REPORT LINE NUMBER	
N		STATION OPERATOR	4			YEL	LOWKNIFE, NT		867) 920-8130	
	DAGENCY DEC DCCG DGNW	The second second	IAÇ DINEB DITC		RECANCE III MINOR I		-23/2 01-01	FILE STATE	US □ OPEN □ CLOSED	
AGE	NGY CO	INTACT NAME		CON	TACT TIME		REMARKS			
LEAL	DAGENCY									
FIRS	ST SUPPORT AGENCY									
SEC	OND SUPPORT AGENCY									
THIR	O SUPPORT AGENCY									

Figure 2. Baffinland NT NU spill report



APPENDIX E.8.4

Initial and Follow-up Spill Reports

Spill Report Number: 19-409



November 1, 2019

Jonathan Mesher, Water Resource Officer Nunavut Field Operations Crown Indigenous Relations and Northern Affairs Canada Iqaluit Office Box 100 Iqaluit, NU X0A 0H0 Monika Trottier, Enforcement Officer Curtis Didham, Enforcement Officer Environment and Climate Change Canada 933 Mivvik Street Iqaluit, NU X0A 0H0

Re: Follow-up to Spill #19-409, Reported on October 2, 2019, Mary River Project - Water Licence No. 2AM-MRY1325

On September 28th, 2019, discharge recommenced from MS-08 due to warm conditions and a rain event after ceasing discharge on September 7th due to initial freeze up. Deleterious substances water quality monitoring was conducted from the MS-08 Final Discharge Point (FDP) on September 28th and 30th and lab results indicated total suspended solids (TSS) in exceedance of the grab limit. Monitoring on October 1st indicated a return of the TSS to below the grab limit, and the discharge continued until October 2nd, 2019.

Deleterious substances water quality monitoring was conducted on September 28th, and effluent characterization was conducted on September 30th and October 1st from the MS-08 FDP. Acute lethality samples were collected on October 1st from the MS-08 FDP. Water quality monitoring was conducted at the reference and exposure sites on September 30th and October 1st. The location of the MS-08 FDP and reference and exposure sites are listed below.

ID	Location
Final Discharge Point MS-08	71° 20′ 41.6″ 79° 13′ 44.5″
MS-08-US (Reference)	71° 18' 37.8" 79° 11' 13.5"
MS-08-DS (Effluent-Exposed)	71° 18' 38.9" 79° 12' 09.4"

MS-08 FDP lab results for all parameters analyzed from the September 28th and 30th samples were compliant with applicable regulatory criteria with the exception of total suspended solids. October 1st samples indicated a return of TSS to below applicable regulatory criteria. Reference and exposure site samples from September 30th and October 1st returned compliant samples for all parameters analyzed with applicable regulatory criteria.

Appendix A outlines water quality results from monitoring conducted at the MS-08 FDP and reference and exposure sites. Appendix B includes the Certificates of Analyses (COAs) for these sampling events.

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

- a) Total Suspended Solids (TSS) grab sample concentration exceedances of 40.5 and 55.5 mg/L on September 28th and 30th, respectively, at the Waste Rock Facility Pond FDP (MS-08). The mean monthly concentration of TSS for September was 35 mg/L.
- b) Discharge volume for the month of September was 9617m³. This was measured using a 4" GPI TM400 turbine flow meter.
- c) A summary is provided in Appendix A of the sampling events during the month of September which includes date, time and respective water quality results.
- d) N/A. All effluent was discharged through the MS-08 FDP.
- e) Appendix A outlines the concentrations of total suspended solids in effluent discharged through the MS-08 FDP in September.
- f) Mary River Tributary F (MRTF) and Mary River would be the receiving bodies of water. The effluent is discharged through approximately 475 m of layflat hose overland (no defined channel)



and flows eastnortheast over boulder-cobble till material for approximately 475 m before entering a headwater depression that contains intermittent natural flow. The gradient of the depression continues eastward, eventually forming a clearly defined channel approximately 1,170 m down gradient of the end of the lay-flat hose line. This defined channel drains southeast approximately 740 m before discharging into MRTF. From this confluence, MRTF flows south approximately 3.3 km) before discharging into the Mary River.

- g) Acute toxicity samples were collected on October 1st and test results were non-lethal. Certificate of Analyses is attached in Appendix B.
- h) See summary above for circumstances of deposit. Extent of release occurred for approximately three days until mitigation measures reduced the elevated TSS to compliant levels. As per Baffinland's Emergency Response Plan and Spill Contingency Plan, bag filters were installed on the discharge line in an effort to reduce TSS concentrations.
- Bag filters were installed in the discharge line prior to the MS-08 FDP.

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:

Connor Devereaux

Environmental Superintendent

Reviewed by:

Daniel Janusauskas

Technical Services Superintendent

Attach: Photos, Map, NT-NU Spill Report, Water Quality Results, Certificates of Analyses

cc. Grant Goddard, Megan Lord-Hoyle, Sylvain Proulx, Tim Sewell, Shawn Stevens, Francois Gaudreau, Christopher Murray, Lou Kamermans (Baffinland), Justin Hack, Jeremy Fraser (CIRNAC), Curtis Didham (ECCC).

Baffinland



Photo 1. September 27th, 2019 – MS-08 pond.



Photo 2. September 29th, 2019 – MS-08 Exposure Area.

Baffinland



Photo 3. September 30th, 2019 – Bag Filters Installed.



Photo 4. October 1st, 2019 – Geotube pond utilized.





Figure 1 – Overview map of spill location







NT-NU SPILL REPORT

FAX: (867)

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca

NT-NU 24-HOUR SPILL REPORT LINE

	REPORT DATE MONTH - DAY -	YEAR		REPORT	TIME			Con W	REPORT LINE USE ONL	
A	10-02-2019			22:30	and the law and the law of	DF	OFUGINAL SPILL REF 1:	ORT	REPORT NUMBER	
В	OCCURRENCE DATE: MONTH - 09-28-2019			13:30	70		UPDATE# O THE ORIGINAL SPILL REPORT		19 409	
С	IOL - Commercial I		01	WATER LICENCE NUMBER (# APPLICABLE) 2AM-MRY1325 Type "A"						
D	GEOGRAPHIC PLACE NAME OF Mary River Mine S			LOCATION		JNAVLIT	VUT ELADJACENT JURISDICTION OR OCEAN			
E	ending modes	MINUTES 20	SECONDS 4		LONGITUDE DEGREES 79		MINUTES 13	S	ECONDS 45	
F	RESPONSIBLE PARTY OR VESS Baffinland Iron Mir	onsible party on vessel name Responsible party address on office Location 2275 Middle Road East, Suite 300, Oakville, ON L6							0C3	
G	N/A		CONTRACTO N/A	R ADDRESS	OR OFFICE LOCATIO	N.i				
	PRODUCT SPILLED Effluent		QUANTITY IN	LITRES, KIL	OGRAMS OR CUBIC I	METRES	U.N. NUMBER N/A			
H	SECOND PRODUCT SPILLED (IF N/A	APPLICABLE)	OUANTHY IN	LITRES KIL	OGRAMS OR CUBIC I	METRES	N/A			
Ţ	Waste rock facility	100.000	SPILL CAUSE Rain event, rapid melt			AREA OF CONTAMINATION IN SQUARE METRES				
J	The same in the same of the sa			DESCRIBE ANY ASSISTANCE REQUIRED N/A			HAZARDS TO PERSONS, PROPERTY OR EQUIPMEN N/A			
K	continues to be sa parameters are in IOL located > 3km of water license no Effluent Regulation Protection Act para	progress and from fish bea o, 2AM-MRY13 ns under the F	will be prese ring water. 1 25, Part H, i isheries Ac	ented in This spi tem 9(b	n the follow-u ill is being re o); section 31	p rep ported of the	ort. The incided as required the Metal and I	dent od d by the Diamor	ccurred on conditions d Mining	
L	REPORTED TO SPILI LINE BY Connor Devereaux	POSITION Env. Super	intendent	EMPI CY	ER.	1000	CATION CALLING FR		ELEPHONE ext. 6016	
M	ANY ALTERNATE CONTACT Shawn Stevens	POSITION Manager of	LART T	EMPLOY	11500 (3)	AL	TERNATE CONTACT 16-364-8820	,	LITERNATE TELEPHONE ext. 6006	
			REPORT L	INE USE OF	NLY	Lo	MATION	_		
N	RECEIVED AT SPILL LINE BY	POSITION STATION OPERATO	iA.	EMPLOY	FR	7	CATION CALLED	- 1	REPORT LINE NUMBER 867) 920-8730	
LEA	DAGENCY DEC DCCG DGN	IWT OGN OILA OI	NAC DINEB DITC	SIGN	IFICANCE III MINOR	□ MAJO	R 🗆 UNKNOWN	FILE STATI	JS @ OPEN @ CLOSED	
AGE	NCY	ONTACT NAME		CON	TACT TIME		REMARKS			
LEA	D AGENCY									
FIRS	ST SUPPORT AGENCY									
SEC	OND SUPPORT AGENCY									
Tier	TO OUROODT ACCAUGIS									

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Figure 2 – NT-NU Spill report

Appendix A Water Quality Results Summary

	ALS Laboratory Sample ID		MS-08 MS-08		MS-08	MS-08-DS	MS-08-US		
		ALS ID		L2339839-1	L2356235-1	L2356892-1	L2356925-1	L2356925-2 9/30/2019 1:20:00 PM	
		Sample Date QA/QC Samp		9/2/2019 2:25:00 PM N/A	N/A	N/A	N/A	N/A	
	Units	LOR	MDMER Grab						
Conductivity	umhos/cm	3	Sample Limits	3180	1390	870	170	167	
Hardness (as CaCO3)	mg/L pH units	10 0.1	6.0-9.5	2350 8.47	- 6.91	479 6.92	73.2 7.94	72.2 7.97	
Total Suspended Solids	mg/L	2	30	10	40.5	55.5	3.2	2.4	
Total Dissolved Solids Turbidity	mg/L NTU	20 0.1	-	3190	1080	643	96 3.38	107 3.32	
Acidity (as CaCO3)	mg/L	2	-	9.32 5	42.1	72.1	-	-	
Alkalinity, Total (as CaCO3)	mg/L mg/L	10 0.1	-	63	-	25	72 0.013	73 <0.010	
Ammonia, Total (as N) Chloride (CI)	mg/L	0.5	-	1.43 11	0.5	0.39 2.21	6.98	7.2	
Fluoride (F)	mg/L	0.02	-	<0.40	-	0.047	0.025	0.027 0.074	
Nitrate (as N) Total Kjeldahl Nitrogen	mg/L mg/L	0.02 0.15	-	10.4 1.31	-	2.71 <1.5	0.074 <0.15	<0.15	
Phosphorus, Total	mg/L	0.03	-	0.0036	-	0.052	0.0073	0.0084	
Sulfate (SO4) Cyanide, Total	mg/L mg/L	0.3 0.002	2	2490 <0.0020	<0.020	424 0.0065	6.8	4.48 -	
Dissolved Organic Carbon	mg/L	0.5	-	2.9	-	1.33	2.31	2.24	
Total Organic Carbon Aluminum (Al)-Total	mg/L mg/L	0.5 0.05	-	3.51 0.092	1.02	2.22 1.88	2.42 0.144	2.47 0.123	
Antimony (Sb)-Total	mg/L	0.001	-	<0.0010	<0.0010	<0.0010	<0.00010	<0.00010	
Arsenic (As)-Total Barium (Ba)-Total	mg/L mg/L	0.001 0.001	1 -	<0.0010 0.015	<0.0010 0.0148	<0.0010 0.0175	<0.00010 0.00999	<0.00010 0.0102	
Beryllium (Be)-Total	mg/L	0.001	-	<0.0010	<0.0010	<0.0010	<0.00010	<0.00010	
Bismuth (Bi)-Total Boron (B)-Total	mg/L mg/L	0.0005 0.1	-	<0.00050 <0.10	<0.00050 <0.10	<0.00050 <0.10	<0.000050 <0.010	<0.00050 <0.010	
Cadmium (Cd)-Total	mg/L	0.00005	-	<0.000050	0.000133	0.000066	<0.000050	<0.000050	
Calcium (Ca)-Total Cesium (Cs)-Total	mg/L mg/L	0.5 0.0001		199 <0.00010	44.6 <0.00010	30.5 0.00015	14.7 0.000019	14.7 0.000019	
Chromium (Cr)-Total	mg/L	0.005	-	<0.0050	<0.0050	<0.0050	<0.00050	<0.00050	
Cobalt (Co)-Total Copper (Cu)-Total	mg/L mg/L	0.001 0.01	0.6	0.0366 <0.010	0.0691 <0.010	0.0359 <0.010	<0.00010 0.0012	<0.00010 0.0011	
Iron (Fe)-Total	mg/L	0.1	-	<0.010 0.96	4.43	<0.010 6.55	0.14	0.121	
Lead (Pb)-Total Lithium (Li)-Total	mg/L mg/L	0.0005 0.01	0.4	<0.00050	0.0012	0.00227	0.000128 <0.0010	0.000099 <0.0010	
Magnesium (Mg)-Total	mg/L mg/L	0.01	-	0.026 462	<0.010 169	<0.010 97.8	<0.0010 8.88	<0.0010 8.62	
Manganese (Mn)-Total	mg/L	0.005	-	9.41	5.85	3.33	0.00469	0.00215	
Mercury (Hg)-Total Molybdenum (Mo)-Total	mg/L mg/L	0.00001 0.0005	-	<0.000050 0.00082	0.00072	<0.000050 0.00121	<0.000050 0.000286	<0.0000050 0.000289	
Nickel (Ni)-Total	mg/L	0.005	1	0.0442	0.0774	0.0384	0.00072	0.00055	
Phosphorus (P)-Total Potassium (K)-Total	mg/L mg/L	0.5 0.5	-	<0.50 7.38	<0.50 2.76	<0.50 3.85	<0.050 1.01	<0.050 1.02	
Rubidium (Rb)-Total	mg/L	0.002	-	0.0078	0.0051	0.0069	0.00156	0.00151	
Selenium (Se)-Total Silicon (Si)-Total	mg/L mg/L	0.0005	-	0.00525 1.1	0.00243	0.00123 3.6	<0.000050 1.26	<0.000050 1.24	
Silver (Ag)-Total	mg/L	0.0005	-	<0.00050	<0.00050	<0.00050	<0.000050	<0.000050	
Sodium (Na)-Total Strontium (Sr)-Total	mg/L mg/L	0.5 0.01	-	5.64 0.337	1.52 0.033	1.56 0.027	2.95 0.0147	3.13 0.0148	
Sulfur (S)-Total	mg/L	5	-	781	258	146	2.38	1.66	
Tellurium (Te)-Total Thallium (Tl)-Total	mg/L mg/L	0.002 0.0001		<0.0020 <0.00010	<0.0020 <0.00010	<0.0020 <0.00010	<0.00020 <0.000010	<0.00020 <0.000010	
Thorium (Th)-Total	mg/L	0.001	-	<0.0010	<0.0010	0.0013	0.00012	0.00013	
Tin (Sn)-Total Titanium (Ti)-Total	mg/L mg/L	0.001 0.003	-	<0.0010 0.006	<0.0010 0.0547	<0.0010 0.0893	<0.00010 0.00799	<0.00010 0.00718	
Tungsten (W)-Total	mg/L	0.001	-	<0.0010	<0.0010	<0.0010	<0.00010	<0.00718	
Uranium (U)-Total	mg/L	0.0001 0.005	-	0.00397	0.00151	0.00263	0.00331 <0.00050	0.00358 <0.00050	
Vanadium (V)-Total Zinc (Zn)-Total	mg/L mg/L	0.003	1	<0.0050 <0.030	<0.0050 <0.030	<0.0050 <0.030	<0.0030	<0.0030	
Zirconium (Zr)-Total	mg/L	0.003 0.05	-	<0.0020	<0.0020	<0.0020	0.00031	0.00034	
Aluminum (Al)-Dissolved Antimony (Sb)-Dissolved	mg/L mg/L	0.001	-	<0.050 <0.0010	-	-	-	-	
Arsenic (As)-Dissolved	mg/L	0.001	-	<0.0010	-	-	-	-	
Barium (Ba)-Dissolved Beryllium (Be)-Dissolved	mg/L mg/L	0.001 0.001	-	0.0151 <0.0010	-	-	-	-	
Bismuth (Bi)-Dissolved	mg/L	0.0005	-	<0.00050	-	-	-	-	
Boron (B)-Dissolved Cadmium (Cd)-Dissolved	mg/L mg/L	0.1 0.00005	-	<0.10 <0.00050	-	-	-	-	
Calcium (Ca)-Dissolved	mg/L	0.5	-	201	-	-	-	-	
Cesium (Cs)-Dissolved Chromium (Cr)-Dissolved	mg/L mg/L	0.0001 0.005	-	<0.00010 <0.0050	-	-	-	-	
Cobalt (Co)-Dissolved	mg/L	0.001	-	0.0328	-	-	-	-	
Copper (Cu)-Dissolved Iron (Fe)-Dissolved	mg/L mg/L	0.002 0.1	-	0.0036 <0.10	-	-	-	-	
Lead (Pb)-Dissolved	mg/L	0.0005	-	<0.00050	-	-	-	-	
Lithium (Li)-Dissolved Magnesium (Mg)-Dissolved	mg/L mg/L	0.01 0.05	-	0.024 449	-	-	-	-	
Manganese (Mn)-Dissolved	mg/L	0.005	-	8.84	-	-	-	-	
Mercury (Hg)-Dissolved Molybdenum (Mo)-Dissolved	mg/L mg/L	0.00001 0.0005	-	<0.000050 0.00082	-	<0.000050	<0.0000050	<0.000050 -	
Nickel (Ni)-Dissolved	mg/L	0.005	-	0.0404	-	-	-	-	
Phosphorus (P)-Dissolved Potassium (K)-Dissolved	mg/L mg/L	0.5 0.5	-	<0.50	-	-	-	-	
Rubidium (Rb)-Dissolved	mg/L mg/L	0.5	-	7.44 0.0074	-	-	-	-	
Selenium (Se)-Dissolved Silicon (Si)-Dissolved	mg/L	0.0005 0.5	-	0.00467	-	-	-	-	
Silver (Ag)-Dissolved	mg/L mg/L	0.0005	-	0.92 <0.00050	-	-	-	-	
Sodium (Na)-Dissolved	mg/L	0.5	-	5.61	-	-	-	-	
Strontium (Sr)-Dissolved Sulfur (S)-Dissolved	mg/L mg/L	0.01 5	-	0.333 769	-	-	-	-	
Tellurium (Te)-Dissolved	mg/L	0.002	-	<0.0020	-	-	-	-	
Thallium (TI)-Dissolved Thorium (Th)-Dissolved	mg/L mg/L	0.0001 0.001	-	<0.00010 <0.0010	-	-	-	-	
Tin (Sn)-Dissolved	mg/L	0.001	-	<0.0010	-	-	-	-	
Titanium (Ti)-Dissolved Tungsten (W)-Dissolved	mg/L mg/L	0.003 0.001	-	<0.0030 <0.0010	-	-	-	<u>-</u>	
Uranium (U)-Dissolved	mg/L	0.001	-	<0.0010 0.00381	-	-	-	-	
Vanadium (V)-Dissolved	mg/L	0.005	-	<0.0050	-	-	-	-	
Zinc (Zn)-Dissolved Zirconium (Zr)-Dissolved	mg/L mg/L	0.01 0.003	-	<0.010 <0.0020	-	-	-	-	
Ra-226	Bq/L	0.0044	1.11	0.02	0.017	<0.0068	<0.0080	<0.0069	
Acute Toxicity Notes:	1	<u> </u>	Not acutely toxic	Not acutely toxic	-	-	-	-	

		ALS Laboratory		MS-08	MS-08-DS	MS-08-US
		ALS ID Sample Date		L2357232-1	L2357716-1 10/1/2019 5:30:00 PM	L2357716-2
		QA/QC Samp		N/A	N/A	N/A
	Units	LOR	MDMER Grab			
Conductivity	umhos/cm	3	Sample Limits	5040	199	192
Hardness (as CaCO3)	mg/L	10	-	3990	83	81.1
pH Total Suspended Solids	pH units mg/L	0.1	6.0-9.5	8.79 6	8.08 2.8	8.08 2
Total Dissolved Solids	mg/L	20	-	5620	90	85
Turbidity	NTU	0.1	-	4.52	3.36	1.88
Acidity (as CaCO3) Alkalinity, Total (as CaCO3)	mg/L mg/L	10	-	2.3 39	- 85	- 85
Ammonia, Total (as N)	mg/L	0.1	-	3.79	<0.010	<0.010
Chloride (CI)	mg/L	0.5	-	17.2	8.2	8.41
Fluoride (F) Nitrate (as N)	mg/L mg/L	0.02	-	<0.20	0.027 0.082	0.03 0.074
Total Kjeldahl Nitrogen	mg/L	0.15	-	16.7 4.38	<0.15	<0.15
Phosphorus, Total	mg/L	0.03	-	<0.0030	0.005	0.0042
Sulfate (SO4) Cyanide, Total	mg/L mg/L	0.3	2	4070	7.65	5.26 -
Dissolved Organic Carbon	mg/L	0.5	-	0.0128 3.82	1.6	1.68
Total Organic Carbon	mg/L	0.5	-	4.16	2.19	2.22
Aluminum (AI)-Total Antimony (Sb)-Total	mg/L mg/L	0.05	-	0.082	0.118 <0.00010	0.0844 <0.00010
Arsenic (As)-Total	mg/L	0.001	1	<0.0010 <0.0010	<0.00010	<0.00010
Barium (Ba)-Total	mg/L	0.001	-	0.012	0.0112	0.0111
Beryllium (Be)-Total	mg/L	0.001	-	<0.0010	<0.00010	<0.00010
Bismuth (Bi)-Total Boron (B)-Total	mg/L mg/L	0.0005	-	<0.00050 <0.10	<0.000050 <0.010	<0.00050 <0.010
Cadmium (Cd)-Total	mg/L	0.00005	-	<0.000050	<0.000050	<0.000050
Calcium (Ca)-Total	mg/L	0.5	-	507	16.5	16.6
Cesium (Cs)-Total Chromium (Cr)-Total	mg/L mg/L	0.0001	-	<0.00010 <0.0050	0.000014 <0.00050	0.000011 <0.00050
Cobalt (Co)-Total	mg/L	0.003	-	0.005	<0.00030	<0.00010
Copper (Cu)-Total	mg/L	0.01	0.6	<0.010	<0.0010	0.001
Iron (Fe)-Total Lead (Pb)-Total	mg/L mg/L	0.1	0.4	0.42 <0.00050	0.117 0.000077	0.066 0.00062
Lithium (Li)-Total	mg/L	0.01	-	0.03	<0.0010	<0.0010
Magnesium (Mg)-Total	mg/L	0.05	-	664	10.2	9.63
Manganese (Mn)-Total	mg/L	0.005	<u>-</u>	1.12	0.00247	0.00121
Mercury (Hg)-Total Molybdenum (Mo)-Total	mg/L mg/L	0.00001	-	<0.0000050 0.00141	<0.000050 0.000321	<0.000050 0.000364
Nickel (Ni)-Total	mg/L	0.005	1	0.0071	0.00058	<0.00050
Phosphorus (P)-Total	mg/L	0.5	-	<0.50	<0.050	<0.050
Potassium (K)-Total Rubidium (Rb)-Total	mg/L mg/L	0.5	-	6.91 0.0082	1.09 0.00154	1.1 0.00161
Selenium (Se)-Total	mg/L	0.0005	-	0.00642	<0.00050	<0.00050
Silicon (Si)-Total	mg/L	1	-	<1.0	1.26	1.31
Silver (Ag)-Total Sodium (Na)-Total	mg/L mg/L	0.0005	-	<0.00050	<0.000050	<0.000050 3.68
Strontium (Sr)-Total	mg/L	0.01	-	6.41 1.58	3.41 0.0167	0.017
Sulfur (S)-Total	mg/L	5	-	1350	2.64	1.92
Tellurium (Te)-Total	mg/L	0.002	-	<0.0020	<0.00020	<0.00020
Thallium (TI)-Total Thorium (Th)-Total	mg/L mg/L	0.0001	-	<0.00010 <0.0010	<0.00010 <0.00010	<0.00010 <0.00010
Tin (Sn)-Total	mg/L	0.001	-	<0.0010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	0.003	-	0.0037	0.00541	0.00375
Tungsten (W)-Total Uranium (U)-Total	mg/L mg/L	0.001	-	<0.0010 0.0019	<0.00010 0.00415	<0.00010 0.0045
Vanadium (V)-Total	mg/L	0.005	-	<0.0050	<0.00050	<0.00050
Zinc (Zn)-Total	mg/L	0.03	1	<0.030	<0.0030	<0.0030
Zirconium (Zr)-Total Aluminum (Al)-Dissolved	mg/L mg/L	0.003	-	<0.0020 <0.050	0.00026	0.00026
Antimony (Sb)-Dissolved	mg/L	0.001	-	<0.0010	-	-
Arsenic (As)-Dissolved	mg/L	0.001	-	<0.0010	=	-
Barium (Ba)-Dissolved Beryllium (Be)-Dissolved	mg/L mg/L	0.001	-	0.0117 <0.0010	-	-
Bismuth (Bi)-Dissolved	mg/L	0.0005	-	<0.0010	-	-
Boron (B)-Dissolved	mg/L	0.1	-	<0.10	-	-
Calcium (Ca) Dissolved	mg/L	0.00005	-	<0.000050	-	-
Calcium (Ca)-Dissolved Cesium (Cs)-Dissolved	mg/L mg/L	0.5 0.0001	-	509 <0.00010	-	-
Chromium (Cr)-Dissolved	mg/L	0.005	-	<0.0050	-	-
Copper (Cu)-Dissolved	mg/L	0.001		0.0046	-	-
Copper (Cu)-Dissolved Iron (Fe)-Dissolved	mg/L mg/L	0.002	-	0.005 <0.10	-	-
Lead (Pb)-Dissolved	mg/L	0.0005	-	<0.0050	- -	-
Lithium (Li)-Dissolved	mg/L	0.01	-	0.033	-	-
Magnesium (Mg)-Dissolved Manganese (Mn)-Dissolved	mg/L mg/L	0.05	-	661	-	-
Mercury (Hg)-Dissolved	mg/L	0.00001	-	<0.000050	<0.000050	<0.000050
Molybdenum (Mo)-Dissolved	mg/L	0.0005	-	0.00156	-	-
Nickel (Ni)-Dissolved Phosphorus (P)-Dissolved	mg/L mg/L	0.005	-	0.0067 <0.50	-	-
Potassium (K)-Dissolved	mg/L	0.5	-	6.97	-	-
Rubidium (Rb)-Dissolved	mg/L	0.002	-	0.0079	-	-
Selenium (Se)-Dissolved Silicon (Si)-Dissolved	mg/L mg/L	0.0005	-	0.0069 <0.50	-	-
Silver (Ag)-Dissolved	mg/L	0.0005	-	<0.00050	- -	- -
Sodium (Na)-Dissolved	mg/L	0.5	-	6.41	-	-
Strontium (Sr)-Dissolved Sulfur (S)-Dissolved	mg/L mg/L	0.01 5	-	1.63 1370	-	-
Tellurium (Te)-Dissolved	mg/L	0.002	-	<0.0020	-	-
Thallium (TI)-Dissolved	mg/L	0.0001	-	<0.00010	-	-
Thorium (Th)-Dissolved	mg/L	0.001		<0.0010	-	-
Tin (Sn)-Dissolved Titanium (Ti)-Dissolved	mg/L mg/L	0.001		<0.0010 <0.0030	-	-
Tungsten (W)-Dissolved	mg/L	0.001	-	<0.0010	- -	- -
(11) 5: 1	mg/L	0.0001	-	0.00185	-	-
Uranium (U)-Dissolved		0.005	=	<0.0050	=	-
Vanadium (V)-Dissolved	mg/L mg/L		_		_	=
	mg/L mg/L mg/L	0.01 0.003	-	<0.010 <0.0020	-	-

Appendix B Certificates of Analyses



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 03-SEP-19

Report Date: 24-SEP-19 11:40 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2339839
Project P.O. #: 4500057496
Job Reference: MS-08 WT TOX

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



L2339839 CONTD.... PAGE 2 of 7

Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339839-1 MS-08 Sampled By: KB/CP on 02-SEP-19 @ 14:25 Matrix: WATER							
Physical Tests							
Conductivity	3180		3.0	umhos/cm		04-SEP-19	R4782545
Hardness (as CaCO3)	2350		1.3	mg/L		03-SEP-19	
pH	8.47		0.10	pH units		03-SEP-19	R4781669
Total Suspended Solids	10.0		2.0	mg/L		03-SEP-19	R4781869
Total Dissolved Solids	3190		20	mg/L			R4782348
Turbidity	9.32		0.10	NTU		02-SEP-19	R4782363
Anions and Nutrients	0.02		0.10	1110		02 02: 10	111102000
Acidity (as CaCO3)	5.0		5.0	mg/L		05-SEP-19	R4784118
Alkalinity, Total (as CaCO3)	63		10	mg/L		04-SEP-19	R4782545
Ammonia, Total (as N)	1.43	DLHC	0.10	mg/L		03-SEP-19	R4781881
Chloride (CI)	11	DLDS	10	mg/L		03-SEP-19	R4782656
Fluoride (F)	<0.40	DLDS	0.40	mg/L		03-SEP-19	R4782656
Nitrate (as N)	10.4	DLDS	0.40	mg/L		03-SEP-19	R4782656
Total Kieldahl Nitrogen	1.31		0.15	mg/L	03-SEP-19	04-SEP-19	R4782526
Phosphorus, Total	0.0036		0.0030	mg/L	03-SEP-19	04-SEP-19	R4782483
Sulfate (SO4)	2490	DLDS	6.0	mg/L	00 021 10	03-SEP-19	R4782656
Cyanides	2400		0.0	1119/12		00 021 10	114702000
Cyanide, Total	<0.0020	SP	0.0020	mg/L		04-SEP-19	R4783059
Organic / Inorganic Carbon			******	J.			
Dissolved Carbon Filtration Location	LAB					03-SEP-19	R4782235
Dissolved Organic Carbon	2.90		0.50	mg/L	03-SEP-19	04-SEP-19	R4782677
Total Organic Carbon	3.51		0.50	mg/L		04-SEP-19	R4782674
Total Metals				, and the second			
Aluminum (Al)-Total	0.092	DLHC	0.050	mg/L	03-SEP-19	03-SEP-19	R4782041
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041
Barium (Ba)-Total	0.0150	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782041
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	03-SEP-19	03-SEP-19	R4782041
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	03-SEP-19	03-SEP-19	R4782041
Calcium (Ca)-Total	199	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782041
Cesium (Cs)-Total	<0.00010	DLHC	0.00010	mg/L	03-SEP-19	03-SEP-19	R4782041
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	03-SEP-19	03-SEP-19	R4782041
Cobalt (Co)-Total	0.0366	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	03-SEP-19	03-SEP-19	R4782041
Iron (Fe)-Total	0.96	DLHC	0.10	mg/L	03-SEP-19	03-SEP-19	R4782041
Lead (Pb)-Total	<0.00050	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782041
Lithium (Li)-Total	0.026	DLHC	0.010	mg/L	03-SEP-19	03-SEP-19	R4782041
Magnesium (Mg)-Total	462	DLHC	0.050	mg/L	03-SEP-19	03-SEP-19	R4782041
Manganese (Mn)-Total	9.41	DLHC	0.0050	mg/L	03-SEP-19	03-SEP-19	R4782041
Mercury (Hg)-Total	<0.0000050	22.10	0.0000050	mg/L	33 JEI - 10	03-SET-19 04-SEP-19	
wording (rig) rotal	\0.0000000		0.0000000	ilig/L		0+0Li-18	114102121

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch	
L2339839-1 MS-08 Sampled By: KB/CP on 02-SEP-19 @ 14:25 Matrix: WATER								
Total Metals								
Molybdenum (Mo)-Total	0.00082	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782041	
Nickel (Ni)-Total	0.0442	DLHC	0.0050	mg/L	03-SEP-19	03-SEP-19	R4782041	
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782041	
Potassium (K)-Total	7.38	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782041	
Rubidium (Rb)-Total	0.0078	DLHC	0.0020	mg/L	03-SEP-19	03-SEP-19	R4782041	
Selenium (Se)-Total	0.00525	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782041	
Silicon (Si)-Total	1.1	DLHC	1.0	mg/L	03-SEP-19	03-SEP-19	R4782041	
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782041	
Sodium (Na)-Total	5.64	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782041	
Strontium (Sr)-Total	0.337	DLHC	0.010	mg/L	03-SEP-19	03-SEP-19	R4782041	
Sulfur (S)-Total	781	DLHC	5.0	mg/L	03-SEP-19	03-SEP-19	R4782041	
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	03-SEP-19	03-SEP-19	R4782041	
Thallium (TI)-Total	<0.00010	DLHC	0.00010	mg/L	03-SEP-19	03-SEP-19	R4782041	
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041	
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041	
Titanium (Ti)-Total	0.0060	DLHC	0.0030	mg/L	03-SEP-19	03-SEP-19	R4782041	
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782041	
Uranium (U)-Total	0.00397	DLHC	0.00010	mg/L	03-SEP-19	03-SEP-19	R4782041	
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	03-SEP-19	03-SEP-19	R4782041	
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	03-SEP-19	03-SEP-19	R4782041	
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	03-SEP-19	03-SEP-19	R4782041	
Dissolved Metals								
Dissolved Mercury Filtration Location	FIELD					03-SEP-19	R4781089	
Dissolved Metals Filtration Location	FIELD	DI LIO					R4781204	
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	03-SEP-19		R4782250	
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782250	
Arsenic (As)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782250	
Barium (Ba)-Dissolved	0.0151	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782250	
Beryllium (Be)-Dissolved Bismuth (Bi)-Dissolved	<0.0010	DLHC DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782250	
,	<0.00050	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19		
Boron (B)-Dissolved Cadmium (Cd)-Dissolved	<0.10	DLHC	0.10	mg/L	03-SEP-19 03-SEP-19	03-SEP-19 03-SEP-19	R4782250	
Cadmum (Ca)-Dissolved Calcium (Ca)-Dissolved	<0.00050	DLHC	0.000050	mg/L			R4782250	
Cesium (Cs)-Dissolved	201	DLHC	0.50	mg/L	03-SEP-19		R4782250	
Chromium (Cr)-Dissolved	<0.00010	DLHC	0.00010	mg/L	03-SEP-19 03-SEP-19	03-SEP-19	R4782250	
Cobalt (Co)-Dissolved	<0.0050	DLHC	0.0050	mg/L			R4782250	
Copper (Cu)-Dissolved	0.0328	DLHC	0.0010	mg/L	03-SEP-19		R4782250	
, ,	0.0036	DLHC	0.0020	mg/L	03-SEP-19 03-SEP-19	03-SEP-19 03-SEP-19	R4782250	
Iron (Fe)-Dissolved	<0.10	DLHC	0.10	mg/L			R4782250	
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	03-SEP-19		R4782250	
Lithium (Li)-Dissolved	0.024	DLHC	0.010	mg/L	03-SEP-19 03-SEP-19	03-SEP-19 03-SEP-19	R4782250	
Magnesium (Mg)-Dissolved	449	טרוזט	0.050	mg/L	03-3E7-19	00-0EF-19	R4782250	

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2339839-1 MS-08							
Sampled By: KB/CP on 02-SEP-19 @ 14:25 Matrix: WATER							
Dissolved Metals							
Manganese (Mn)-Dissolved	8.84	DLHC	0.0050	mg/L	03-SEP-19	03-SEP-19	R4782250
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	03-SEP-19	04-SEP-19	R4782733
Molybdenum (Mo)-Dissolved	0.00082	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782250
Nickel (Ni)-Dissolved	0.0404	DLHC	0.0050	mg/L	03-SEP-19	03-SEP-19	R4782250
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782250
Potassium (K)-Dissolved	7.44	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782250
Rubidium (Rb)-Dissolved	0.0074	DLHC	0.0020	mg/L	03-SEP-19	03-SEP-19	R4782250
Selenium (Se)-Dissolved	0.00467	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782250
Silicon (Si)-Dissolved	0.92	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782250
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	03-SEP-19	03-SEP-19	R4782250
Sodium (Na)-Dissolved	5.61	DLHC	0.50	mg/L	03-SEP-19	03-SEP-19	R4782250
Strontium (Sr)-Dissolved	0.333	DLHC	0.010	mg/L	03-SEP-19	03-SEP-19	R4782250
Sulfur (S)-Dissolved	769	DLHC	5.0	mg/L	03-SEP-19	03-SEP-19	R4782250
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	03-SEP-19	03-SEP-19	R4782250
Thallium (TI)-Dissolved	<0.00010	DLHC	0.00010	mg/L	03-SEP-19	03-SEP-19	R4782250
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782250
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782250
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	03-SEP-19	03-SEP-19	R4782250
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-SEP-19	03-SEP-19	R4782250
Uranium (U)-Dissolved	0.00381	DLHC	0.00010	mg/L	03-SEP-19	03-SEP-19	R4782250
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	03-SEP-19	03-SEP-19	R4782250
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	03-SEP-19	03-SEP-19	R4782250
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	03-SEP-19	03-SEP-19	R4782250
Radiological Parameters							
Ra-226	0.020		0.0075	Bq/L	09-SEP-19	19-SEP-19	R4780785
* Refer to Referenced Information for Qualifiers (if any) and	 Natharlane		l	1	l	l	

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Chloride (CI)	MS-B	L2339839-1
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L2339839-1
Matrix Spike	Boron (B)-Dissolved	MS-B	L2339839-1
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2339839-1
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L2339839-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2339839-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2339839-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2339839-1
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L2339839-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2339839-1
Matrix Spike	Rubidium (Rb)-Dissolved	MS-B	L2339839-1
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L2339839-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2339839-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2339839-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2339839-1
Matrix Spike	Aluminum (Al)-Total	MS-B	L2339839-1
Matrix Spike	Barium (Ba)-Total	MS-B	L2339839-1
Matrix Spike	Boron (B)-Total	MS-B	L2339839-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2339839-1
Matrix Spike	Copper (Cu)-Total	MS-B	L2339839-1
Matrix Spike	Iron (Fe)-Total	MS-B	L2339839-1
Matrix Spike	Lithium (Li)-Total	MS-B	L2339839-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2339839-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2339839-1
Matrix Spike	Molybdenum (Mo)-Total	MS-B	L2339839-1
Matrix Spike	Potassium (K)-Total	MS-B	L2339839-1
Matrix Spike	Rubidium (Rb)-Total	MS-B	L2339839-1
Matrix Spike	Silicon (Si)-Total	MS-B	L2339839-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2339839-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2339839-1
Matrix Spike	Sulfur (S)-Total	MS-B	L2339839-1
Matrix Spike	Titanium (Ti)-Total	MS-B	L2339839-1
Matrix Spike	Uranium (U)-Total	MS-B	L2339839-1
Matrix Spike	Zinc (Zn)-Total	MS-B	L2339839-1
Matrix Spike	Phosphorus, Total	MS-B	L2339839-1

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).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
SP	Sample was Preserved at the laboratory

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-TITR-TB	Water	Acidity	APHA 2310 B modified
This analysis is carried	out using pro	codures adapted from	ARHA Mothod 2310 "Acidity". Acidity is determined by potentiametric fitration to a specified

ALK-WT Water Alkalinity, Total (as CaCO3) EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

colourinethic method

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).

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Reference Information

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CN-TOT-WT

Water

Cyanide, Total

ISO 14403-2

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

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

APHA 2510

Only)

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

EC-WT

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

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

EPA 1631E (mod)

CVAAS

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)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-D-CCMS-WT

Dissolved Metals in Water by CRC

APHA 3030B/6020A (mod)

ICPMS

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).

MFT-T-CCMS-WT

Water

Total Metals in Water by CRC

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

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.

Water Nitrate in Water by IC EPA 300.1 (mod) 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

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

APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

RA226-MMFR-FC Water

Ra226 by Alpha Scint, MDC=0.01

FPA 903.1

pН

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Reference Information

EPA 300.1 (mod)

SO4-IC-N-WT Water Sulfate in Water by IC

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-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D

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
FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
ТВ	ALS ENVIRONMENTAL - THUNDER BAY, 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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2339839 Report Date: 24-SEP-19 Page 1 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACY-TITR-TB	Water							
Batch R4784118 WG3152901-3 DUP Acidity (as CaCO3)		L2339862-1 4.1	3.7		mg/L	10	20	05-SEP-19
WG3152901-2 LCS Acidity (as CaCO3)			94.6		%		85-115	05-SEP-19
WG3152901-1 MB Acidity (as CaCO3)			<2.0		mg/L		2	05-SEP-19
ALK-WT	Water							
Batch R4782545 WG3151110-4 DUP Alkalinity, Total (as CaC	:O3)	WG3151110-3 150	150		mg/L	0.3	20	04-SEP-19
WG3151110-2 LCS Alkalinity, Total (as CaC	O3)		103.0		%		85-115	04-SEP-19
WG3151110-1 MB Alkalinity, Total (as CaC	O3)		<10		mg/L		10	04-SEP-19
CL-IC-N-WT	Water							
Batch R4782656 WG3150765-10 DUP Chloride (CI)		WG3150765-8 212	211		mg/L	0.4	20	03-SEP-19
WG3150765-7 LCS Chloride (CI)			100.8		%		90-110	03-SEP-19
WG3150765-6 MB Chloride (CI)			<0.50		mg/L		0.5	03-SEP-19
WG3150765-9 MS Chloride (CI)		WG3150765-8	N/A	MS-B	%		-	03-SEP-19
CN-TOT-WT	Water							
Batch R4783059 WG3151281-3 DUP Cyanide, Total		L2339844-2 <2.0	<2.0	RPD-NA	mg/L	N/A	20	04-SEP-19
WG3151281-2 LCS Cyanide, Total			86.3		%		80-120	04-SEP-19
WG3151281-1 MB Cyanide, Total			<0.0020		mg/L		0.002	04-SEP-19
WG3151281-4 MS Cyanide, Total		L2339844-2	77		%		70-130	04-SEP-19
DOC-WT	Water							



Workorder: L2339839 Report Date: 24-SEP-19 Page 2 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DOC-WT	Water							
Batch R4782677								
WG3150890-3 DUP Dissolved Organic Carbo	on	L2339830-1 2.69	2.84		mg/L	5.7	20	04-SEP-19
WG3150890-2 LCS Dissolved Organic Carbo	on		98.0		%		80-120	04-SEP-19
WG3150890-1 MB Dissolved Organic Carb	on		<0.50		mg/L		0.5	04-SEP-19
WG3150890-4 MS Dissolved Organic Carbo	on	L2339830-1	99.8		%		70-130	04-SEP-19
EC-WT	Water							
Batch R4782545								
WG3151110-4 DUP Conductivity		WG3151110-3 1280	1270		umhos/cm	0.5	10	04-SEP-19
WG3151110-2 LCS Conductivity			100.8		%		90-110	04-SEP-19
WG3151110-1 MB Conductivity			<3.0		umhos/cm		3	04-SEP-19
F-IC-N-WT	Water							
Batch R4782656								
WG3150765-10 DUP Fluoride (F)		WG3150765-8 0.132	0.133		mg/L	1.1	20	03-SEP-19
WG3150765-7 LCS Fluoride (F)			101.2		%		90-110	03-SEP-19
WG3150765-6 MB Fluoride (F)			<0.020		mg/L		0.02	03-SEP-19
WG3150765-9 MS Fluoride (F)		WG3150765-8	100.0		%		75-125	03-SEP-19
HG-D-CVAA-WT	Water							
Batch R4782733								
WG3150261-4 DUP Mercury (Hg)-Dissolved		WG3150261-3 < 0.000050	0.0000360)	mg/L	18	20	04-SEP-19
WG3150261-2 LCS Mercury (Hg)-Dissolved			98.2		%		80-120	04-SEP-19
WG3150261-1 MB Mercury (Hg)-Dissolved			<0.000005	5C	mg/L		0.000005	04-SEP-19
WG3150261-5 MS Mercury (Hg)-Dissolved		WG3150261-3	85.1		%		70-130	04-SEP-19
HG-T-CVAA-WT	Water							



Workorder: L2339839 Report Date: 24-SEP-19 Page 3 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WT	Water							
Batch R4782727								
WG3150240-3 DUP Mercury (Hg)-Total		L2339830-1 < 0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	04-SEP-19
WG3150240-2 LCS Mercury (Hg)-Total			97.6		%		80-120	04-SEP-19
WG3150240-1 MB Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	04-SEP-19
WG3150240-4 MS Mercury (Hg)-Total		L2339839-1	90.9		%		70-130	04-SEP-19
MET-D-CCMS-WT	Water							
Batch R4782250								
WG3150303-4 DUP		WG3150303-3			,			
Aluminum (Al)-Dissolve		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-SEP-19
Antimony (Sb)-Dissolve	d	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Arsenic (As)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Barium (Ba)-Dissolved		0.0199	0.0206		mg/L	3.5	20	03-SEP-19
Beryllium (Be)-Dissolve	d	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Bismuth (Bi)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-SEP-19
Boron (B)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-SEP-19
Cadmium (Cd)-Dissolve		0.000338	0.000374		mg/L	10	20	03-SEP-19
Calcium (Ca)-Dissolved		107	106		mg/L	1.1	20	03-SEP-19
Cesium (Cs)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-SEP-19
Chromium (Cr)-Dissolve	ed	<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-SEP-19
Cobalt (Co)-Dissolved		0.0816	0.0823		mg/L	0.9	20	03-SEP-19
Copper (Cu)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-SEP-19
Iron (Fe)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-SEP-19
Lead (Pb)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-SEP-19
Lithium (Li)-Dissolved		0.063	0.059		mg/L	5.4	20	03-SEP-19
Magnesium (Mg)-Disso	lved	277	278		mg/L	0.6	20	03-SEP-19
Manganese (Mn)-Disso	lved	14.1	14.0		mg/L	0.6	20	03-SEP-19
Molybdenum (Mo)-Disse	olved	<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-SEP-19
Nickel (Ni)-Dissolved		0.0918	0.0931		mg/L	1.5	20	03-SEP-19
Phosphorus (P)-Dissolv	red	<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-SEP-19
Potassium (K)-Dissolve	d	11.4	11.6		mg/L	1.6	20	03-SEP-19
Rubidium (Rb)-Dissolve	ed	0.0153	0.0156		mg/L	1.9	20	03-SEP-19
Selenium (Se)-Dissolve	d	0.00232	0.00227		mg/L	2.3	20	03-SEP-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R4782250								
WG3150303-4 DUP Silicon (Si)-Dissolved		WG3150303- 3 2.11	3 2.13		mg/L	1.3	20	03-SEP-19
Silver (Ag)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-SEP-19
Sodium (Na)-Dissolved		6.81	6.77		mg/L	0.6	20	03-SEP-19
Strontium (Sr)-Dissolved	I	0.200	0.200		mg/L	0.1	20	03-SEP-19
Sulfur (S)-Dissolved		480	467		mg/L	2.6	20	03-SEP-19
Tellurium (Te)-Dissolved	I	<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-SEP-19
Thallium (TI)-Dissolved		0.00013	0.00012		mg/L	1.9	20	03-SEP-19
Thorium (Th)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Tin (Sn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Titanium (Ti)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	03-SEP-19
Tungsten (W)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Uranium (U)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-SEP-19
Vanadium (V)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-SEP-19
Zinc (Zn)-Dissolved		0.013	0.012		mg/L	4.5	20	03-SEP-19
Zirconium (Zr)-Dissolved	i	<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-SEP-19
WG3150303-2 LCS								
Aluminum (Al)-Dissolved	i		104.9		%		80-120	03-SEP-19
Antimony (Sb)-Dissolved	d		100.8		%		80-120	03-SEP-19
Arsenic (As)-Dissolved			99.0		%		80-120	03-SEP-19
Barium (Ba)-Dissolved			99.9		%		80-120	03-SEP-19
Beryllium (Be)-Dissolved	I		100.4		%		80-120	03-SEP-19
Bismuth (Bi)-Dissolved			101.0		%		80-120	03-SEP-19
Boron (B)-Dissolved			100.1		%		80-120	03-SEP-19
Cadmium (Cd)-Dissolve	d		95.7		%		80-120	03-SEP-19
Calcium (Ca)-Dissolved			102.1		%		80-120	03-SEP-19
Cesium (Cs)-Dissolved			100.2		%		80-120	03-SEP-19
Chromium (Cr)-Dissolve	d		101.2		%		80-120	03-SEP-19
Cobalt (Co)-Dissolved			98.9		%		80-120	03-SEP-19
Copper (Cu)-Dissolved			97.0		%		80-120	03-SEP-19
Iron (Fe)-Dissolved			96.9		%		80-120	03-SEP-19
Lead (Pb)-Dissolved			102.2		%		80-120	03-SEP-19
Lithium (Li)-Dissolved			98.9		%		80-120	03-SEP-19
Magnesium (Mg)-Dissolv	ved		101.5		%		80-120	03-SEP-19



Workorder: L2339839 Report Date: 24-SEP-19 Page 5 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R47822								
WG3150303-2 LC			101.2		0/		00.400	00 OFD 40
Manganese (Mn)-Dis			101.2		%		80-120	03-SEP-19
Molybdenum (Mo)-D			103.8 97.6				80-120	03-SEP-19
Nickel (Ni)-Dissolved Phosphorus (P)-Diss			97.6		%		80-120	03-SEP-19
Priospriorus (P)-Diss					%		80-120	03-SEP-19
Rubidium (Rb)-Disso			101.0		%		80-120	03-SEP-19
` ,			100.2		%		80-120	03-SEP-19
Selenium (Se)-Disso			99.8		%		80-120	03-SEP-19
Silicon (Si)-Dissolved			102.0		%		60-140	03-SEP-19
Silver (Ag)-Dissolved			99.2 104.4		%		80-120	03-SEP-19
Sodium (Na)-Dissolv					%		80-120	03-SEP-19
Strontium (Sr)-Disso	ivea		99.96		%		80-120	03-SEP-19
Sulfur (S)-Dissolved	h . a al		105.1		%		80-120	03-SEP-19
Tellurium (Te)-Disso			95.8		%		80-120	03-SEP-19
Thallium (TI)-Dissolv			102.1		%		80-120	03-SEP-19
Thorium (Th)-Dissolv	vea		96.9		%		80-120	03-SEP-19
Tin (Sn)-Dissolved			98.1		%		80-120	03-SEP-19
Titanium (Ti)-Dissolv			97.3		%		80-120	03-SEP-19
Tungsten (W)-Dissol			99.99		%		80-120	03-SEP-19
Uranium (U)-Dissolv			99.0		%		80-120	03-SEP-19
Vanadium (V)-Dissol	ived		101.0		%		80-120	03-SEP-19
Zinc (Zn)-Dissolved			95.9		%		80-120	03-SEP-19
Zirconium (Zr)-Disso			98.1		%		80-120	03-SEP-19
WG3150303-1 MB Aluminum (Al)-Disso			<0.0050		mg/L		0.005	03-SEP-19
Antimony (Sb)-Disso			<0.00010		mg/L		0.0001	03-SEP-19
Arsenic (As)-Dissolve			<0.00010		mg/L		0.0001	03-SEP-19
Barium (Ba)-Dissolve			<0.00010		mg/L		0.0001	03-SEP-19
Beryllium (Be)-Disso			<0.00010		mg/L		0.0001	03-SEP-19
Bismuth (Bi)-Dissolve			<0.000050)	mg/L		0.00005	03-SEP-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-SEP-19
Cadmium (Cd)-Disso	olved		<0.000005	5C	mg/L		0.000005	03-SEP-19
Calcium (Ca)-Dissolv			<0.050		mg/L		0.05	03-SEP-19
Cesium (Cs)-Dissolv			<0.000010)	mg/L		0.00001	03-SEP-19
Chromium (Cr)-Disso			<0.00050	-	mg/L		0.0005	03-SEP-19
5 5diii (61) 51000			-0.00000		y, =		0.000	00-0L1 - 13



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT Water							
Batch R4782250							
WG3150303-1 MB Cobalt (Co)-Dissolved		<0.00010		mg/L		0.0001	03-SEP-19
Copper (Cu)-Dissolved		<0.00020		mg/L		0.0002	03-SEP-19
Iron (Fe)-Dissolved		<0.010		mg/L		0.01	03-SEP-19
Lead (Pb)-Dissolved		<0.000050	ı	mg/L		0.00005	03-SEP-19
Lithium (Li)-Dissolved		<0.0010		mg/L		0.001	03-SEP-19
Magnesium (Mg)-Dissolved		<0.0050		mg/L		0.005	03-SEP-19
Manganese (Mn)-Dissolved		<0.00050		mg/L		0.0005	03-SEP-19
Molybdenum (Mo)-Dissolved		<0.000050	ı	mg/L		0.00005	03-SEP-19
Nickel (Ni)-Dissolved		<0.00050		mg/L		0.0005	03-SEP-19
Phosphorus (P)-Dissolved		<0.050		mg/L		0.05	03-SEP-19
Potassium (K)-Dissolved		<0.050		mg/L		0.05	03-SEP-19
Rubidium (Rb)-Dissolved		<0.00020		mg/L		0.0002	03-SEP-19
Selenium (Se)-Dissolved		<0.000050	ı	mg/L		0.00005	03-SEP-19
Silicon (Si)-Dissolved		<0.050		mg/L		0.05	03-SEP-19
Silver (Ag)-Dissolved		<0.000050	1	mg/L		0.00005	03-SEP-19
Sodium (Na)-Dissolved		<0.050		mg/L		0.05	03-SEP-19
Strontium (Sr)-Dissolved		<0.0010		mg/L		0.001	03-SEP-19
Sulfur (S)-Dissolved		<0.50		mg/L		0.5	03-SEP-19
Tellurium (Te)-Dissolved		<0.00020		mg/L		0.0002	03-SEP-19
Thallium (TI)-Dissolved		<0.000010	1	mg/L		0.00001	03-SEP-19
Thorium (Th)-Dissolved		<0.00010		mg/L		0.0001	03-SEP-19
Tin (Sn)-Dissolved		<0.00010		mg/L		0.0001	03-SEP-19
Titanium (Ti)-Dissolved		<0.00030		mg/L		0.0003	03-SEP-19
Tungsten (W)-Dissolved		<0.00010		mg/L		0.0001	03-SEP-19
Uranium (U)-Dissolved		<0.000010	ı	mg/L		0.00001	03-SEP-19
Vanadium (V)-Dissolved		<0.00050		mg/L		0.0005	03-SEP-19
Zinc (Zn)-Dissolved		<0.0010		mg/L		0.001	03-SEP-19
Zirconium (Zr)-Dissolved		<0.00020		mg/L		0.0002	03-SEP-19
WG3150303-5 MS Aluminum (Al)-Dissolved	WG3150303-3	96.0		%		70-130	03-SEP-19
Antimony (Sb)-Dissolved		97.4		%		70-130	03-SEP-19
Arsenic (As)-Dissolved		98.8		%		70-130	03-SEP-19
Barium (Ba)-Dissolved		N/A	MS-B	%		-	03-SEP-19
Beryllium (Be)-Dissolved		96.0		%		70-130	03-SEP-19



Workorder: L2339839 Report Date: 24-SEP-19 Page 7 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R478225	0							
WG3150303-5 MS	.i	WG3150303-			0/			
Bismuth (Bi)-Dissolve	a		94.8		%		70-130	03-SEP-19
Boron (B)-Dissolved			N/A	MS-B	%		-	03-SEP-19
Cadmium (Cd)-Dissol			94.7		%		70-130	03-SEP-19
Calcium (Ca)-Dissolve			N/A	MS-B	%		-	03-SEP-19
Cesium (Cs)-Dissolve			97.2		%		70-130	03-SEP-19
Chromium (Cr)-Disso			97.5		%		70-130	03-SEP-19
Cobalt (Co)-Dissolved			N/A	MS-B	%		-	03-SEP-19
Copper (Cu)-Dissolve	d		93.9		%		70-130	03-SEP-19
Iron (Fe)-Dissolved			85.3		%		70-130	03-SEP-19
Lead (Pb)-Dissolved			95.1		%		70-130	03-SEP-19
Lithium (Li)-Dissolved			N/A	MS-B	%		-	03-SEP-19
Magnesium (Mg)-Diss	solved		N/A	MS-B	%		-	03-SEP-19
Manganese (Mn)-Diss	solved		N/A	MS-B	%		-	03-SEP-19
Molybdenum (Mo)-Dis	solved		99.8		%		70-130	03-SEP-19
Nickel (Ni)-Dissolved			N/A	MS-B	%		-	03-SEP-19
Phosphorus (P)-Disso	lved		104.8		%		70-130	03-SEP-19
Potassium (K)-Dissolv	ved .		N/A	MS-B	%		-	03-SEP-19
Rubidium (Rb)-Dissol	ved		N/A	MS-B	%		-	03-SEP-19
Selenium (Se)-Dissolv	/ed		95.5		%		70-130	03-SEP-19
Silicon (Si)-Dissolved			N/A	MS-B	%		-	03-SEP-19
Silver (Ag)-Dissolved			95.3		%		70-130	03-SEP-19
Sodium (Na)-Dissolve	d		N/A	MS-B	%		-	03-SEP-19
Strontium (Sr)-Dissolv	red .		N/A	MS-B	%		-	03-SEP-19
Sulfur (S)-Dissolved			N/A	MS-B	%		-	03-SEP-19
Tellurium (Te)-Dissolv	ved .		92.1		%		70-130	03-SEP-19
Thallium (TI)-Dissolve	d		94.4		%		70-130	03-SEP-19
Thorium (Th)-Dissolve	ed		92.1		%		70-130	03-SEP-19
Tin (Sn)-Dissolved			96.4		%		70-130	03-SEP-19
Titanium (Ti)-Dissolve	ed		94.7		%		70-130	03-SEP-19
Tungsten (W)-Dissolv	ed		94.5		%		70-130	03-SEP-19
Vanadium (V)-Dissolv	ed		99.8		%		70-130	03-SEP-19
Zirconium (Zr)-Dissolv	/ed		94.0		%		70-130	03-SEP-19
								-

MET-T-CCMS-WT Water



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R478204	1							
WG3150225-4 DUP		WG3150225-			/I			
Aluminum (Al)-Total		1.11	1.15		mg/L	3.7	20	03-SEP-19
Antimony (Sb)-Total		0.0022	0.0022		mg/L	0.0	20	03-SEP-19
Arsenic (As)-Total		0.0034	0.0037		mg/L	8.9	20	03-SEP-19
Barium (Ba)-Total		0.0565	0.0582		mg/L	2.8	20	03-SEP-19
Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-SEP-19
Boron (B)-Total		0.86	0.89		mg/L	3.0	20	03-SEP-19
Cadmium (Cd)-Total		0.000098	0.000099		mg/L	0.8	20	03-SEP-19
Calcium (Ca)-Total		71.6	73.0		mg/L	1.9	20	03-SEP-19
Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-SEP-19
Cesium (Cs)-Total		0.00018	0.00018		mg/L	2.9	20	03-SEP-19
Cobalt (Co)-Total		0.0013	0.0013		mg/L	0.2	20	03-SEP-19
Copper (Cu)-Total		0.021	0.022		mg/L	3.3	20	03-SEP-19
Iron (Fe)-Total		1.56	1.56		mg/L	0.0	20	03-SEP-19
Lead (Pb)-Total		0.00317	0.00327		mg/L	3.1	20	03-SEP-19
Lithium (Li)-Total		0.136	0.138		mg/L	1.3	20	03-SEP-19
Magnesium (Mg)-Tota	l	20.7	21.2		mg/L	2.5	20	03-SEP-19
Manganese (Mn)-Tota	I	0.0947	0.0954		mg/L	0.7	20	03-SEP-19
Molybdenum (Mo)-Tot	al	0.325	0.319		mg/L	1.8	20	03-SEP-19
Nickel (Ni)-Total		<0.0050	0.0065	RPD-NA	mg/L	N/A	20	03-SEP-19
Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-SEP-19
Potassium (K)-Total		32.8	33.1		mg/L	0.9	20	03-SEP-19
Rubidium (Rb)-Total		0.0188	0.0191		mg/L	1.7	20	03-SEP-19
Selenium (Se)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-SEP-19
Silicon (Si)-Total		4.1	4.5		mg/L	10	20	03-SEP-19
Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-SEP-19
Sodium (Na)-Total		112	115		mg/L	3.1	20	03-SEP-19
Strontium (Sr)-Total		0.398	0.383		mg/L	3.7	20	03-SEP-19
Sulfur (S)-Total		19.7	19.3		mg/L	1.6	25	03-SEP-19
Thallium (TI)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-SEP-19
Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-SEP-19
Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	03-SEP-19
Tin (Sn)-Total		<0.0010	<0.0010		mg/L			03-SEP-19



Workorder: L2339839 Report Date: 24-SEP-19 Page 9 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4782041								
WG3150225-4 DUP Tin (Sn)-Total		WG3150225- <0.0010	3 <0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Titanium (Ti)-Total		0.0476	0.0471		mg/L	1.1	20	03-SEP-19
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-SEP-19
Uranium (U)-Total		0.0106	0.0106		mg/L	0.3	20	03-SEP-19
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-SEP-19
Zinc (Zn)-Total		0.137	0.137		mg/L	0.2	20	03-SEP-19
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-SEP-19
WG3150225-2 LCS Aluminum (Al)-Total			103.1		%		80-120	03-SEP-19
Antimony (Sb)-Total			98.0		%		80-120	03-SEP-19
Arsenic (As)-Total			100.4		%		80-120	03-SEP-19
Barium (Ba)-Total			98.8		%		80-120	03-SEP-19
Beryllium (Be)-Total			97.2		%		80-120	03-SEP-19
Bismuth (Bi)-Total			96.9		%		80-120	03-SEP-19
Boron (B)-Total			96.3		%		80-120	03-SEP-19
Cadmium (Cd)-Total			95.4		%		80-120	03-SEP-19
Calcium (Ca)-Total			96.3		%		80-120	03-SEP-19
Chromium (Cr)-Total			98.2		%		80-120	03-SEP-19
Cesium (Cs)-Total			96.2		%		80-120	03-SEP-19
Cobalt (Co)-Total			97.3		%		80-120	03-SEP-19
Copper (Cu)-Total			97.6		%		80-120	03-SEP-19
Iron (Fe)-Total			95.4		%		80-120	03-SEP-19
Lead (Pb)-Total			98.9		%		80-120	03-SEP-19
Lithium (Li)-Total			92.9		%		80-120	03-SEP-19
Magnesium (Mg)-Total			100.6		%		80-120	03-SEP-19
Manganese (Mn)-Total			102.0		%		80-120	03-SEP-19
Molybdenum (Mo)-Tota	d		98.2		%		80-120	03-SEP-19
Nickel (Ni)-Total			97.5		%		80-120	03-SEP-19
Phosphorus (P)-Total			102.8		%		70-130	03-SEP-19
Potassium (K)-Total			100.3		%		80-120	03-SEP-19
Rubidium (Rb)-Total			93.5		%		80-120	03-SEP-19
Selenium (Se)-Total			100.5		%		80-120	03-SEP-19
Silicon (Si)-Total			102.2		%		60-140	03-SEP-19



Workorder: L2339839 Report Date: 24-SEP-19 Page 10 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4782041								
WG3150225-2 LCS			05.4		0/		00.400	
Silver (Ag)-Total			95.4		%		80-120	03-SEP-19
Sodium (Na)-Total Strontium (Sr)-Total			106.3 95.3		%		80-120	03-SEP-19
` '			99.1		%		80-120	03-SEP-19
Sulfur (S)-Total Thallium (TI)-Total			98.7		%		80-120	03-SEP-19
Tellurium (Te)-Total			92.7		%		80-120	03-SEP-19
Thorium (Th)-Total			93.9		%		80-120	03-SEP-19
			94.5		%		70-130	03-SEP-19
Tin (Sn)-Total Titanium (Ti)-Total			99.1		%		80-120	03-SEP-19
Tungsten (W)-Total			96.0		%		80-120	03-SEP-19
Uranium (U)-Total			96.0		%		80-120	03-SEP-19
Vanadium (V)-Total			99.6		%		80-120	03-SEP-19
Zinc (Zn)-Total			96.3		%		80-120 80-120	03-SEP-19 03-SEP-19
Zirconium (Zr)-Total			94.6		%		80-120	03-SEP-19 03-SEP-19
WG3150225-1 MB			34.0		76		6U-12U	03-SEP-19
Aluminum (AI)-Total			<0.0050		mg/L		0.005	03-SEP-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	03-SEP-19
Boron (B)-Total			<0.010		mg/L		0.01	03-SEP-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	03-SEP-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	03-SEP-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	03-SEP-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	03-SEP-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	03-SEP-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-SEP-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	03-SEP-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-SEP-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-SEP-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	03-SEP-19
Molybdenum (Mo)-Total			<0.000050)	mg/L		0.00005	03-SEP-19



Workorder: L2339839 Report Date: 24-SEP-19 Page 11 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4782041								
WG3150225-1 MB Nickel (Ni)-Total			<0.00050		mg/L		0.0005	03-SEP-19
Phosphorus (P)-Total			< 0.050		mg/L		0.05	03-SEP-19
Potassium (K)-Total			<0.050		mg/L		0.05	03-SEP-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	03-SEP-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	03-SEP-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-SEP-19
Silver (Ag)-Total			<0.000050)	mg/L		0.00005	03-SEP-19
Sodium (Na)-Total			<0.050		mg/L		0.05	03-SEP-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	03-SEP-19
Sulfur (S)-Total			<0.50		mg/L		0.5	03-SEP-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	03-SEP-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	03-SEP-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-SEP-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	03-SEP-19
Uranium (U)-Total			<0.000010)	mg/L		0.00001	03-SEP-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-SEP-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-SEP-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	03-SEP-19
WG3150225-5 MS Aluminum (Al)-Total		WG3150225-3	N/A	MS-B	%		-	03-SEP-19
Antimony (Sb)-Total			98.6		%		70-130	03-SEP-19
Arsenic (As)-Total			103.6		%		70-130	03-SEP-19
Barium (Ba)-Total			N/A	MS-B	%		-	03-SEP-19
Beryllium (Be)-Total			109.4		%		70-130	03-SEP-19
Bismuth (Bi)-Total			98.2		%		70-130	03-SEP-19
Boron (B)-Total			N/A	MS-B	%		-	03-SEP-19
Cadmium (Cd)-Total			104.8		%		70-130	03-SEP-19
Calcium (Ca)-Total			N/A	MS-B	%		-	03-SEP-19
Chromium (Cr)-Total			103.3		%		70-130	03-SEP-19
Cesium (Cs)-Total			102.0		%		70-130	03-SEP-19
Cobalt (Co)-Total			102.6		%		70-130	03-SEP-19
Copper (Cu)-Total			N/A	MS-B	%		-	03-SEP-19



Workorder: L2339839 Report Date: 24-SEP-19 Page 12 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4782041								
WG3150225-5 MS		WG3150225-3	N1/A		0/			
Iron (Fe)-Total			N/A	MS-B	%		-	03-SEP-19
Lead (Pb)-Total			99.1		%		70-130	03-SEP-19
Lithium (Li)-Total			N/A	MS-B	%		-	03-SEP-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	03-SEP-19
Manganese (Mn)-Total			N/A	MS-B	%		-	03-SEP-19
Molybdenum (Mo)-Total			N/A	MS-B	%		-	03-SEP-19
Nickel (Ni)-Total			102.8		%		70-130	03-SEP-19
Phosphorus (P)-Total			90.1		%		70-130	03-SEP-19
Potassium (K)-Total			N/A	MS-B	%		-	03-SEP-19
Rubidium (Rb)-Total			N/A	MS-B	%		-	03-SEP-19
Selenium (Se)-Total			100.8		%		70-130	03-SEP-19
Silicon (Si)-Total			N/A	MS-B	%		-	03-SEP-19
Silver (Ag)-Total			94.3		%		70-130	03-SEP-19
Sodium (Na)-Total			N/A	MS-B	%		-	03-SEP-19
Strontium (Sr)-Total			N/A	MS-B	%		-	03-SEP-19
Sulfur (S)-Total			N/A	MS-B	%		-	03-SEP-19
Thallium (TI)-Total			98.3		%		70-130	03-SEP-19
Tellurium (Te)-Total			98.3		%		70-130	03-SEP-19
Tin (Sn)-Total			98.5		%		70-130	03-SEP-19
Titanium (Ti)-Total			N/A	MS-B	%		-	03-SEP-19
Tungsten (W)-Total			98.7		%		70-130	03-SEP-19
Uranium (U)-Total			N/A	MS-B	%		-	03-SEP-19
Vanadium (V)-Total			104.1		%		70-130	03-SEP-19
Zinc (Zn)-Total			N/A	MS-B	%		-	03-SEP-19
NH3-F-WT	Water							
Batch R4781881								
WG3150401-7 DUP		L2339522-6						
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-SEP-19
WG3150401-6 LCS Ammonia, Total (as N)			97.3		%		85-115	03-SEP-19
WG3150401-5 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	03-SEP-19
WG3150401-8 MS Ammonia, Total (as N)		L2339522-6	93.2		%		75-125	03-SEP-19



Workorder: L2339839 Report Date: 24-SEP-19

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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-WT	Water							_
Batch R4782656								
WG3150765-10 DUP Nitrate (as N)		WG3150765-8 2.09	2.08		mg/L	0.1	20	03-SEP-19
WG3150765-7 LCS Nitrate (as N)			101.4		%		90-110	03-SEP-19
WG3150765-6 MB Nitrate (as N)			<0.020		mg/L		0.02	03-SEP-19
WG3150765-9 MS Nitrate (as N)		WG3150765-8	96.2		%		75-125	03-SEP-19
P-T-COL-WT	Water							
Batch R4782483								
WG3150772-3 DUP Phosphorus, Total		L2338742-1 0.106	0.110		mg/L	3.5	20	04-SEP-19
WG3150772-2 LCS Phosphorus, Total			97.3		%		80-120	04-SEP-19
WG3150772-1 MB Phosphorus, Total			<0.0030		mg/L		0.003	04-SEP-19
WG3150772-4 MS Phosphorus, Total		L2338742-1	N/A	MS-B	%		-	04-SEP-19
PH-BF	Water							
Batch R4781669								
WG3150384-2 DUP pH		L2339918-1 7.04	7.05	J	pH units	0.01	0.2	03-SEP-19
WG3150384-1 LCS pH			7.01		pH units		6.9-7.1	03-SEP-19
SO4-IC-N-WT	Water							
Batch R4782656								
WG3150765-10 DUP Sulfate (SO4)		WG3150765-8 43.7	43.4		mg/L	0.6	20	03-SEP-19
WG3150765-7 LCS Sulfate (SO4)			100.8		%		90-110	03-SEP-19
WG3150765-6 MB Sulfate (SO4)			<0.30		mg/L		0.3	03-SEP-19
WG3150765-9 MS Sulfate (SO4)		WG3150765-8	96.8		%		75-125	03-SEP-19
SOLIDS-TDS-BF	Water							



Workorder: L2339839 Report Date: 24-SEP-19 Page 14 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-BF	Water							
Batch R4782348								
WG3151105-3 DUP Total Dissolved Solids		L2339753-2 3310	3210		mg/L	3.1	20	03-SEP-19
WG3151105-2 LCS								
Total Dissolved Solids			101.9		%		85-115	03-SEP-19
WG3151105-1 MB Total Dissolved Solids			<20		mg/L		20	03-SEP-19
SOLIDS-TSS-BF	Water							
Batch R4781869								
WG3150478-3 DUP Total Suspended Solids		L2339918-2 94.0	92.0		mg/L	2.2	25	03-SEP-19
WG3150478-2 LCS Total Suspended Solids			100.8		%		85-115	03-SEP-19
WG3150478-1 MB Total Suspended Solids			<2.0		mg/L		2	03-SEP-19
TKN-WT	Water							
Batch R4782526								
WG3150802-3 DUP Total Kjeldahl Nitrogen		L2334143-2 <0.15	<0.15	RPD-NA	mg/L	N/A	20	04-SEP-19
WG3150802-2 LCS Total Kjeldahl Nitrogen			95.3		%		75-125	04-SEP-19
WG3150802-1 MB Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	04-SEP-19
WG3150802-4 MS Total Kjeldahl Nitrogen		L2334143-2	102.8		%		70-130	04-SEP-19
TOC-WT	Water							
Batch R4782674								
WG3151130-3 DUP Total Organic Carbon		L2339830-1 3.06	3.15		mg/L	2.8	20	04-SEP-19
WG3151130-2 LCS		0.00	3.13		mg/L	2.0	20	04-3EF-19
Total Organic Carbon			97.0		%		80-120	04-SEP-19
WG3151130-1 MB Total Organic Carbon			<0.50		mg/L		0.5	04-SEP-19
WG3151130-4 MS Total Organic Carbon		L2339830-1	95.8		%		70-130	04-SEP-19
TURBIDITY-BF	Water							



Workorder: L2339839

Report Date: 24-SEP-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-BF		Water							
Batch	R4782363								
WG3151144- Turbidity	3 DUP		L2339839-1 9.32	9.32		NTU	0.0	15	02-SEP-19
WG3151144- Turbidity	2 LCS			110.0		%		85-115	02-SEP-19
WG3151144- Turbidity	1 MB			<0.10		NTU		0.1	02-SEP-19

Report Date: 24-SEP-19 Workorder: L2339839

Baffinland Iron Mine's Corporation (Oakville) Client: Page 16 of 16

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

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives) DUP Duplicate RPD Relative Percent Difference N/A Not Available LCS Laboratory Control Sample Standard Reference Material SRM MS Matrix Spike **MSD** Matrix Spike Duplicate Average Desorption Efficiency

ADE

Method Blank MB Internal Reference Material IRM 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.

Hold Time Exceedances:

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

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

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

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



Ft. Collins, Colorado LIMS Version: 6,909 Page 1 of 1

Thursday, September 19, 2019

Rick Hawthorne
ALS Environmental
60 Northland Rd, Unit 1
Waterloo Canada, ON N2V 2B8

Re: ALS Workorder: 1909038

Project Name:

Project Number: L2339839

Dear Mr. Hawthorne:

One water sample was received from ALS Environmental, on 9/4/2019. The sample was scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely.

ALS Environmental

Katie M. OBrien

Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins				
Accreditation Body	License or Certification Number			
AIHA	214884			
Alaska (AK)	UST-086			
Alaska (AK)	CO01099			
Arizona (AZ)	AZ0742			
California (CA)	06251CA			
Colorado (CO)	CO01099			
Florida (FL)	E87914			
Idaho (ID)	CO01099			
Kansas (KS)	E-10381			
Kentucky (KY)	90137			
PJ-LA (DoD ELAP/ISO 170250)	95377			
Louisiana (LA)	05057			
Maryland (MD)	285			
Missouri (MO)	175			
Nebraska(NE)	NE-OS-24-13			
Nevada (NV)	CO000782008A			
New York (NY)	12036			
North Dakota (ND)	R-057			
Oklahoma (OK)	1301			
Pennsylvania (PA)	68-03116			
Tennessee (TN)	2976			
Texas (TX)	T104704241			
Utah (UT)	CO01099			
Washington (WA)	C1280			

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 1909038

Client Name: ALS Environmental

Client Project Name:

Client Project Number: L2339839 Client PO Number: L2339839

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L2339839-1	1909038-1		WATER	02-Sep-19	

Date Printed: Thursday, September 19, 2019



1909038

Radium-226:

The sample was prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.





1909038

Subcontract Request Form

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA

Please reference on final report and invoice: PO#

225 COMMERCE DRIVE FORT COLLINS, CO 80524

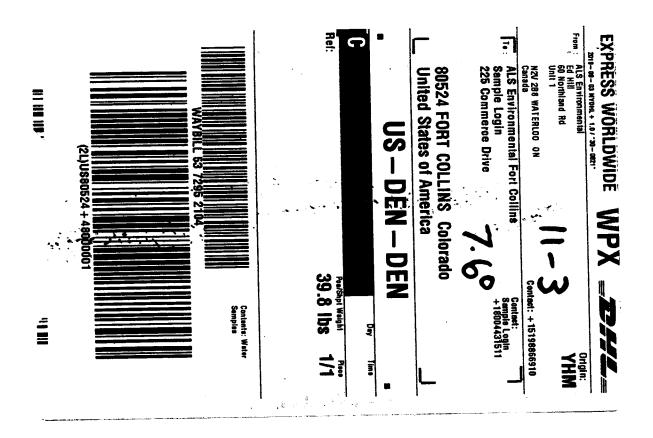
Please see enclosed 1 san	nple(s) in 1 Container(s)			
SAMPLE NUMBER ANALYTI	DATE SA	Priority Flag		
L2339839-1 MS-08 Ra226 by	Alpha Scint, MDC=0.01 Bq/L (RA226-M	9/ 2/ 201 MER-FC 1)	9 9/20/2019	E
Subcontract Info Contact: Analysis and reporting info contact:	Mary-Lynn Pike (519) 886-6910 Rick Hawthorne 60 NORTHLAND ROAD, UNIT 1 WATERLOO,ON N2V 2B8 Phone: (519) 886-6910	Email: Rick	.Hawthorne@als	sglobal.com
Please email confirmation of rece	ipt to: Rick.Hawthorne	@alsglobal.	com	
Shipped By: Received By:	Date Shipped: Date Received:	9/4/19	1620	
Verified By:	Date Verified: Temperature:			



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: ALS Waterlo	<u>e</u>	Worke	order No:	19090	<u> 38</u>		_
Project Manager: KMO		Initials:			9/5/19	1	_
Are airbills / shipping documents pre	sent and/or remov	vable?			DROP OFF	(TS S	NO
Are custody seals on shipping contain	ners intact?				NONE	B S	NO *
Are custody seals on sample contain	ers intact?				NODE	YES	NO *
Is there a COC (chain-of-custody) pro	esent?					O S	NO *
Is the COC in agreement with sample matrix, requested analyses, etc.)	es received? (IDs,	dates, times, # of	samples, #	of conta	iners,	Œ	NO *
Are short-hold samples present?						YES	©
Are all samples within holding times	for the requested	analyses?				Œ	NO *
Were all sample containers received	intact? (not broke	en or leaking)				€ S	NO *
Is there sufficient sample for the requ	ested analyses?					YOE S	NO *
0. Are all samples in the proper contain	ers for the reques	ted analyses?				1 €DES	NO *
1. Are all aqueous samples preserved co	orrectly, if require	ed? (excluding v	olatiles)		N/A	Ø ES	NO *
2. Are all aqueous non-preserved sampl	es pH 4-9?				N/A	YES	NO *
3. Are all samples requiring no headspa > 6 mm (1/4 inch) diameter? (i.e. size	ce (VOC, GRO, Fe of green pea)	RSK/MEE, rado	n) free of bu	bbles	Ø4	YES	NO
Were the samples shipped on ice?						Œs	NO
Were cooler temperatures measured a	せいしんハツツ し	IR gun used*: #1	#3	#4	RAD	YES	©
Coole		useu #1	#3	#4	ONLY	1	
Temperature (°							
No. of custody seals on coo					·		
DOT Survey/ Acceptance External µR/hr readi							-
Background μR/hr readi	·	 -					
Were external µR/hr readings ≤ two times background			÷				
Please provide details here for NO respon	ses to gray boxes al	bove - for 2 thru 5	& 7 thru 12,	notify P	M & conti	nue w/ log	gin.
applicable, was the client contacted? YES / NO		ent bottle ID's	vs ALS lab	ID's do	ouble-che _ Date/Tim		EE

Form 201r27.xls (02/11/2019)



SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 19-Sep-19

 Project:
 L2339839
 Work Order:
 1909038

 Sample ID:
 L2339839-1
 Lab ID:
 1909038-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 9/2/2019 Percent Moisture:

D.

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Ema	anation - Method 903.1	SOF	783	Prep	Date: 9/9/2019	PrepBy: JXH
Ra-226	0.020 (+/- 0.0088)		0.0075	BQ/I	NA	9/19/2019 12:00
Carr: BARIUM	96.6		40-110	%REC	DL = NA	9/19/2019 12:00

AR Page 1 of 2 **8 of 10**

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 19-Sep-19

 Project:
 L2339839

 Work Order:
 1909038

 Sample ID:
 L2339839-1

 Lab ID:
 1909038-1

Sample ID: L2339839-1 Lab ID: 1909038-1
Legal Location: Matrix: WATER

Collection Date: 9/2/2019 Percent Moisture:

Report Dilution
Analyses Result Qual Limit Units Factor Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested

MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:

- gasoline

- bunker C

- JP-8

diesel
mineral spirits

mineral spirits
 motor oil

- Stoddard solvent

Client: ALS Environmental

Work Order: 1909038 **Project:** L2339839

Date: 9/19/2019 6:41:

QC BATCH REPORT

LCS	Sample ID: RE19090	9-1			Uı	nits: BQ/I		Analysi	s Date: 9	/19/201	9 12:32	
Client ID:		Run II	D: RE190909 -	1A			Pr	ep Date: 9/9/2	2019	DF:	NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226		1.77 (+/- 0.442)	0.0116	1.72		103	67-120					P,M3
Carr: BARII	JM	15500		16020		96.7	40-110					
LCSD	Sample ID: RE19090	9-1			Uı	nits: BQ/I		Analysi	s Date: 9	/19/201	9 12:32	
Client ID:		Run II	D: RE190909 -	1A			Pr	ep Date: 9/9/2	2019	DF:	NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226		1.83 (+/- 0.457)	0.012	1.72		106	67-120		1.77	0.1	2.1	P,M3
Carr: BARII	JM	15700		16020		98.3	40-110		15500			
МВ	Sample ID: RE19090	9-1			Uı	nits: BQ/I		Analysi	s Date: 9	/19/201	9 12:00	
Client ID:		Run II	D: RE190909 -	1A			Pr	ep Date: 9/9/2	2019	DF:	NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226		0.0021 (+/- 0.0039)	0.0068									U
Carr: BARII	JM	15400		16020		95.9	40-110					

QC Page: 1 of 1



AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, ON NOB 2JO Tel. (519) 763-4412

Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna EPS 1/RM/14 Page 1 of 2

Work Order: Sample Number: 240166 60495

SAMPLE IDENTIFICATION

Company:

ALS Laboratory Group, Waterloo

Date Collected:

2019-09-02

Location:

Waterloo ON

Time Collected:

14:25

Job Number:

L2339839

Date Received:

2019-09-03

Substance:

MS-08 Grab

Time Received: Temperature on Receipt:

11:55 9.0 °C

Sampling Method:

KB/CP

Date Tested:

2019-09-03

Sampled By:

Sample Description: Clear, light brown, odourless.

Test Method:

Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment

Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

	48-HOUR TEST RESULTS	
Substance	Effect	Value
Control	Mean Immobility	0.0 %
	Mean Mortality	0.0 %
100%	Mean Immobility	0.0 %
	Mean Mortality	0.0 %

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Species:

Daphnia magna

Time to First Brood:

8.4 days

Organism Batch:

Dm19-17

Average Brood Size:

42.0 young

Culture Mortality:

0% (previous 7 days)

TEST CONDITIONS

Sample Treatment:

None

None

Number of Replicates:

pH Adjustment:

None

Organisms / Replicate:

3 10

Pre-aeration Rate:

 $\sim 30 \text{ mL/min/L}$

Organisms / Test Level:

30

Pre-aeration Time:

30 minutes

Organism Loading Rate:

15.0 mL/organism

Test Aeration: Hardness Adjustment: None

Impaired Control Organisms: 0.0% Test Method Deviation(s):

None

REFERENCE TOXICANT DATA

Toxicant: Date Tested: Sodium Chloride

Historical Mean LC50:

6.4 g/L5.8 - 7.2 g/L

LC50:

2019-09-03 6.2 g/L6.0 - 6.4 g/L Warning Limits (\pm 2SD): Organism Batch:

Analyst(s):

Dm19-17 MJT, RK

95% Confidence Limits: Statistical Method:

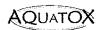
Spearman-Kärber

COMMENTS

All test validity criteria as specified in the test method were satisfied.

Approved By .

Accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA)



Sample Number: 60495

240166

Work Order:

TOXICITY TEST REPORT

Daphnia magna

EPS 1/RM/14

Page 2 of 2

TEST DATA

	Initial Wate	er Chemist	ry (100%) :	рН 8.4	Dissolved O ₂ (mg/L) 10.0	Conductivity (µmhos/cm) 3240	Temperature (°C) 20.0	O ₂ Saturation (%)* 116	Hardness (as CaCO ₃) >1000 mg/L
Date & Time Analyst(s):	2019-09-03 KP	14:20		0 HC	OURS				
Concentration (%)	Replicate	Dead	Immobile	pН	Dissolved O ₂	Conductivity	Temperature	O ₂ Saturation (%)*	Hardness
100	A	0	0	8.3	9.5	3240	20.0	110	>1000
100	В	0	0	8.3	9.5	3240	20.0	110	>1000
100	C	0	0	8.3	9.5	3240	20.0	110	>1000
Control	A	0	0	8.5	8.8	780	20.0	100	220
Control	В	0	0	8.5	8.8	780	20.0	100	220
Control	C	0	0	8.5	8.8	780	20.0	100	220
Notes:									
	<u> </u>			24 H	OURS				
Date & Time Analyst(s):	2019-09-04 RK (MJT)	14:20							
Concentration (%)	Replicate	Dead	Immobile	pН	Dissolved O ₂	Conductivity	Temperature		
100	Α	-	0	_	_	WARRY.	19.0		
100	В	_	0	*****	_	_	19.0		
100	С	_	0	-	_	_	19.0		
Control	Α	-	0	_	_		19.0		
Control	В	_	0	****		_	19.0		
Control	С		0	_	_	_	19.0		
Notes:									
Make the state of				48 H	OURS				
Date & Time Analyst(s):	2019-09-05 KP	14:20							
Concentration (%)	Replicate	Dead	Immobile	pН	Dissolved O ₂	Conductivity	Temperature		
100	Α	0	0	8.0	8.5	3280	19.0		
100	В	0	0	8.0	8.5	3260	19.0		
100	С	0	0	8.0	8.5	3260	19.0		
Control	Α	0	0	8.5	8.5	795	19.0		
Control	В	0	0	8.5	8.5	795	19.0		
Control	C	0	0	8.5	8.5	790	19.0		
Notes:									

Number immobile does not include number dead.

- = not measured/not required	Test Data Reviewed By	:	FS
* adjusted for temperature and barometric pressure	Date:	2019-09-09	



AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, ON NOB 2JO Tel. (519) 763-4412 Fax. (519) 763-4419

TOXICITY TEST REPORT

Rainbow Trout EPS 1/RM/13 Page 1 of 2

Work Order:

240166 60495

SAMPLE IDENTIFICATION

Company: Location: ALS Laboratory Group, Waterloo

Waterloo ON L2339839

Job Number: Substance:

MS-08 Grab

Sampling Method : Sampled By : Sample Description :

KB/CP

Clear, light brown, odourless.

Date Collected:

Date Tested:

Time Collected :
Date Received :

Date Received: 2019-09-03
Time Received: 11:55
Temperature on Receipt: 9.0 °C

2019-09-03

2019-09-02

14:25

Test Method(s): Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment

Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007 and February 2016 amendments).

96-HOUR TEST R	ESULTS
----------------	--------

Substance	Effect	Value	
Control	Mean Impairment	0.0 %	
	Mean Mortality	0.0 %	
100%	Mean Impairment	0.0 %	
	Mean Mortality	0.0 %	

The results reported relate only to the sample tested and as received.

TEST ORGANISM

Test Organism: Oncorhynchus mykiss A
Organism Batch: T19-16 R
Control Sample Size: 10 A

Cumulative stock tank mortality rate: 0% (previous 7 days)
Control organisms showing stress: 0 (at test completion)

Average Fork Length (\pm 2 SD) : Range of Fork Lengths :

Range of Fork Lengths: 39 - 50 mmAverage Wet Weight ($\pm 2 \text{ SD}$): $0.73 \text{ g } (\pm 0.45)$ Range of Wet Weights: 0.46 - 1.04 gOrganism Loading Rate: 0.4 g/L

TEST CONDITIONS

Sample Treatment: None Volume Tested (L): 20 pH Adjustment: None Number of Replicates: 1 Test Aeration: Yes Organisms Per Replicate: 10 Pre-aeration/Aeration Rate: $6.5 \pm 1 \text{ mL/min/L}$ Organisms Per Test Level: 10 Total Pre-Aeration Time: 120 minutes Test Method Deviation(s): None

REFERENCE TOXICANT DATA

Toxicant:
Organism Batch:
LC50:

Potassium Chloride T19-16

Date Tested: Historical Mean LC50:

2019-09-03 3760 mg/L 3139 - 4503 mg/L

 $44.1 \text{ mm } (\pm 8.0)$

95% Confidence Limits:

3661 mg/L 3264 - 4089 mg/L Warning Limits (± 2SD) : Analyst(s) :

MDH, ALC, KTL, FS

Statistical Method:

Linear Regression (MLE)

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Date :

yyyy-mm-dd

Approved B

) (1790es



TOXICITY TEST REPORT **Rainbow Trout**

EPS 1/RM/13 Page 2 of 2

Work Order: 240166 Sample Number: 60495

TEST DATA

			1631	DATA			
Initial Water Ch	nemistry (100%)		рН 8.4	Dissolved O ₂ (mg/L) 10.1	Conductivity (µmhos/cm) 3430	Temperature (°C) 14.0	O ₂ Saturation (%)* 105
After 30 min pr		•	8.4	9.9	3430	14.0	103
riner so min pr	c deration .		0	7.7	3.11,	11.0	103
	 		0 H	OURS			
Date & Time Analyst(s):	2019-09-03 MDH	15:50					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	O ₂ Saturation*
100%	0	0	8.4	9.5	3408	14.0	100
Control	0	0	8.1	9.6	927	14.5	100
Notes:							
**************************************			24 H	OURS			
Date & Time Analyst(s):	2019-09-04 FS	15:50					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	7.8	****	_	15.0	
Control	0	0	_	-	_	15.0	
Notes:							
			48 H	OURS			
Date & Time Analyst(s):	2019-09-05 MDH	15:50					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	7.6	_	_	15.0	
Control	0	0	8.2	NAME:	_	15.0	
Notes:							
			72 H	OURS			<u> </u>
Date & Time Analyst(s):	2019-09-06 TL	15:50					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	7.6	_		15.0	
Control	0	0	8.2	\rightarrow	_	15.0	
Notes:							
			96 H	OURS	7. max		
Date & Time Analyst(s):	2019-09-07 MDH	15:50	<i>7</i> 0 11				
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	7.7	9.2	3409	14.5	
Control	0	0	8.2	9.3	910	14.5	
Notes:							
"_" = not measure	ed/not required						
Number impaired	does not include	number dead.			Test Data Re	viewed By:	FS
adjusted for tem	perature and baro	metric pressure			Date:	2019	-09-09

CHAIN OF CUSTODY RECORD

AquaTox Work Order No:

240 (66 Affiliation: Baffinland Iron Mine / ALS Environmental Custody Relinquished by: Kendra Button Date/Time Shipped: 2-Sep-19/ 20:00 KB/CP P.O. Number: 4500057496 Sample Storage (prior to shipping): Field Sampler Name (print): Signature:

AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, Ontario Canada N0B 2J0 Shipping Address:

Voice: (519) 763-4412

(519) 763-4419 Fax:

ALS Environmental c/o Baffinland Iron Mine

Client:

Quote # (2019): 162705399-19

(519) 886-6910 Phone:

(519) 886-9047 Fax:

Rick Hawthorne (ALS) / Martina Rendas (Aquatox) Contact:

ō
604959

For, Lab Use Only Storage Temp.(°C) Storage Location: Received By: Time:

Rush T外 W Daily updates. PH required.

Please list any special requests or instructions:

Report Distribution: bimcore@alsglobal.com, rick.hawthorne@alsglobal.com

Standard COC rev 3 2016 09 01 TC



Subcontract Request Form

L2339839

Subcontract To:

AQUATOX TESTING AND CONSULTING

NOTES: Please reference on final report and invoice: PO#

ALS requires QC data to be provided with your final results.

11B NICHOLAS BEAVER ROAD RR3 GUELPH,ON N1H 6H9

Please see enclosed 1 san	ıple(s) i	n <u>0</u> Container(s)		,
SAMPLE NUMBER	CAL REQI	ITRED	DATE	SAMPLED DUE DATE	Priority Flag
L2339839-1 MS-08	CAL KLQ	71KLD	9/2/2		E
	eauest Aa	uatox (SPECIAL REQUEST2		9/9/2019	-
•		uatox (SPECIAL REQUEST-	• •	9/9/2019	
Subcontract Info Contact: Analysis and reporting info contact:	Rick Ha 60 NOF WATER	ynn Pike (519) 886-691 wthorne RTHLAND ROAD, UNIT 1 LOO,ON N2V 2B8 (519) 886-6910		ck.Hawthorne@als	sglobal.com
Please email confirmation of rece	ipt to:	Rick.Hawthorn	e@alsglob	al.com	
Shipped By:		Date Shipped:	·		
Received By:		Date Received:			
Verified By:		Date Verified:			
		Temperature:			

ALS) Environmental

Chain of Custody (COC) / Analytical Request Form

L2339839-COFC

Page

1 of

1

Canada Toli Free: 1 800 668 9878 www.alsglobal.com Report Format / Distribution Contact and company name below will appear on the final report Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply Report To Select Report Format: PDF DECEL DEDD (DIGITAL) Standard TAT if received by 3 pm - business days - no surcharges apply Baffinland Iron Mines Corp. Regular [R] Company: Quality Control (QC) Report with Report YES NO 1 Business day [E1] Wiliam Bowden and Connor Devereaux 4 day [P4] Contact: 647-253-0596 EXT 6016 Compare Results to Criteria on Report - provide details below if box checked 3 day [P3] \Box Phone: Same Day, Weekend or V ☐ BMAIL ☐ FAX Company address below will appear on the final report Select Distribution: 2 day [P2] Statutory holiday [E0] Email 1 or Fax bimcore@alsglobal.com Date and Time Required for all E&P TATs: 2275 Upper Middle Rd. E., Suite #300 Street: Oakville, ON Email 2 For tests that can not be performed according to the service level selected, you will be contacted. City/Province: L6H 0C3 Email 3 **Analysis Request** Postal Code: ☑ YES ☐ NO Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Same as Report To Invoice To YES INO Select Invoice Distribution: 🔽 EMAIL 🔲 MAIL 🔲 FAX Copy of Invoice with Report Email 1 or Fax ap@baffinland.com Company: commercial@baffinland.com Email 2 Contact: **Aumber of Containers Project Information** Oil and Gas Required Fields (client use) 23642 /Q42455 PO# ALS Account # / Quote # AFE/Cost Center Routing Code: MS-08 WT TOX Job #: Maior/Minor Code 4500057496 PO / AFE: Requisitioner: LSD: Location: M-MMER-WT KB/CP Sampler: ALS Lab Work Order # (lab use only) ALS Contact: Group 3 Date Time Sample Identification and/or Coordinates ALS Sample # Sample Type (lab use only) (hh:mm) (This description will appear on the report) (dd-mmm-yy) E1 MS-08 2-Sep-19 14:25 E0 11 Water SAMPLE CONDITION AS RECEIVED (lab use only) Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below Drinking Water (DW) Samples¹ (client use) (electronic COC only) SIF Observations Frozen No Are samples taken from a Regulated DW System? \Box Ice Packs Ice Cubes Custody seal intact Yes YES INO Cooling Initiated INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C Are samples for human drinking water use? 0 TYES INO FINAL SHIPMENT RECEPTION (lab use only) SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (lab use only) Released By: Kendra Button Date: 2-Sep-19 Time: Received by: Date: Time: Received by: 16:40



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 28-SEP-19

Report Date: 21-OCT-19 11:03 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

 Lab Work Order #:
 L2356235

 Project P.O. #:
 4500057496

 Job Reference:
 MS-08 DEL

C of C Numbers: Legal Site Desc:

Rick Hawthorne Account Manager

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

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

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L2356235 CONTD.... PAGE 2 of 5

Version: FINAL

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356235-1 MS-08							
Sampled By: KB/LM on 28-SEP-19 @ 13:30 Matrix: WATER							
Matrix: WATER Physical Tests							
Conductivity	1390		3.0	umhos/cm		02-OCT-19	R4857597
pH	6.91		0.10	pH units		29-SEP-19	R4849880
Total Suspended Solids	40.5		2.0	mg/L		29-SEP-19	R4849883
Total Dissolved Solids	1080		20	mg/L		29-SEP-19	R4849913
Turbidity	42.1		0.10	NTU		29-SEP-19	R4849881
Anions and Nutrients							
Ammonia, Total (as N)	0.50	DLHC	0.10	mg/L		02-OCT-19	R4856571
Cyanides							
Cyanide, Total	<0.020	DLM	0.020	mg/L		03-OCT-19	R4857913
Total Metals							
Aluminum (Al)-Total	1.02	DLHC	0.050	mg/L	02-OCT-19	02-OCT-19	R4854170
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Barium (Ba)-Total	0.0148	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	02-OCT-19		R4854170
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	02-OCT-19	02-OCT-19	R4854170
Cadmium (Cd)-Total	0.000133	DLHC	0.000050	mg/L	02-OCT-19	02-OCT-19	R4854170
Calcium (Ca)-Total	44.6	DLHC	0.50	mg/L	02-OCT-19	02-OCT-19	R4854170
Cesium (Cs)-Total	<0.00010	DLHC	0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	02-OCT-19	02-OCT-19	R4854170
Cobalt (Co)-Total	0.0691	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	02-OCT-19	02-OCT-19	R4854170
Iron (Fe)-Total	4.43	DLHC	0.10	mg/L	02-OCT-19		R4854170
Lead (Pb)-Total	0.00120	DLHC	0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Lithium (Li)-Total	<0.010	DLHC	0.010	mg/L	02-OCT-19	02-OCT-19	R4854170
Magnesium (Mg)-Total	169	DLHC	0.050	mg/L	02-OCT-19		R4854170
Manganese (Mn)-Total	5.85	DLHC	0.0050	mg/L	02-OCT-19	1	R4854170
Molybdenum (Mo)-Total	0.00072	DLHC	0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Nickel (Ni)-Total Phosphorus (P)-Total	0.0774	DLHC	0.0050	mg/L	02-OCT-19		R4854170
Potassium (K)-Total	<0.50	DLHC	0.50	mg/L	02-OCT-19 02-OCT-19	02-OCT-19 02-OCT-19	R4854170
Rubidium (Rb)-Total	2.76	DLHC	0.50	mg/L	02-OCT-19 02-OCT-19		R4854170 R4854170
Selenium (Se)-Total	0.0051	DLHC	0.0020	mg/L	02-OCT-19 02-OCT-19		
Silicon (Si)-Total	0.00243 2.3	DLHC	0.00050	mg/L mg/L	02-OCT-19	02-OCT-19 02-OCT-19	R4854170 R4854170
Silver (Ag)-Total		DLHC	1.0	-			
Soliver (Ag)-10tal Sodium (Na)-Total	<0.00050 1.52	DLHC	0.00050 0.50	mg/L mg/L	02-OCT-19 02-OCT-19		R4854170 R4854170
Strontium (Sr)-Total	0.033	DLHC	0.50	mg/L mg/L	02-OCT-19 02-OCT-19		R4854170 R4854170
Sulfur (S)-Total	258	DLHC		mg/L	02-OCT-19 02-OCT-19		R4854170 R4854170
Tellurium (Te)-Total	<0.0020	DLHC	5.0 0.0020	mg/L	02-OCT-19 02-OCT-19	02-OCT-19 02-OCT-19	R4854170
Thallium (Tl)-Total	<0.0020	DLHC	0.0020	mg/L	02-OCT-19 02-OCT-19	02-OCT-19 02-OCT-19	R4854170
Thorium (Th)-Total Thorium (Th)-Total		DLHC		-	02-OCT-19 02-OCT-19		
monum (m)-rotal	<0.0010	סנוזט	0.0010	mg/L	02-001-19	02-001-19	R4854170

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

L2356235 CONTD....

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356235-1 MS-08							
Sampled By: KB/LM on 28-SEP-19 @ 13:30							
Matrix: WATER Total Metals							
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Titanium (Ti)-Total	0.0547	DLHC	0.0030	mg/L	02-OCT-19	02-OCT-19	1
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	
Uranium (U)-Total	0.00151	DLHC	0.00010	mg/L	02-OCT-19	02-OCT-19	
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	02-OCT-19	02-OCT-19	R4854170
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	02-OCT-19	02-OCT-19	R4854170
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	02-OCT-19	02-OCT-19	R4854170
Radiological Parameters							
Ra-226	0.017		0.0048	Bq/L	08-OCT-19	17-OCT-19	R4851666

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

MS-08 DEL

Reference Information

L2356235 CONTD....
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QC Samples with Qualifiers & Comments:

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

 Sample Parameter Qualifier key listed:
 Qualifier
 Description

 DLHC
 Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

 DLM
 Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

CN-TOT-WT Water Cyanide, Total ISO 14403-2

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

EC-SCREEN-WT Water Conductivity Screen (Internal Use APHA 2510

Only)

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.

MET-T-CCMS-WT 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.

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.

RA226-MMER-FC Water Ra226 by Alpha Scint, MDC=0.01 EPA 903.1

Bq/L

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
FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, CANADA
Ohaira at Ossata da Nassahara	

Chain of Custody Numbers:

MS-08 DEL L2356235 CONTD....

Reference Information

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GLOSSARY OF REPORT TERMS

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

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

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

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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

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



Test

Quality Control Report

Qualifier

Workorder: L2356235 Report Date: 21-OCT-19 Page 1 of 8

RPD

Limit

Analyzed

Units

Client: Baffinland Iron Mine's Corporation (Oakville)

Matrix

2275 Upper Middle Rd. E. Suite #300

Reference

Result

Oakville ON L6H 0C3

lest	Wallix	Reference	Result	Qualifier	Units	KFD	Lillin	Allalyzeu
CN-TOT-WT	Water							
Batch R4857913 WG3180527-3 DUP Cyanide, Total		L2357043-2	0.027		ma/l	0.040	0.04	00 007 40
WG3180527-2 LCS		0.025	0.037	J	mg/L	0.013	0.04	03-OCT-19
Cyanide, Total			102.1		%		80-120	02-OCT-19
WG3180527-1 MB Cyanide, Total			<0.0020		mg/L		0.002	02-OCT-19
WG3180527-4 MS Cyanide, Total		L2357043-2	89.7		%		70-130	03-OCT-19
EC-WT	Water							
Batch R4857597								
WG3179309-4 DUP Conductivity		WG3179309-3 2090	2080		umhos/cm	0.5	10	02-OCT-19
WG3179309-2 LCS Conductivity			100.2		%		90-110	02-OCT-19
WG3179309-1 MB Conductivity			<3.0		umhos/cm		3	02-OCT-19
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-4 DUP Aluminum (Al)-Total		WG3179173-3 < 0.0050	<0.0050	RPD-NA	mg/L	N/A	20	02-OCT-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Barium (Ba)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-OCT-19
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Calcium (Ca)-Total		<0.050	< 0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Copper (Cu)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-OCT-19
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-OCT-19
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-OCT-19



Workorder: L2356235 Report Date: 21-OCT-19 Page 2 of 8

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-4 DUP Magnesium (Mg)-Total		WG3179173-3 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	02-OCT-19
Manganese (Mn)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Potassium (K)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Rubidium (Rb)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Silicon (Si)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-OCT-19
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Sodium (Na)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Strontium (Sr)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-OCT-19
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	25	02-OCT-19
Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	25	02-OCT-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Titanium (Ti)-Total		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	02-OCT-19
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	02-OCT-19
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
WG3179173-2 LCS			100.0		0/			
Aluminum (Al)-Total			103.6		%		80-120	02-OCT-19
Antimony (Sb)-Total			101.1 98.7		%		80-120	02-OCT-19
Arsenic (As)-Total Barium (Ba)-Total			99.7		%		80-120	02-OCT-19
Beryllium (Be)-Total			99.7 95.9		%		80-120	02-OCT-19
Bismuth (Bi)-Total			95.9 96.5		%		80-120	02-OCT-19
Boron (B)-Total			93.0		%		80-120 80-120	02-OCT-19
Cadmium (Cd)-Total			95.4		%		80-120 80-120	02-OCT-19 02-OCT-19
Calcium (Ca)-Total			95.8		%		80-120	02-OCT-19 02-OCT-19
Calciani (Ca) i otai			55.5		70		00-120	02-001-19



Workorder: L2356235 Report Date: 21-OCT-19 Page 3 of 8

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-2 LCS			00.6		%		00.400	00 007 40
Chromium (Cr)-Total Cesium (Cs)-Total			99.6 96.1		%		80-120	02-OCT-19
Cobalt (Co)-Total			97.0		%		80-120	02-OCT-19 02-OCT-19
			95.7		%		80-120	
Copper (Cu)-Total					%		80-120	02-OCT-19
Iron (Fe)-Total Lead (Pb)-Total			96.4 99.6		%		80-120	02-OCT-19
, ,			95.9		%		80-120	02-OCT-19
Lithium (Li)-Total							80-120	02-OCT-19
Magnesium (Mg)-Total			106.9 100.5		%		80-120	02-OCT-19
Manganese (Mn)-Total					%		80-120	02-OCT-19
Molybdenum (Mo)-Total			96.7		%		80-120	02-OCT-19
Nickel (Ni)-Total			95.8		%		80-120	02-OCT-19
Phosphorus (P)-Total			102.6		%		70-130	02-OCT-19
Potassium (K)-Total			98.4		%		80-120	02-OCT-19
Rubidium (Rb)-Total			99.6		%		80-120	02-OCT-19
Selenium (Se)-Total			98.8		%		80-120	02-OCT-19
Silicon (Si)-Total			100.1		%		60-140	02-OCT-19
Silver (Ag)-Total			95.8		%		80-120	02-OCT-19
Sodium (Na)-Total			104.7		%		80-120	02-OCT-19
Strontium (Sr)-Total			101.5		%		80-120	02-OCT-19
Sulfur (S)-Total			96.5		%		80-120	02-OCT-19
Thallium (TI)-Total			97.4		%		80-120	02-OCT-19
Tellurium (Te)-Total			95.3		%		80-120	02-OCT-19
Thorium (Th)-Total			97.1		%		70-130	02-OCT-19
Tin (Sn)-Total			98.4		%		80-120	02-OCT-19
Titanium (Ti)-Total			98.3		%		80-120	02-OCT-19
Tungsten (W)-Total			96.2		%		80-120	02-OCT-19
Uranium (U)-Total			93.5		%		80-120	02-OCT-19
Vanadium (V)-Total			101.1		%		80-120	02-OCT-19
Zinc (Zn)-Total			96.4		%		80-120	02-OCT-19
Zirconium (Zr)-Total			93.6		%		80-120	02-OCT-19
WG3179173-1 MB Aluminum (Al)-Total			<0.0050		mg/L		0.005	02-OCT-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	02-OCT-19



Workorder: L2356235 Report Date: 21-OCT-19 Page 4 of 8

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-1 MB Barium (Ba)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Bismuth (Bi)-Total			<0.00005	0	mg/L		0.00005	02-OCT-19
Boron (B)-Total			<0.010		mg/L		0.01	02-OCT-19
Cadmium (Cd)-Total			<0.00000	5C	mg/L		0.000005	02-OCT-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	02-OCT-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	02-OCT-19
Cesium (Cs)-Total			<0.00001	0	mg/L		0.00001	02-OCT-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	02-OCT-19
Iron (Fe)-Total			<0.010		mg/L		0.01	02-OCT-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	02-OCT-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	02-OCT-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	02-OCT-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	02-OCT-19
Molybdenum (Mo)-Total			<0.00005	0	mg/L		0.00005	02-OCT-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	02-OCT-19
Phosphorus (P)-Total			<0.050		mg/L		0.05	02-OCT-19
Potassium (K)-Total			<0.050		mg/L		0.05	02-OCT-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	02-OCT-19
Selenium (Se)-Total			<0.00005	0	mg/L		0.00005	02-OCT-19
Silicon (Si)-Total			<0.10		mg/L		0.1	02-OCT-19
Silver (Ag)-Total			<0.00005	0	mg/L		0.00005	02-OCT-19
Sodium (Na)-Total			<0.050		mg/L		0.05	02-OCT-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	02-OCT-19
Sulfur (S)-Total			<0.50		mg/L		0.5	02-OCT-19
Thallium (TI)-Total			<0.00001	0	mg/L		0.00001	02-OCT-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	02-OCT-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02-OCT-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Uranium (U)-Total			<0.00001	0	mg/L		0.00001	02-OCT-19



Workorder: L2356235 Report Date: 21-OCT-19 Page 5 of 8

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Metr Satch R4854170 R4854170 R4854170 R4854170 R4854170 R4854171 MB Vanadium (V)-Total	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WG3179173-1 MB Vanadlum (V)-Total	MET-T-CCMS-WT	Water							
Vanadum (V)-Total <0.00050 mg/L 0.0005 02-OCT-19 Zinc (Zn)-Total <0.00020	Batch R4854170								
Zirconium (Zr)-Total 0,00020 mg/L 0,0002 02-OCT-19 WG3179173-5 MS WG3179173-3 Aluminum (Al)-Total 100.4 % 70-130 02-OCT-19 Antimony (Sb)-Total 101.1 % 70-130 02-OCT-19 Arsenic (As)-Total 98.9 % 70-130 02-OCT-19 Barium (Ba)-Total 99.2 % 70-130 02-OCT-19 Beryllium (Be)-Total 97.5 % 70-130 02-OCT-19 Beryllium (Be)-Total 97.4 % 70-130 02-OCT-19 Boron (B)-Total 95.9 % 70-130 02-OCT-19 Cadmum (Ca)-Total 98.9 % 70-130 02-OCT-19 Cadmum (Ca)-Total 98.8 % 70-130 02-OCT-19 Cesium (Ca)-Total 98.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.4 % 70-130 02-OCT-19				<0.00050		mg/L		0.0005	02-OCT-19
WG3179173-5 MS	Zinc (Zn)-Total			<0.0030		mg/L		0.003	
Aluminum (Al)-Total 100.4 % 70-130 02-OCT-19 Antimony (Sb)-Total 101.1 % 70-130 02-OCT-19 Arsenic (As)-Total 98.9 % 70-130 02-OCT-19 Barium (Ba)-Total 98.2 % 70-130 02-OCT-19 Beryllium (Be)-Total 97.5 % 70-130 02-OCT-19 Bismuth (Bi)-Total 97.4 % 70-130 02-OCT-19 Boron (B)-Total 95.9 % 70-130 02-OCT-19 Cadrium (Cd)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 98.1 % 70-130 02-OCT-19 Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Ca)-Total 98.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Lead (Pb)-Total 98.4 % 70-130 02-OCT-19 Lead (Pb)-Total 97.7 % 70-130 02-OCT-19	Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	02-OCT-19
Antimony (Sb)-Total 101.1 % 70.130 02-OCT-19 Arsenic (As)-Total 98.9 % 70.130 02-OCT-19 Barium (Ba)-Total 98.2 % 70.130 02-OCT-19 Beryllium (Be)-Total 97.5 % 70.130 02-OCT-19 Bismuth (Be)-Total 97.5 % 70.130 02-OCT-19 Bismuth (Be)-Total 97.4 % 70.130 02-OCT-19 Boron (B)-Total 95.9 % 70.130 02-OCT-19 Boron (B)-Total 98.9 % 70.130 02-OCT-19 Cadmium (Cd)-Total 98.9 % 70.130 02-OCT-19 Caicium (Ca)-Total 98.1 % 70.130 02-OCT-19 Caicium (Co)-Total 99.9 % 70.130 02-OCT-19 Cosium (Co)-Total 99.9 % 70.130 02-OCT-19 Cobait (Co)-Total 98.8 % 70.130 02-OCT-19 Coper (Cu)-Total 99.3 % 70.130 02-OCT-19 Iron (Fe)-Total 98.4 % 70.130 02-OCT-19 Iron (Fe)-Total 98.4 % 70.130 02-OCT-19 Lithium (L)-Total 99.7 % 70.130 02-OCT-19 Lithium (L)-Total 101.9 % 70.130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70.130 02-OCT-19 Magnesium (Mg)-Total 103.3 % 70.130 02-OCT-19 Magnesium (Mg)-Total 103.3 % 70.130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70.130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70.130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70.130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70.130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70.130 02-OCT-19 Selenium (Se)-Total 100.8 % 70.130 02-OCT-19 Selenium (Se)-Total 100.8 % 70.130 02-OCT-19 Silver (Ag)-Total 100.7 % 70.130 02-OCT-19 Silver (Ag)-Total 100.7 % 70.130 02-OCT-19 Silver (Mg)-Total 100.7 % 70.130 02-OCT-19	WG3179173-5 MS		WG3179173-3						
Arsenic (As)-Total 98.9 % 70-130 02-OCT-19 Barium (Ba)-Total 98.2 % 70-130 02-OCT-19 Beryllium (Be)-Total 97.5 % 70-130 02-OCT-19 Bismuth (Bi)-Total 97.4 % 70-130 02-OCT-19 Bismuth (Bi)-Total 97.4 % 70-130 02-OCT-19 Bismuth (Bi)-Total 97.4 % 70-130 02-OCT-19 Bismuth (Bi)-Total 98.9 % 70-130 02-OCT-19 Cadmium (Cd)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 98.1 % 70-130 02-OCT-19 Calcium (Ca)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 99.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Itim (Ui)-Total 99.7 % 70-130 02-OCT-19 Lithium (Li)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 106.9 % 70-130 02-OCT-19 Manganesium (Mg)-Total 103.3 % 70-130 02-OCT-19 Manganesium (Mg)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 103.3 % 70-130 02-OCT-19 Phosphorus (P)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.8 % 70-130 02-OCT-19 Silver (Ag)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 100.7 % 70-130 02-OCT-19 Silver (Ag)-Total 100.7 % 70-130 02-OCT-19 Silver (Ag)-Total 100.7 % 70-130 02-OCT-19 Silver (Mo)-Total 100.7 % 70-130 02-OCT-19	Aluminum (AI)-Total			100.4		%		70-130	02-OCT-19
Barium (Ba)-Total 98.2 % 70-130 02-OCT-19 Beryllium (Be)-Total 97.5 % 70-130 02-OCT-19 Bismuth (Bi)-Total 97.4 % 70-130 02-OCT-19 Boron (B)-Total 95.9 % 70-130 02-OCT-19 Cadrium (Cd)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 99.9 % 70-130 02-OCT-19 Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 99.3 % 70-130 02-OCT-19 Lead (Pb)-Total 99.3 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Mangaesium (Mg)-Total 106.9 % 70-130 02-OCT-19	Antimony (Sb)-Total			101.1		%		70-130	02-OCT-19
Beryllium (Be)-Total 97.5 % 70-130 02-OCT-19 Bismuth (Bi)-Total 97.4 % 70-130 02-OCT-19 Boron (B)-Total 95.9 % 70-130 02-OCT-19 Cadnium (Cd)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 98.1 % 70-130 02-OCT-19 Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Copper (Cu)-Total 98.4 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Icad (Pb)-Total 101.9 % 70-130 02-OCT-19 Icad (Pb)-Total 106.9 % 70-130 02-OCT-19 Mangaesium (Mg)-Total 106.9 % 70-130 02-OCT-19	Arsenic (As)-Total			98.9		%		70-130	02-OCT-19
Bismuth (Bi)-Total 97.4 % 70-130 02-OCT-19 Boron (B)-Total 95.9 % 70-130 02-OCT-19 Cadmium (Cd)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 98.1 % 70-130 02-OCT-19 Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Iron (Fe)-Total 101.9 % 70-130 02-OCT-19 Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (L)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 103.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 100.7 % 70-130 02-OCT-19 Silicon (Si)-Total 100.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19	Barium (Ba)-Total			98.2		%		70-130	02-OCT-19
Boron (B)-Total 95.9 % 70.130 02-OCT-19 Cadmium (Cd)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 98.1 % 70-130 02-OCT-19 Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Icad (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 <td>Beryllium (Be)-Total</td> <td></td> <td></td> <td>97.5</td> <td></td> <td>%</td> <td></td> <td>70-130</td> <td>02-OCT-19</td>	Beryllium (Be)-Total			97.5		%		70-130	02-OCT-19
Cadmium (Cd)-Total 98.9 % 70-130 02-OCT-19 Calcium (Ca)-Total 98.1 % 70-130 02-OCT-19 Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Icad (Pb)-Total 101.9 % 70-130 02-OCT-19 Lead (Pb)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19<	Bismuth (Bi)-Total			97.4		%		70-130	02-OCT-19
Calcium (Ca)-Total 98.1 % 70-130 02-OCT-19 Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Mangnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130	Boron (B)-Total			95.9		%		70-130	02-OCT-19
Chromium (Cr)-Total 99.9 % 70-130 02-OCT-19 Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-O	Cadmium (Cd)-Total			98.9		%		70-130	02-OCT-19
Cesium (Cs)-Total 95.8 % 70-130 02-OCT-19 Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-	Calcium (Ca)-Total			98.1		%		70-130	02-OCT-19
Cobalt (Co)-Total 98.8 % 70-130 02-OCT-19 Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 96.2 % 70-130 02	Chromium (Cr)-Total			99.9		%		70-130	02-OCT-19
Copper (Cu)-Total 99.3 % 70-130 02-OCT-19 Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Phosphorus (P)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 105.7 % 70-130	Cesium (Cs)-Total			95.8		%		70-130	02-OCT-19
Iron (Fe)-Total 98.4 % 70-130 02-OCT-19 Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130	Cobalt (Co)-Total			98.8		%		70-130	02-OCT-19
Lead (Pb)-Total 101.9 % 70-130 02-OCT-19 Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 <td>Copper (Cu)-Total</td> <td></td> <td></td> <td>99.3</td> <td></td> <td>%</td> <td></td> <td>70-130</td> <td>02-OCT-19</td>	Copper (Cu)-Total			99.3		%		70-130	02-OCT-19
Lithium (Li)-Total 97.7 % 70-130 02-OCT-19 Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Iron (Fe)-Total			98.4		%		70-130	02-OCT-19
Magnesium (Mg)-Total 106.9 % 70-130 02-OCT-19 Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Lead (Pb)-Total			101.9		%		70-130	02-OCT-19
Manganese (Mn)-Total 103.3 % 70-130 02-OCT-19 Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Lithium (Li)-Total			97.7		%		70-130	02-OCT-19
Molybdenum (Mo)-Total 95.3 % 70-130 02-OCT-19 Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Magnesium (Mg)-Total			106.9		%		70-130	02-OCT-19
Nickel (Ni)-Total 97.5 % 70-130 02-OCT-19 Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Manganese (Mn)-Total			103.3		%		70-130	02-OCT-19
Phosphorus (P)-Total 103.3 % 70-130 02-OCT-19 Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Molybdenum (Mo)-Total			95.3		%		70-130	02-OCT-19
Potassium (K)-Total 98.3 % 70-130 02-OCT-19 Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Nickel (Ni)-Total			97.5		%		70-130	02-OCT-19
Rubidium (Rb)-Total 100.8 % 70-130 02-OCT-19 Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Phosphorus (P)-Total			103.3		%		70-130	02-OCT-19
Selenium (Se)-Total 100.3 % 70-130 02-OCT-19 Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Potassium (K)-Total			98.3		%		70-130	02-OCT-19
Silicon (Si)-Total 99.4 % 70-130 02-OCT-19 Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Rubidium (Rb)-Total			100.8		%		70-130	02-OCT-19
Silver (Ag)-Total 96.2 % 70-130 02-OCT-19 Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Selenium (Se)-Total			100.3		%		70-130	02-OCT-19
Sodium (Na)-Total 105.7 % 70-130 02-OCT-19 Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Silicon (Si)-Total			99.4		%		70-130	02-OCT-19
Strontium (Sr)-Total 100.7 % 70-130 02-OCT-19 Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Silver (Ag)-Total			96.2		%		70-130	02-OCT-19
Sulfur (S)-Total 99.8 % 70-130 02-OCT-19	Sodium (Na)-Total			105.7		%		70-130	02-OCT-19
	Strontium (Sr)-Total			100.7		%		70-130	02-OCT-19
Thallium (TI)-Total 99.4 % 70-130 02-OCT-19	Sulfur (S)-Total			99.8		%		70-130	02-OCT-19
	Thallium (TI)-Total			99.4		%		70-130	02-OCT-19



Workorder: L2356235

Report Date: 21-OCT-19

Page 6 of 8

Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-5 MS Tellurium (Te)-Total		WG3179173-3	93.3		%		70-130	02-OCT-19
Thorium (Th)-Total			95.3		%		70-130	02-OCT-19
Tin (Sn)-Total			96.3		%		70-130	02-OCT-19
Titanium (Ti)-Total			99.9		%		70-130	02-OCT-19
Tungsten (W)-Total			97.7		%		70-130	02-OCT-19
Uranium (U)-Total			94.6		%		70-130	02-OCT-19
Vanadium (V)-Total			101.3		%		70-130	02-OCT-19
Zinc (Zn)-Total			96.6		%		70-130	02-OCT-19
Zirconium (Zr)-Total			93.6		%		70-130	02-OCT-19
NH3-F-WT	Water							
Batch R4856571								
WG3179170-19 DUP Ammonia, Total (as N)		L2356009-15 0.035	0.039		mg/L	11	20	02-OCT-19
WG3179170-18 LCS Ammonia, Total (as N)			103.1		%		85-115	02-OCT-19
WG3179170-17 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	02-OCT-19
WG3179170-20 MS Ammonia, Total (as N)		L2356009-15	91.7		%		75-125	02-OCT-19
PH-BF	Water							
Batch R4849880								
WG3176164-2 DUP pH		L2356235-1 6.91	6.91	J	pH units	0.00	0.2	29-SEP-19
WG3176164-1 LCS pH			7.01		pH units		6.9-7.1	29-SEP-19
	Water				,		0.0 7.1	20 021 10
SOLIDS-TDS-BF Batch R4849913	vvater							
WG3176171-3 DUP Total Dissolved Solids		L2356119-2 711	677		mg/L	5.0	20	29-SEP-19
WG3176171-2 LCS Total Dissolved Solids			103.6		%		85-115	29-SEP-19
WG3176171-1 MB Total Dissolved Solids			<20		mg/L		20	29-SEP-19
SOLIDS-TSS-BF	Water							



Workorder: L2356235

Report Date: 21-OCT-19

Page 7 of 8

Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TSS-BF	Water							
Batch R48498								
WG3176170-3 DL Total Suspended Sc		L2356235-1 40.5	40.5		mg/L	0.0	25	29-SEP-19
WG3176170-2 LC Total Suspended Sc	_		99.4		%		85-115	29-SEP-19
WG3176170-1 ME Total Suspended So			<2.0		mg/L		2	29-SEP-19
TURBIDITY-BF	Water							
Batch R48498	381							
WG3176166-3 DL Turbidity	JP	L2356119-2 22.2	22.2		NTU	0.0	15	29-SEP-19
WG3176166-2 LC Turbidity	S		110.0		%		85-115	29-SEP-19
WG3176166-1 ME Turbidity	3		<0.10		NTU		0.1	29-SEP-19

Page 8 of 8

Workorder: L2356235 Report Date: 21-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)

DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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



Ft. Collins, Colorado LIMS Version: 6.914 Page 1 of 1

Friday, October 18, 2019

Rick Hawthorne
ALS Environmental
60 Northland Rd, Unit 1
Waterloo Canada, ON N2V 2B8

Re: ALS Workorder: 1910088

Project Name:

Project Number: L2356235

Dear Mr. Hawthorne:

One water sample was received from ALS Environmental, on 10/3/2019. The sample was scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental Katie M. OBrien

Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environme	ntal – Fort Collins							
Accreditation Body	License or Certification Number							
AIHA	214884							
Alaska (AK)	UST-086							
Alaska (AK)	CO01099							
Arizona (AZ)	AZ0742							
California (CA)	06251CA							
Colorado (CO)	CO01099							
Florida (FL)	E87914							
Idaho (ID)	CO01099							
Kansas (KS)	E-10381							
Kentucky (KY)	90137							
PJ-LA (DoD ELAP/ISO 170250)	95377							
Louisiana (LA)	05057							
Maryland (MD)	285							
Missouri (MO)	175							
Nebraska(NE)	NE-OS-24-13							
Nevada (NV)	CO000782008A							
New York (NY)	12036							
North Dakota (ND)	R-057							
Oklahoma (OK)	1301							
Pennsylvania (PA)	68-03116							
Tennessee (TN)	2976							
Texas (TX)	T104704241							
Utah (UT)	CO01099							
Washington (WA)	C1280							



1910088

Radium-226:

The sample was prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1910088

Client Name: ALS Environmental

Client Project Name:

Client Project Number: L2356235 Client PO Number: L2356235

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L2356235-1	1910088-1		WATER	28-Sep-19	•





1910088

Subcontract Request Form

L2356235

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA

Please reference on final report and invoice: PO#

225 COMMERCE DRIVE FORT COLLINS, CO 80524

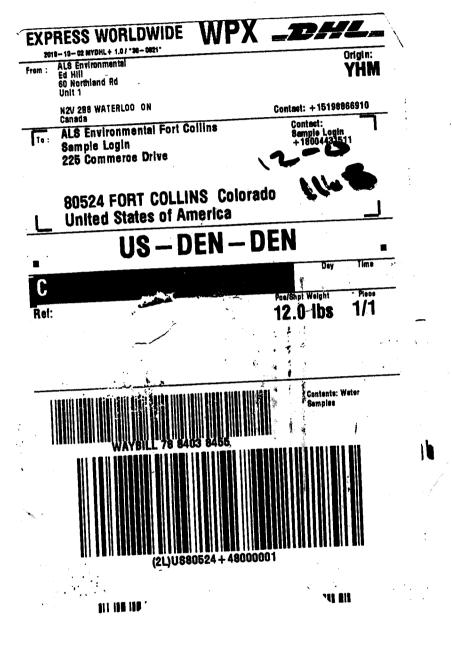
Please see enclosed 1 san	nple(s) in <u>1</u> Container(s))	
SAMPLE NUMBER ANALYTI	CAL REQUIRED	DATE SAMPLED DUE DATE	Priority Flag
L2356235-1 MS-08 Ra226 by	Alpha Scint, MDC=0.01 Bq/L (RA226	9/ 28/ 2019 -MMER-FC 1) 10/18/2019	E
Subcontract Info Contact: Analysis and reporting info contact:	Mary-Lynn Pike (519) 886-6910 Rick Hawthorne 60 NORTHLAND ROAD, UNIT 1 WATERLOO,ON N2V 2B8 Phone: (519) 886-6910	0 Email: Rick.Hawthorne@	alsglobal.com
Please email confirmation of rece	ipt to: Rick.Hawthorn	e@alsglobal.com	
Shipped By: Received By: Verified By:	Date Shipped: Date Received: Date Verified: Temperature:	10.03.19 10	005



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

. (ALS	Client: Al	3 Islata	100		Work	order No:	1918	188		
Proje	ct Manager:	KMC)	<u> </u>		SIM	Date:	10:03	.19	
	ills / shipping docu	ments present a	nd/or rer	movable?		GIAZ		DROP OFF	(YES)	NO
	ody seals on shipp						<u> </u>	NONE	YES	NO *
	ody seals on sampl							MONE	YES	NO *
	a COC (chain-of-cu							HOIVE	(FES)	100 *
	OC in agreement wi		ived? (II	Ds dates t	imes # of	Feamples	# of contr	inom	(LES)	3 NO :
matrix, r	equested analyses,	etc.)				samples,	# OI COIIL	anners,	TES	NO *
	t-hold samples pres								YES	NO
	amples within hold								(YES)	* NO *
8. Were all	sample containers	received intact?	(not br	oken or le	aking)				(YES)	1 NO *
	sufficient sample fo		•						YES	5.NO *
	amples in the prope								(YES)	* NO *
	queous samples pre			ired? (exc	luding v	olatiles)		N/A	YES	! NO *
12. Are all a	queous non-preserv	ed samples pH	4-9?					(N/A	YES	No *
Are all so > 6 mm (amples requiring no (1/4 inch) diameter	headspace (VC? (i.e. size of gre	C, GRC en pea)), RSK/M	EE, rado	n) free of t	oubbles	N/A)	YES	; NO
14. Were the	samples shipped o	n ice?							(YES)	NO
15. Were co	oler temperatures m	easured at 0.1-6	.0°C?	IR gun used*:	#1	#3	#4	RAD	YES	NO
		Cooler #:	<u> </u>							
:		-	1 .8 -							
DOT Survey/	No. of custody se	als on cooler:	/		 ,					
Acceptance Information	External µ	R/hr reading:	<u> </u>		 .					
	Background µ	R/hr reading:	4_							
Were externa	al µR/hr readings ≤ two tir	nes background and w	ithin DOT	acceptance c	riteria? YE	S/NO/NA	(If no, see	Form 008.)		
* Please prov	ide details here for N	O responses to g	ay boxes	s above - fo	r 2 thru 5	& 7 thru 1:	2, notify P	M & cont	inue w/ log	gin.
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	vas the client contacted	Ta 1/0	Contact: _	 .				_ Date/Tim	ie:	
Project Man	ager Signature / Da	te: <u>Uff</u>	-k	t	- 101	419				

Form 201r27.xls (02/11/2019)



SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 18-Oct-19

 Project:
 L2356235
 Work Order:
 1910088

 Sample ID:
 L2356235-1
 Lab ID:
 1910088-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 9/28/2019 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed				
Radium-226 by Radon Ema	nation - Method 903.1	SO	P 783	Prep	Date: 10/8/2019	PrepBy: TRW				
Ra-226	0.017 (+/- 0.0070)	Y1	0.0048	BQ/I	NA	10/17/2019 14:05				
Carr: BARIUM	102	Y1	40-110	%REC	DI = NA	10/17/2019 14:05				

SAMPLE SUMMARY REPORT

Date: 18-Oct-19 **Client:** ALS Environmental

Project: L2356235 **Work Order: 1910088**

L2356235-1 **Lab ID:** 1910088-1 Sample ID: **Legal Location:** Matrix: WATER

Collection Date: 9/28/2019 **Percent Moisture:**

Dilution Analyses Result **Oual** Limit Units **Date Analyzed Factor**

Report

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested

MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:

- gasoline

- JP-8

- diesel - mineral spirits

- motor oil

- Stoddard solvent

- bunker C

Client: ALS Environmental

Work Order: 1910088 **Project:** L2356235

Date: 10/18/2019 11:1

QC BATCH REPORT

LCS	Sample ID: RE191008-2		Units: BQ/I A						Analysis Date: 10/17/2019 14:40							
Client ID:		Run II	D: RE191008 -	2A			Р	rep Date: 10/8	/2019	DF:						
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual				
Ra-226		1.58 (+/- 0.393)	0.0155	1.72		91.6	67-120					P,Y1,M3				
Carr: BARI	UM	16500		16380		101	40-110					Y1				
LCSD	Sample ID: RE191008-2 Units: BQ/I									e: 10/17/2019 14:40						
Client ID:		D: RE191008-2A				Р	rep Date: 10/8	/2019	DF:							
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual				
Ra-226		1.49 (+/- 0.373)	0.0178	1.72		86.7	67-120		1.58	0.2	2.1	P,Y1,M3				
Carr: BARI	UM	16500		16390		101	40-110		16500			Y1				
МВ	Sample ID: RE191008-2				Uı	nits: BQ/I		Analys	Analysis Date: 10/17/2019 14:40							
Client ID:		Run II	D: RE191008 -	2A			Р	rep Date: 10/8	/2019	DF:	NA					
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual				
Ra-226		0.0023 (+/- 0.0027)	0.0041									Y1,U				
Carr: BARI	UM	16600		16380		102	40-110					Y1				

QC Page: 1 of 1

S) Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L2356235-COFC

COC Number: 15 -

www.aisglobai.com																					,	
Report To Contact and company name below will appear on the final report						infirm all E&P TATs with your AM - surcharges will apply																
Company:	any: Baffinland Iron Mines Corp.				Select Report Format: PDF DE EXCEL DEDD (DIGITAL)						Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply									s apply		
	Wiliam Bowden and Co		Quality Control (QC) Report with Report 🗵 YES 🔲 NO						day [F	² 4]			Ć,	1 E	Business day [E1]							
Phone:	647-253-0596 EXT 601	6			Compare Results to Criteria on Report - provide details below if box checked						day [F	23]	3] 🗆			Sa	ame [.				
	Company address below w	vill appear on the final	report		Select Distribution: 🗹 EMAIL 🗌 MAIL 🔲 FAX						day [F				EMERGENCY	8	Statut	☑				
Street:	2275 Upper Middle Rd.	E., Suite #300			Email 1 or Fax	44	Date ar	nd Time	Requir	ed for al	1 E&P 1	ATs:	1 丰富			67 JH	1.495-1.51	-,i., 900	f.			
City/Province:	Oakville, ON				Email 2	For tes	ts that ca	en not be	perform	ed accor	ding to t	the serv	ice leve	l select	ed, you	will be	contacted	l.				
Postal Code:	al Code: L6H 0C3					Email 3								Α	nalys	is Re	ques	t				
Invoice To	Same as Report To		Invoice Distribution						cate Fil	tered (F)	, Presen	red (P)	or Filte	red and	I Prese	rved (F	/P) bel	ow				
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Contact:					Email 2	commercial@baff	inland.com						1					ł	-			و
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LSD:					Location:				1						ı		1					Number of Containers
ALS Lab Work Order # (lab use only) L2356235					ALS Contact:		Sampler:	KB/LM	BIM-MMER-DEL													z
ALS Sample # Sample Identification and/or Coordinates			inates		Date	Time	<u> </u>	ΣΨ							- 1							
(lab use only)		s description will				(dd-mmm-yy)	(hh:mm)	Sample Type	蓋			l i							1			
	MS-08					28-Sep-19	13:30	Water	E0													6
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	<u> </u>		Special Instruc	tions / S	ecify Criteria to	add on report by clic	king on the drop	-down list below				SAMI	LE CO	DNDIT	ION A	AS RE	CEIV	/ED (I	ab us	e only)	
Drinking	Water (DW) Samples ¹	(client use)	Ороска изака			tronic COC only)			Froz	en					SIF (Obser	vation	าร	Yes		No	
Are samples tak	en from a Regulated DW S	System?	,						Ice F	acks		Ice C	ubes		Cust	ody s	eal inf	tact	Yes		No	
	ES 🛛 NO									ing Init	_			_		-				-		
Are samples for human drinking water use?								1.5				EMPER.	ATURE	s °C			FINAL	ÇQOL	ER TEN	PERAT	URES °C	
	ES 🗸 NO																17	7	\mathbb{Z}			
<u> </u>		LEASE (client use	2)		Hardis Friday sa seria	INITIAL SHIPMEN	T RECEPTION	(lab use only)		7 E F		r, pri	FII	NAL S	НРМ	ENT	RECE	PTIO	N (lat	use o	nly)	poly and angles of the
Released by: K		Release Date: 28		Time:	Received by:	1 , 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Date:		Time) :	Rec	eived b	y:J.Str					:Sept		9 . /	<u>, 1</u>	ime:6:00pm
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Baffinland Iron Mine's Corporation (Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 30-SEP-19

Report Date: 21-OCT-19 11:04 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2356892 Project P.O. #: 4500057496

Job Reference: MS-08 EFF CHARACTERIZATION

C of C Numbers: Legal Site Desc:

Comments: ADDITIONAL 02-OCT-19 07:45

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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Environmental 🚴

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

L2356892 CONTD.... PAGE 2 of 8 Version: FINAL

Hardness (as CaCO3)	Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
Matric. WATER Physical Tests Phy								
Physical Tests								
Conductivity								
Hardness (as CaCO3)	•	870		3.0	umhos/cm		02-OCT-19	R4857597
PH	•		HTC		mg/L			
Total Dissolved Solids Turbridity 72.1 Anions and Nutrients Alkalinity, Total (as CaCO3) Amnonia, Total (as N) Chloride (CI) Fluoride (F) Nitrate (as N) O.047 O.020 Mg/L O.02-OCT-19 R48572 Amnonia, Total (as N) O.047 O.020 Mg/L O.02-OCT-19 R48573 Total Kjeldahi Nitrogen O.052 Olimbride (SO4) Cyanides Cyanide, Total Dissolved Carbon Dissolved		6.92			_			R4851198
Total Dissolved Solids	Total Suspended Solids	55.5		2.0	mg/L		01-OCT-19	R4851221
Anions and Nutrients Alkaininy, Total (as CaCo3) 25 10 mg/L 02-OCT-19 R48676 Alkaininy, Total (as N) 0.39 DLHC 0.10 mg/L 02-OCT-19 R48576 Chloride (Cl) 2.21 0.50 mg/L 02-OCT-19 R48577 Fluoride (F) 0.047 0.020 mg/L 02-OCT-19 R48577 Nitrate (as N) 2.71 0.020 mg/L 02-OCT-19 R48577 Total Kjeldahl Nitrogen <1.5	Total Dissolved Solids	643		20	mg/L		01-OCT-19	R4851401
Alkalinity, Total (as CaCO3)	Turbidity	72.1		0.10	NTU		01-OCT-19	R4851213
Ammonia, Total (as N) Chloride (CI) 2.21 Chloride (CF) 0.047 Fluoride (F) 0.047 Nitrate (as N) 2.71 O.020 mg/L O.020 mg/L O.020 Mg/L	Anions and Nutrients							
Chloride (CI) 2.21 0.050 mg/L 02-0CT-19 R48577 Fluoride (F) 0.047 0.020 mg/L 02-0CT-19 R48577 Nitrate (as N) 2.71 0.020 mg/L 02-0CT-19 R48577 Total Kjeldahl Nitrogen 4.1.5 DLM 0.030 mg/L 02-0CT-19 R48577 Total Kjeldahl Nitrogen 4.1.5 DLM 0.030 mg/L 02-0CT-19 R48577 Total Kjeldahl Nitrogen 4.1.5 DLM 0.030 mg/L 02-0CT-19 R48578 Phosphorus, Total 0.0652 DLM 0.030 mg/L 02-0CT-19 R48582 Sulfate (SO4) 424 0.30 mg/L 02-0CT-19 R48578 Cyanide, Total 0.0065 0.0020 mg/L 02-0CT-19 R48578 Cyanide, Total 0.0065 0.0020 mg/L 02-0CT-19 R48578 Cyanide, Total 0.0065 0.0020 mg/L 02-0CT-19 R48578 Cyanide / Total Organic Carbon 0.133 0.50 mg/L 02-0CT-19 R48578 Total Organic Carbon 1.33 0.50 mg/L 02-0CT-19 R48578 Total Organic Carbon 1.33 0.50 mg/L 02-0CT-19 R48578 Total Organic Carbon 1.38 DLHC 0.050 mg/L 02-0CT-19 R48578 Aluminum (Al)-Total 1.88 DLHC 0.050 mg/L 02-0CT-19 02-0CT-19 R48541 Arsenic (As)-Total 0.0010 DLHC 0.0010 mg/L 02-0CT-19 02-0CT-19 R48541 Arsenic (As)-Total 0.0175 DLHC 0.0010 mg/L 02-0CT-19 02-0CT-19 R48541 Berillium (Ba)-Total 0.0015 DLHC 0.00050 mg/L 02-0CT-19 02-0CT-19 R48541 Boron (B)-Total 0.00050 DLHC 0.00050 mg/L 02-0CT-19 02-0CT-19 R48541 Boron (B)-Total 0.00066 DLHC 0.00050 mg/L 02-0CT-19 02-0CT-19 R48541 Cadmium (Ca)-Total 0.00066 DLHC 0.00050 mg/L 02-0CT-19 02-0CT-19 R48541 Cadmium (Ca)-Total 0.00066 DLHC 0.00050 mg/L 02-0CT-19 02-0CT-19 R48541 Chromium (Cr)-Total 0.00066 DLHC 0.00050 mg/L 02-0CT-19 02-0CT-19 R48541 Chromium (Cr)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 DLHC 0.00000 mg/L 02-0CT-19 02-0CT-19 R48541 Cobalt (Co)-Total 0.00050 mg	Alkalinity, Total (as CaCO3)	25		10	mg/L		02-OCT-19	R4857597
Fluoride (F) 0.047 0.020 mg/L 02-OCT-19 R48577	Ammonia, Total (as N)	0.39	DLHC	0.10	mg/L		02-OCT-19	R4856571
Nitrate (as N)	Chloride (CI)	2.21		0.50	mg/L		02-OCT-19	R4857755
Total Keldahl Nitrogen	Fluoride (F)	0.047		0.020	mg/L		02-OCT-19	R4857755
Phosphorus, Total 0.052	Nitrate (as N)	2.71		0.020	mg/L		02-OCT-19	R4857755
Sulfate (SO4)	Total Kjeldahl Nitrogen	<1.5	DLM	1.5	mg/L	02-OCT-19	03-OCT-19	R4858209
Cyanide. Total 0.0065 0.0020 mg/L 0.2-OCT-19 R48578 Organic / Inorganic Carbon LAB 0.0020 mg/L 02-OCT-19 R48578 Dissolved Carbon Filtration Location LAB 0.50 mg/L 02-OCT-19 R48578 Total Organic Carbon 1.33 0.50 mg/L 02-OCT-19 03-OCT-19 R48578 Total Metals Aluminum (Al)-Total 1.88 DLHC 0.050 mg/L 02-OCT-19 02-OCT-19 R48541 Antimony (Sb)-Total								

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356892-1 MS-08 Sampled By: KB/AZ on 30-SEP-19 @ 09:20 Matrix: WATER							
Total Metals							
Nickel (Ni)-Total	0.0384	DLHC	0.0050	mg/L	02-OCT-19	02-OCT-19	R4854170
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	02-OCT-19	02-OCT-19	R4854170
Potassium (K)-Total	3.85	DLHC	0.50	mg/L	02-OCT-19	02-OCT-19	R4854170
Rubidium (Rb)-Total	0.0069	DLHC	0.0020	mg/L	02-OCT-19	02-OCT-19	R4854170
Selenium (Se)-Total	0.00123	DLHC	0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Silicon (Si)-Total	3.6	DLHC	1.0	mg/L	02-OCT-19	02-OCT-19	R4854170
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Sodium (Na)-Total	1.56	DLHC	0.50	mg/L	02-OCT-19	02-OCT-19	R4854170
Strontium (Sr)-Total	0.027	DLHC	0.010	mg/L	02-OCT-19	02-OCT-19	R4854170
Sulfur (S)-Total	146	DLHC	5.0	mg/L	02-OCT-19	02-OCT-19	R4854170
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	02-OCT-19	02-OCT-19	R4854170
Thallium (TI)-Total	<0.00010	DLHC	0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Thorium (Th)-Total	0.0013	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Titanium (Ti)-Total	0.0893	DLHC	0.0030	mg/L	02-OCT-19	02-OCT-19	R4854170
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Uranium (U)-Total	0.00263	DLHC	0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	02-OCT-19	02-OCT-19	R4854170
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	02-OCT-19	02-OCT-19	R4854170
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	02-OCT-19	02-OCT-19	R4854170
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-OCT-19	R4854329
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	02-OCT-19	02-OCT-19	R4855218
Radiological Parameters	0.0000		0.000	D -: //	00 007 40	47 OOT 40	D 4054000
Ra-226	<0.0068		0.0068	Bq/L	08-OCT-19	17-OCT-19	R4851666
L2356892-2 MS-0802 Sampled By: KB/AZ on 30-SEP-19 @ 09:20 Matrix: WATER							
Physical Tests							
Conductivity	<3.0		3.0	umhos/cm		02-OCT-19	R4857597
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		03-OCT-19	
рН	5.77		0.10	pH units		02-OCT-19	R4857597
Total Suspended Solids	<2.0		2.0	mg/L	02-OCT-19	03-OCT-19	R4857622
Total Dissolved Solids	<10		10	mg/L		02-OCT-19	R4857823
Turbidity	0.16	PEHT	0.10	NTU	03-OCT-19	03-OCT-19	R4858080
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	<10		10	mg/L		02-OCT-19	R4857597
Ammonia, Total (as N)	<0.010		0.010	mg/L		02-OCT-19	R4856571
Chloride (CI)	<0.50		0.50	mg/L		02-OCT-19	R4857755
Fluoride (F)	<0.020		0.020	mg/L		02-OCT-19	R4857755
Nitrate (as N)	<0.020		0.020	mg/L		02-OCT-19	R4857755
Total Kjeldahl Nitrogen	<0.15		0.15	mg/L	02-OCT-19	03-OCT-19	R4858209

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356892-2 MS-0802 Sampled By: KB/AZ on 30-SEP-19 @ 09:20 Matrix: WATER							
Anions and Nutrients							
Phosphorus, Total	<0.0030		0.0030	mg/L	02-OCT-19	03-OCT-19	R4858093
Sulfate (SO4)	<0.30		0.30	mg/L		02-OCT-19	R4857755
Cyanides							
Cyanide, Total	<0.0020		0.0020	mg/L		02-OCT-19	R4857913
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					02-OCT-19	R4857502
Dissolved Organic Carbon	<0.50		0.50	mg/L	02-OCT-19	03-OCT-19	R4857987
Total Organic Carbon	<0.50		0.50	mg/L		02-OCT-19	R4855629
Total Metals							
Aluminum (Al)-Total	<0.0050		0.0050	mg/L	02-OCT-19	02-OCT-19	R4854170
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Arsenic (As)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Barium (Ba)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854170
Boron (B)-Total	<0.010		0.010	mg/L	02-OCT-19	02-OCT-19	R4854170
Cadmium (Cd)-Total	<0.000050		0.0000050	mg/L	02-OCT-19	02-OCT-19	R4854170
Calcium (Ca)-Total	<0.050		0.050	mg/L	02-OCT-19	02-OCT-19	R4854170
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	02-OCT-19	02-OCT-19	R4854170
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Copper (Cu)-Total	<0.0010		0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Iron (Fe)-Total	<0.010		0.010	mg/L	02-OCT-19	02-OCT-19	R4854170
Lead (Pb)-Total	<0.000050		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854170
Lithium (Li)-Total	<0.0010		0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Magnesium (Mg)-Total	<0.0050		0.0050	mg/L	02-OCT-19	02-OCT-19	R4854170
Manganese (Mn)-Total	<0.00050		0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		02-OCT-19	R4855211
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854170
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Phosphorus (P)-Total	<0.050		0.050	mg/L	02-OCT-19	02-OCT-19	R4854170
Potassium (K)-Total	<0.050		0.050	mg/L	02-OCT-19	02-OCT-19	R4854170
Rubidium (Rb)-Total	<0.00020		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854170
Selenium (Se)-Total	<0.000050		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854170
Silicon (Si)-Total	<0.10		0.10	mg/L	02-OCT-19	02-OCT-19	R4854170
Silver (Ag)-Total	<0.000050		0.000050	mg/L	02-OCT-19	02-OCT-19	R4854170
Sodium (Na)-Total	<0.050		0.050	mg/L	02-OCT-19	02-OCT-19	R4854170
Strontium (Sr)-Total	<0.0010		0.0010	mg/L	02-OCT-19	02-OCT-19	R4854170
Sulfur (S)-Total	<0.50		0.50	mg/L	02-OCT-19	02-OCT-19	R4854170
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854170
Thallium (TI)-Total	<0.000010		0.000010	mg/L	02-OCT-19	02-OCT-19	R4854170
Thorium (Th)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356892-2 MS-0802 Sampled By: KB/AZ on 30-SEP-19 @ 09:20							
Matrix: WATER							
Total Metals							
Tin (Sn)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Titanium (Ti)-Total	<0.00030		0.00030	mg/L	02-OCT-19	02-OCT-19	R4854170
Tungsten (W)-Total	<0.00010		0.00010	mg/L	02-OCT-19	02-OCT-19	R4854170
Uranium (U)-Total	<0.000010		0.000010	mg/L	02-OCT-19	02-OCT-19	R4854170
Vanadium (V)-Total	<0.00050		0.00050	mg/L	02-OCT-19	02-OCT-19	R4854170
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	02-OCT-19	02-OCT-19	R4854170
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	02-OCT-19	02-OCT-19	R4854170
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					02-OCT-19	R4854329
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	02-OCT-19	02-OCT-19	R4855218
Radiological Parameters							
Ra-226	0.018		0.0078	Bq/L	08-OCT-19	17-OCT-19	R4851666
Refer to Referenced Information for Qualifiers (if any) and							<u> </u>

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Des	cription Parame	ter Qualifier	Applies to Sample Number(s)
Sample Para	meter Qualifier key listed:		
Qualifier	Description		
DLHC	Detection Limit Raised: Dilution red	quired due to high concentration of test and	alyte(s).
DLM	Detection Limit Adjusted due to sai	mple matrix effects (e.g. chemical interfere	ence, colour, turbidity).
HTC	Hardness was calculated from Total	al Ca and/or Mg concentrations and may b	e biased high (dissolved Ca/Mg results unavailable).
PEHT	Parameter Exceeded Recommend	ed Holding Time Prior to Analysis	

Test Method References:

ALS Test Code Matrix Test Description Method Reference**

ALK-WT Water Alkalinity, Total (as CaCO3) EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange

colourimetric method.

CL-IC-N-WT Water Chloride by IC EPA 300.1 (mod)

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).

CN-TOT-WT Water Cyanide, Total ISO 14403-2

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

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

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.

illitared detector.

EC-SCREEN-WT Water Conductivity Screen (Internal Use APHA 2510

Only

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

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 EPA 1631E (mod)

CVAAS

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)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WT 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.

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.

Reference Information

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NO3-IC-WT Water Nitrate in Water by IC EPA 300.1 (mod) 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

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

Water samples are analyzed directly by a calibrated pH meter.

PH-WT Water pH APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

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). Holdtime for samples under this regulation is 28 days

RA226-MMER-FC Water Ra226 by Alpha Scint, MDC=0.01 EPA 903.1

Bq/L

SO4-IC-N-WT 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-TDS-WT Water Total Dissolved Solids APHA 2540C

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.

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.

SOLIDS-TSS-WT 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 104-1°C for a minimum of

four hours or until a constant weight is achieved.

FKN-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D

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.

TURBIDITY-WT 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
FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, CANADA

Chain of Custody Numbers:

MS-08 EFF CHARACTERIZATION

Reference Information

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GLOSSARY OF REPORT TERMS

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

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

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

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2356892

Report Date: 21-OCT-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT	Water							
Batch R4857597								
WG3179309-4 DUP Alkalinity, Total (as CaC	CO3)	WG3179309-3 86	85		mg/L	1.0	20	02-OCT-19
WG3179309-2 LCS Alkalinity, Total (as CaC	CO3)		101.5		%		85-115	02-OCT-19
WG3179309-1 MB Alkalinity, Total (as CaC	CO3)		<10		mg/L		10	02-OCT-19
CL-IC-N-WT	Water							
Batch R4857755								
WG3179166-14 DUP		WG3179166-1						
Chloride (CI)		3.86	3.84		mg/L	0.4	20	02-OCT-19
WG3179166-12 LCS Chloride (CI)			101.9		%		90-110	02-OCT-19
WG3179166-11 MB Chloride (Cl)			<0.50		mg/L		0.5	02-OCT-19
WG3179166-15 MS Chloride (Cl)		WG3179166-1	3 99.0		%		75-125	02-OCT-19
CN-TOT-WT	Water							
Batch R4857913								
WG3180527-3 DUP Cyanide, Total		L2357043-2 0.025	0.037	J	mg/L	0.013	0.04	03-OCT-19
WG3180527-2 LCS Cyanide, Total			102.1		%		80-120	02-OCT-19
WG3180527-1 MB Cyanide, Total			<0.0020		mg/L		0.002	02-OCT-19
WG3180527-4 MS Cyanide, Total		L2357043-2	89.7		%		70-130	03-OCT-19
DOC-WT	Water				-		.0 .00	33 331 13
Batch R4857987								
WG3180102-3 DUP		L2356715-1						
Dissolved Organic Carb	oon	3.30	3.51		mg/L	6.1	20	03-OCT-19
WG3180102-2 LCS Dissolved Organic Carb	oon		106.0		%		80-120	03-OCT-19
WG3180102-1 MB Dissolved Organic Carb	pon		<0.50		mg/L		0.5	03-OCT-19
WG3180102-4 MS Dissolved Organic Carb	oon	L2356715-1	102.2		%		70-130	03-OCT-19
EC-WT	Water							



Workorder: L2356892 Report Date: 21-OCT-19 Page 2 of 13

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-WT	Water							
Batch R4857597								
WG3179309-4 DUP Conductivity		WG3179309-3 2090	2080		umhos/cm	0.5	10	02-OCT-19
WG3179309-2 LCS Conductivity			100.2		%		90-110	02-OCT-19
WG3179309-1 MB Conductivity			<3.0		umhos/cm		3	02-OCT-19
F-IC-N-WT	Water							
Batch R4857755								
WG3179166-14 DUP Fluoride (F)		WG3179166-1 3 0.390	3 0.389		mg/L	0.3	20	02-OCT-19
WG3179166-12 LCS Fluoride (F)			103.0		%		90-110	02-OCT-19
WG3179166-11 MB Fluoride (F)			<0.020		mg/L		0.02	02-OCT-19
WG3179166-15 MS Fluoride (F)		WG3179166-1	3 99.3		%		75-125	02-OCT-19
HG-D-CVAA-WT	Water							
Batch R4855218								
WG3179168-3 DUP Mercury (Hg)-Dissolved		L2356892-1 <0.000050	<0.000005	C RPD-NA	mg/L	N/A	20	02-OCT-19
WG3179168-2 LCS Mercury (Hg)-Dissolved			102.0		%		80-120	02-OCT-19
WG3179168-1 MB Mercury (Hg)-Dissolved			<0.000005	С	mg/L		0.000005	02-OCT-19
WG3179168-4 MS Mercury (Hg)-Dissolved		L2356892-2	104.4		%		70-130	02-OCT-19
HG-T-CVAA-WT	Water							
Batch R4855211 WG3179150-4 DUP		WG3179150-3						
Mercury (Hg)-Total		<0.0000050	<0.000005	C RPD-NA	mg/L	N/A	20	02-OCT-19
WG3179150-2 LCS Mercury (Hg)-Total			96.9		%		80-120	02-OCT-19
WG3179150-1 MB Mercury (Hg)-Total			<0.000005	С	mg/L		0.000005	02-OCT-19
WG3179150-6 MS Mercury (Hg)-Total		WG3179150-5	101.2		%		70-130	02-OCT-19
MET-T-CCMS-WT	Water							



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-4 DUP Aluminum (Al)-Total		WG3179173-3 <0.0050	<0.0050	RPD-NA	mg/L	N/A	20	02-OCT-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Barium (Ba)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Boron (B)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-OCT-19
Cadmium (Cd)-Total		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Calcium (Ca)-Total		<0.050	< 0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Cesium (Cs)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Copper (Cu)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-OCT-19
Iron (Fe)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-OCT-19
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-OCT-19
Magnesium (Mg)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	02-OCT-19
Manganese (Mn)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Molybdenum (Mo)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Nickel (Ni)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Potassium (K)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Rubidium (Rb)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Silicon (Si)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	02-OCT-19
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	02-OCT-19
Sodium (Na)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	02-OCT-19
Strontium (Sr)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	02-OCT-19
Sulfur (S)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	25	02-OCT-19
Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	25	02-OCT-19
Tin (Sn)-Total		<0.00010	<0.00010		mg/L			02-OCT-19



Workorder: L2356892 Report Date: 21-OCT-19 Page 4 of 13

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-4 DUP		WG3179173-			/I			
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Titanium (Ti)-Total		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	02-OCT-19
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	02-OCT-19
Uranium (U)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	02-OCT-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	02-OCT-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	02-OCT-19
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	02-OCT-19
WG3179173-2 LCS Aluminum (Al)-Total			103.6		%		80-120	02-OCT-19
Antimony (Sb)-Total			101.1		%		80-120	02-OCT-19
Arsenic (As)-Total			98.7		%		80-120	02-OCT-19
Barium (Ba)-Total			99.7		%		80-120	02-OCT-19
Beryllium (Be)-Total			95.9		%		80-120	02-OCT-19
Bismuth (Bi)-Total			96.5		%		80-120	02-OCT-19
Boron (B)-Total			93.0		%		80-120	02-OCT-19
Cadmium (Cd)-Total			95.4		%		80-120	02-OCT-19
Calcium (Ca)-Total			95.8		%		80-120	02-OCT-19
Chromium (Cr)-Total			99.6		%		80-120	02-OCT-19
Cesium (Cs)-Total			96.1		%		80-120	02-OCT-19
Cobalt (Co)-Total			97.0		%		80-120	02-OCT-19
Copper (Cu)-Total			95.7		%		80-120	02-OCT-19
Iron (Fe)-Total			96.4		%		80-120	02-OCT-19
Lead (Pb)-Total			99.6		%		80-120	02-OCT-19
Lithium (Li)-Total			95.9		%		80-120	02-OCT-19
Magnesium (Mg)-Total			106.9		%		80-120	02-OCT-19
Manganese (Mn)-Total			100.5		%		80-120	02-OCT-19
Molybdenum (Mo)-Total			96.7		%		80-120	02-OCT-19
Nickel (Ni)-Total			95.8		%		80-120	02-OCT-19
Phosphorus (P)-Total			102.6		%		70-130	02-OCT-19
Potassium (K)-Total			98.4		%		80-120	02-OCT-19
Rubidium (Rb)-Total			99.6		%		80-120	02-OCT-19
Selenium (Se)-Total			98.8		%		80-120	02-OCT-19
Silicon (Si)-Total			100.1		%		60-140	02-OCT-19



Workorder: L2356892 Report Date: 21-OCT-19 Page 5 of 13

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-2 LCS			05.0		%		00.400	00 007 10
Silver (Ag)-Total			95.8 104.7		%		80-120	02-OCT-19
Sodium (Na)-Total							80-120	02-OCT-19
Strontium (Sr)-Total			101.5		%		80-120	02-OCT-19
Sulfur (S)-Total			96.5		%		80-120	02-OCT-19
Thallium (TI)-Total			97.4		%		80-120	02-OCT-19
Tellurium (Te)-Total			95.3		%		80-120	02-OCT-19
Thorium (Th)-Total			97.1		%		70-130	02-OCT-19
Tin (Sn)-Total			98.4		%		80-120	02-OCT-19
Titanium (Ti)-Total			98.3		%		80-120	02-OCT-19
Tungsten (W)-Total			96.2		%		80-120	02-OCT-19
Uranium (U)-Total			93.5		%		80-120	02-OCT-19
Vanadium (V)-Total			101.1		%		80-120	02-OCT-19
Zinc (Zn)-Total			96.4		%		80-120	02-OCT-19
Zirconium (Zr)-Total			93.6		%		80-120	02-OCT-19
WG3179173-1 MB Aluminum (Al)-Total			<0.0050		mg/L		0.005	02-OCT-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	
Arsenic (As)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Bismuth (Bi)-Total			<0.00010		mg/L		0.00005	02-OCT-19 02-OCT-19
Boron (B)-Total			<0.010	O	mg/L		0.01	02-OCT-19
Cadmium (Cd)-Total			<0.00000	50	mg/L		0.000005	02-OCT-19
Calcium (Ca)-Total			<0.050		mg/L		0.05	02-OCT-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	02-OCT-19
Cesium (Cs)-Total			<0.00001		mg/L		0.00001	02-OCT-19
Cobalt (Co)-Total			<0.0001		mg/L		0.0001	02-OCT-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	02-OCT-19
Iron (Fe)-Total			<0.010		mg/L		0.01	02-OCT-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	02-OCT-19
Lithium (Li)-Total			<0.0010	~	mg/L		0.001	02-OCT-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	02-OCT-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	02-OCT-19
Molybdenum (Mo)-Total			<0.00005		mg/L		0.00005	02-OCT-19
woybacham (wo)-Total			~U.UUUU	•	1119/ =		0.00000	02-001-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-1 MB Nickel (Ni)-Total			<0.00050		mg/L		0.0005	02-OCT-19
Phosphorus (P)-Total			< 0.050		mg/L		0.05	02-OCT-19
Potassium (K)-Total			< 0.050		mg/L		0.05	02-OCT-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	02-OCT-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	02-OCT-19
Silicon (Si)-Total			<0.10		mg/L		0.1	02-OCT-19
Silver (Ag)-Total			<0.000050)	mg/L		0.00005	02-OCT-19
Sodium (Na)-Total			<0.050		mg/L		0.05	02-OCT-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	02-OCT-19
Sulfur (S)-Total			<0.50		mg/L		0.5	02-OCT-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	02-OCT-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	02-OCT-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	02-OCT-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	02-OCT-19
Uranium (U)-Total			<0.000010)	mg/L		0.00001	02-OCT-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	02-OCT-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	02-OCT-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	02-OCT-19
WG3179173-5 MS Aluminum (Al)-Total		WG3179173-3	100.4		%		70-130	02-OCT-19
Antimony (Sb)-Total			101.1		%		70-130	02-OCT-19
Arsenic (As)-Total			98.9		%		70-130	02-OCT-19
Barium (Ba)-Total			98.2		%		70-130	02-OCT-19
Beryllium (Be)-Total			97.5		%		70-130	02-OCT-19
Bismuth (Bi)-Total			97.4		%		70-130	02-OCT-19
Boron (B)-Total			95.9		%		70-130	02-OCT-19
Cadmium (Cd)-Total			98.9		%		70-130	02-OCT-19
Calcium (Ca)-Total			98.1		%		70-130	02-OCT-19
Chromium (Cr)-Total			99.9		%		70-130	02-OCT-19
Cesium (Cs)-Total			95.8		%		70-130	02-OCT-19
Cobalt (Co)-Total			98.8		%		70-130	02-OCT-19
Copper (Cu)-Total			99.3		%		70-130	02-OCT-19



Workorder: L2356892 Report Date: 21-OCT-19 Page 7 of 13

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4854170								
WG3179173-5 MS		WG3179173-3						
Iron (Fe)-Total			98.4		%		70-130	02-OCT-19
Lead (Pb)-Total			101.9		%		70-130	02-OCT-19
Lithium (Li)-Total			97.7		%		70-130	02-OCT-19
Magnesium (Mg)-Total			106.9		%		70-130	02-OCT-19
Manganese (Mn)-Total			103.3		%		70-130	02-OCT-19
Molybdenum (Mo)-Total			95.3		%		70-130	02-OCT-19
Nickel (Ni)-Total			97.5		%		70-130	02-OCT-19
Phosphorus (P)-Total			103.3		%		70-130	02-OCT-19
Potassium (K)-Total			98.3		%		70-130	02-OCT-19
Rubidium (Rb)-Total			100.8		%		70-130	02-OCT-19
Selenium (Se)-Total			100.3		%		70-130	02-OCT-19
Silicon (Si)-Total			99.4		%		70-130	02-OCT-19
Silver (Ag)-Total			96.2		%		70-130	02-OCT-19
Sodium (Na)-Total			105.7		%		70-130	02-OCT-19
Strontium (Sr)-Total			100.7		%		70-130	02-OCT-19
Sulfur (S)-Total			99.8		%		70-130	02-OCT-19
Thallium (TI)-Total			99.4		%		70-130	02-OCT-19
Tellurium (Te)-Total			93.3		%		70-130	02-OCT-19
Thorium (Th)-Total			95.3		%		70-130	02-OCT-19
Tin (Sn)-Total			96.3		%		70-130	02-OCT-19
Titanium (Ti)-Total			99.9		%		70-130	02-OCT-19
Tungsten (W)-Total			97.7		%		70-130	02-OCT-19
Uranium (U)-Total			94.6		%		70-130	02-OCT-19
Vanadium (V)-Total			101.3		%		70-130	02-OCT-19
Zinc (Zn)-Total			96.6		%		70-130	02-OCT-19
Zirconium (Zr)-Total			93.6		%		70-130	02-OCT-19
NH3-F-WT	Water							
Batch R4856571								
WG3179170-15 DUP		L2356892-2	0.615		,,	,		
Ammonia, Total (as N)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	02-OCT-19
WG3179170-19 DUP Ammonia, Total (as N)		L2356009-15 0.035	0.039		mg/L	11	20	02-OCT-19
WG3179170-14 LCS								
Ammonia, Total (as N)			101.2		%		85-115	02-OCT-19



Workorder: L2356892

Report Date: 21-OCT-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT	Water							
Batch R4856571								
WG3179170-18 LCS Ammonia, Total (as N)			103.1		%		85-115	02-OCT-19
WG3179170-13 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	02-OCT-19
WG3179170-17 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	02-OCT-19
WG3179170-16 MS Ammonia, Total (as N)		L2356892-2	99.2		%		75-125	02-OCT-19
WG3179170-20 MS Ammonia, Total (as N)		L2356009-15	91.7		%		75-125	02-OCT-19
NO3-IC-WT	Water							
Batch R4857755								
WG3179166-14 DUP Nitrate (as N)		WG3179166-1 3 2.43	3 2.42		mg/L	0.7	20	02-OCT-19
WG3179166-12 LCS Nitrate (as N)			101.2		%		90-110	02-OCT-19
WG3179166-11 MB Nitrate (as N)			<0.020		mg/L		0.02	02-OCT-19
WG3179166-15 MS Nitrate (as N)		WG3179166-1	3 97.4		%		75-125	02-OCT-19
P-T-COL-WT	Water							
Batch R4858093								
WG3180097-3 DUP Phosphorus, Total		L2355119-2 0.0119	0.0092	J	mg/L	0.0027	0.006	03-OCT-19
WG3180097-2 LCS Phosphorus, Total			97.0		%		80-120	03-OCT-19
WG3180097-1 MB Phosphorus, Total			<0.0030		mg/L		0.003	03-OCT-19
WG3180097-4 MS Phosphorus, Total		L2355119-2	105.2		%		70-130	03-OCT-19
PH-BF	Water							
Batch R4851198								
WG3177985-2 DUP pH		L2356874-1 7.16	7.16	J	pH units	0.00	0.2	01-OCT-19
WG3177985-1 LCS pH			7.01		pH units		6.9-7.1	01-OCT-19
PH-WT	Water							



Workorder: L2356892

Report Date: 21-OCT-19

Page 9 of 13

Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH-WT	Water							
Batch R4857597								
WG3179309-4 DUP pH		WG3179309-3 7.26	7.23	J	pH units	0.03	0.2	02-OCT-19
WG3179309-2 LCS pH			7.01		pH units		6.9-7.1	02-OCT-19
SO4-IC-N-WT	Water							
Batch R4857755								
WG3179166-14 DUP Sulfate (SO4)		WG3179166-1 : 56.4	3 56.5		mg/L	0.0	20	02-OCT-19
WG3179166-12 LCS Sulfate (SO4)			102.2		%		90-110	02-OCT-19
WG3179166-11 MB Sulfate (SO4)			<0.30		mg/L		0.3	02-OCT-19
WG3179166-15 MS Sulfate (SO4)		WG3179166-1	3 99.1		%		75-125	00 007 40
SOLIDS-TDS-BF	Water		99.1		76		75-125	02-OCT-19
Batch R4851401								
WG3178028-3 DUP Total Dissolved Solids		L2356940-1 3130	3180		mg/L	1.7	20	01-OCT-19
WG3178028-2 LCS Total Dissolved Solids			104.5		%		85-115	01-OCT-19
WG3178028-1 MB Total Dissolved Solids			<20		mg/L		20	01-OCT-19
SOLIDS-TDS-WT	Water							
Batch R4857823								
WG3179646-3 DUP Total Dissolved Solids		L2354869-2 275	276		mg/L	0.4	20	02-OCT-19
WG3179646-2 LCS Total Dissolved Solids			98.6		%		85-115	02-OCT-19
WG3179646-1 MB Total Dissolved Solids			<10		mg/L		10	02-OCT-19
SOLIDS-TSS-BF	Water							
Batch R4851221								
WG3178016-3 DUP Total Suspended Solids		L2356874-2 72.0	73.0		mg/L	1.4	25	01-OCT-19
WG3178016-2 LCS Total Suspended Solids			101.0		%		85-115	01-OCT-19
WG3178016-1 MB								



Qualifier

Workorder: L2356892

Result

Reference

Report Date: 21-OCT-19

RPD

Limit

Units

Page 10 of 13

Analyzed

Client:

Contact:

Test

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Matrix

	Matrix	11010101100	rtooun	- Cuanno	- Cimo			7 iliaiy20a
SOLIDS-TSS-BF	Water					_		
Batch R4851221 WG3178016-1 MB Total Suspended Solids			<2.0		mg/L		2	01-OCT-19
SOLIDS-TSS-WT	Water							
Batch R4857622 WG3179644-3 DUP Total Suspended Solids		L2355710-11 386	404		mg/L	4.6	20	03-OCT-19
WG3179644-2 LCS Total Suspended Solids			100.5		%		85-115	03-OCT-19
WG3179644-1 MB Total Suspended Solids			<2.0		mg/L		2	03-OCT-19
TKN-WT	Water							
Batch R4858209								
WG3179864-3 DUP Total Kjeldahl Nitrogen		WG3179864-5 0.50	0.57		mg/L	12	20	03-OCT-19
WG3179864-2 LCS Total Kjeldahl Nitrogen			95.2		%		75-125	03-OCT-19
WG3179864-1 MB Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	03-OCT-19
WG3179864-4 MS Total Kjeldahl Nitrogen		WG3179864-5	99.3		%		70-130	03-OCT-19
TOC-WT	Water							
Batch R4855629 WG3179001-3 DUP Total Organic Carbon		L2353445-1 4.68	4.62		mg/L	1.3	20	02-OCT-19
WG3179001-2 LCS Total Organic Carbon			106.1		%		80-120	02-OCT-19
WG3179001-1 MB Total Organic Carbon			<0.50		mg/L		0.5	02-OCT-19
WG3179001-4 MS Total Organic Carbon		L2353445-1	94.0		%		70-130	02-OCT-19
TURBIDITY-BF	Water							
Batch R4851213 WG3177999-3 DUP Turbidity		L2356874-1 14.2	13.9		NTU	2.1	15	01-OCT-19
WG3177999-2 LCS Turbidity			114.0		%		85-115	01-OCT-19



Workorder: L2356892

Report Date: 21-OCT-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-BF		Water							_
	851213 MB			<0.10		NTU		0.1	01-OCT-19
TURBIDITY-WT		Water							
Batch R48	858080								
WG3180753-3	DUP		L2358675-2						
Turbidity			8.40	8.64		NTU	2.8	15	03-OCT-19
WG3180753-2 Turbidity	LCS			103.0		%		85-115	03-OCT-19
WG3180753-1 Turbidity	MB			<0.10		NTU		0.1	03-OCT-19

Workorder: L2356892 Report Date: 21-OCT-19

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

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

ALS Control Limit (Data Quality Objectives) Limit DUP **Duplicate** RPD Relative Percent Difference N/A Not Available LCS Laboratory Control Sample SRM Standard Reference Material MS Matrix Spike Matrix Spike Duplicate MSD Average Desorption Efficiency ADE MB Method Blank Internal Reference Material IRM

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.

Workorder: L2356892 Report Date: 21-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Page 13 of 13

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Turbidity							
	2	30-SEP-19 09:20	03-OCT-19 14:30	48	77	hours	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 L2356892 were received on 30-SEP-19 15:00.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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



Ft. Collins, Colorado LIMS Version: 6.914 Page 1 of 1

Friday, October 18, 2019

Rick Hawthorne
ALS Environmental
60 Northland Rd, Unit 1
Waterloo Canada, ON N2V 2B8

Re: ALS Workorder: 1910087

Project Name:

Project Number: L2356892

Dear Mr. Hawthorne:

Two water samples were received from ALS Environmental, on 10/3/2019. The samples were scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental

Katie M. OBrien

Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environme	ntal – Fort Collins
7.20	
Accreditation Body	License or Certification Number
AIHA	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1910087

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1910087

Client Name: ALS Environmental

Client Project Name:

Client Project Number: L2356892 Client PO Number: L2356892

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L2356892-1	1910087-1		WATER	30-Sep-19	
L2356892-2	1910087-2		WATER	30-Sep-19	





Subcontract Request Form

1910087

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA

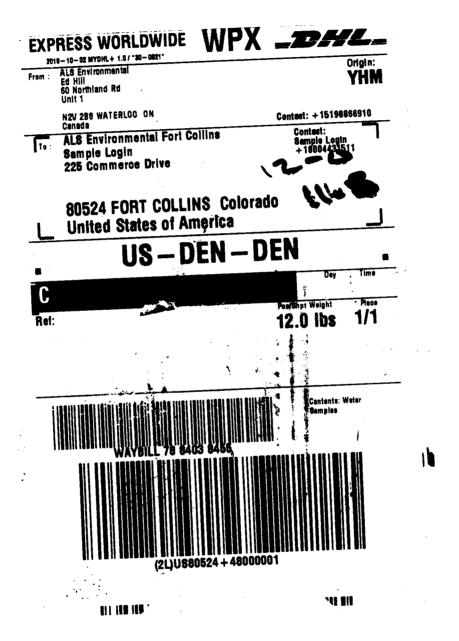
225 COMMERCE DRIVE FORT COLLINS, CO 80524

	I report and invoice: PO# <u>L235</u> be provided with your final result	56892 s.	
Please see enclosed 2 san	nple(s) in 2 Container(s)		
SAMPLE NUMBER ANALYTI	ICAL REQUIRED	DATE SAMPLED DUE DATE	Priority Flag
L2356892-1 MS-08 Ra226 by	Alpha Scint, MDC=0.01 Bq/L (RA226-	9/ 30/ 2019 MMER-FC 1) 10/22/2019	E
L2356892-2 MS-0802 Ra226 by	Alpha Scint, MDC=0.01 Bg/L (RA226-	9/ 30/ 2019 MMER-FC 1) 10/22/2019	E
Subcontract Info Contact: Analysis and reporting info contact:	Mary-Lynn Pike (519) 886-6910 Rick Hawthorne 60 NORTHLAND ROAD, UNIT 1 WATERLOO,ON N2V 2B8 Phone: (519) 886-6910) Email: Rick.Hawthorne@als	salohal com
Please email confirmation of rece	•	e@alsglobal.com	igiobal.com
Shipped By: Received By: Verified By:	Date Shipped: Date Received: Date Verified: Temperature:	10.03.19 1005	
Sample Integrity Issues:			



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

(ALS	Client: Al	Shalatarla	`	Workorder No:	191	008	(7	
Proje	ct Manager:	KMO		Initials:	Date	10.03	.19	_
□ Are airb	ills / shipping doci	ments present and/or r	emovable?			DROP OFF	(YES)	NO NO
		oing containers intact?				NONE)	YES	NO *
3. Are cust	ody seals on samp	le containers intact?			- ,	MONE	YES	NO*
4. Is there a	a COC (chain-of-c	ustody) present?					(YES)	NO *
	OC in agreement we equested analyses.	ith samples received? etc.)	(IDs, dates, t	times, # of samples	s, # of cont	ainers,	(ES)	NO *
6. Are shor	t-hold samples pre	esent?					YES	NÓ
7. Are all s	amples within hole	ding times for the reque	sted analys	es?			(YES)	NO *
8. Were all	sample containers	received intact? (not l	broken or le	eaking)			YES	NO *
9. Is there s	sufficient sample f	or the requested analyse	es?				YES	NO *
10. Are all s	amples in the prop	er containers for the re-	quested ana	lyses?			YES	NO *
□ Are all a	queous samples pi	reserved correctly, if rec	quired? (exc	cluding volatiles)		N/A	(YES)	NO *
12. Are all a	queous non-preser	ved samples pH 4-9?				N/A	YES	NO *
Are all s > 6 mm (amples requiring r	o headspace (VOC, GF r? (i.e. size of green pea	RO, RSK/M a)	EE, radon) free or	f bubbles	N/A	YES	NO
14. Were the	samples shipped	on ice?					(YES)	NO
15. Were co	oler temperatures	measured at 0.1-6.0°C?	IR gun used*:	#1 #3	#4	RAD	YES	NO
DOT Survey/ Acceptance Information	No. of custody s External Background	Cooler #: Inperature (°C): I	OT acceptance of	riteria ⁹ VES/NO/N	SA (If no see	Form (08)		
		NO responses to gray box					inue w/ log	gin.
	was the client contacte	d? YES/NO/NA Contact		ttle ID's vs ALS	lab ID's d	ouble-che _ Date/Tin		Ew



SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 18-Oct-19

 Project:
 L2356892
 Work Order:
 1910087

 Sample ID:
 L2356892-1
 Lab ID:
 1910087-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 9/30/2019 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Ema	nation - Method 903.1	SOF	P 783	Prep	Date: 10/8/2019	PrepBy: TRW
Ra-226	0.0047 (+/- 0.0045)	Y1,U	0.0068	BQ/I	NA	10/17/2019 14:05
Carr: BARIUM	100	Y1	40-110	%REC	DL = NA	10/17/2019 14:05

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 18-Oct-19

 Project:
 L2356892
 Work Order:
 1910087

 Sample ID:
 L2356892-2
 Lab ID:
 1910087-2

Legal Location: Matrix: WATER

Collection Date: 9/30/2019 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Ema	nation - Method 903.1	SO	P 783	Prep	Date: 10/8/2019	PrepBy: TRW
Ra-226	0.018 (+/- 0.0082)	Y1	0.0078	BQ/I	NA	10/17/2019 14:05
Carr: BARIUM	100	Y1	40-110	%REC	DL = NA	10/17/2019 14:05

AR Page 2 of 3 **9 of 11**

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 18-Oct-19

Project: L2356892 **Work Order:** 1910087

Sample ID: L2356892-2 Lab ID: 1910087-2 Legal Location: Matrix: WATER

Collection Date: 9/30/2019 Percent Moisture:

Analyses Result Qual Limit Units Factor Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested

MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:

- gasoline

- JP-8

dieselmineral spirits

mineral spirits
 motor oil

- Stoddard solvent

- bunker C

Client: ALS Environmental

Work Order: 1910087 **Project:** L2356892

Date: 10/18/2019 11:1

QC BATCH REPORT

Batch ID: R	RE191008-2-1	lr	nstrument ID Alp	ha Scin		Method: I	Radium-226	by Rad	lon Emanation						
LCS	Sample ID:	RE191008-2				l	Jnits: BQ/I		Analys	s Date: 1	e: 10/17/2019 14:40				
Client ID:			Run II	D: RE191008 -	-2A				Prep Date: 10/8	/2019	DF: NA				
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual		
Ra-226			1.58 (+/- 0.393)	0.0155	1.72		91.6	67-120)				P,Y1,M3		
Carr: BARII	UM		16500		16380		101	40-110	1				Y1		
LCSD	Sample ID:	RE191008-2				l	Jnits: BQ/I		Analys	s Date: 1	0/17/20	19 14:4	10		
Client ID:			Run II	D: RE191008 -	-2A				Prep Date: 10/8	/8/2019		Date: 10/8/2019 DF: NA		NA	
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual		
Ra-226			1.49 (+/- 0.373)	0.0178	1.72		86.7	67-120)	1.58	0.2	2.1	P,Y1,M3		
Carr: BARII	UM		16500		16390		101	40-110)	16500			Y1		
МВ	Sample ID:	RE191008-2				l	Jnits: BQ/I		Analys	s Date: 1	0/17/20	19 14:4	10		
Client ID:			Run II	: RE191008 -	-2A				Prep Date: 10/8	/2019	DF:	NA			
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual		
Ra-226			0.0023 (+/- 0.0027)	0.0041									Y1,U		
Carr: BARII	UM		16600		16380		102	40-110)				Y1		
The follow	ving samples	were analyzed	d in this batch:	1910	087-1	19100	087-2								

Environmental

Chain of Custody (COC) / Analytical Request Form

Page	1 of	1

(ALS)	Environ	menta	[¶] Can	ada Tol	ll Free: 1 800 6	68 9878															
	www.aisglobal.com						L2	356892-COF	-0												
Report To	Contact and compa	ny name below will a	appear on the final rep	ort		Report Fo						_							s will apply		
Company:	Baffinland Iron Mines (Corp.			Select Report F	ormat: 🖸 PDF	☑ EXCEL ☑ ED	D (DIGITAL)	<u></u>	Ke	guiar į	rj 🗆	Stand	ard TAT	if recei				days - no s		
Contact:	Wiliam Bowden and Co	nnor Devereaux			Quality Control	(QC) Report with R	eport 🗹 YES	□ NO	Èâ	4	day [P4	[]			ķ	1 B	usine	ss day	(E1)		
Phone:	647-253-0596 EXT 60	16			☐ Compare Result	s to Criteria on Report -			PRIORITY (Business Da)	3	day [P3	_			ERGE				kend or		2
	Company address below	will appear on the fir	nal report		Select Distributi		MAIL D	AX			day [P2				E	S	tatuto	ry holid	lay [E0]		
Street:	2275 Upper Middle Rd	. E., Suite #300			Email 1 or Fax	bimcore@alsglob	al.com				nd Time I				_						
City/Province:	Oakville, ON				Email 2				For tes	ts that c	an not be	performed	accor	ding to t	he servi	ice level	selecte	d, you will	l be contact	.ed.	
Postal Code:	L6H 0C3				Email 3										<u> </u>	is Rec	<u> </u>				
Invoice To	Same as Report To	☑ YES	□ NO			Invoice Di	stribution		ļ	Indic	cate Filter	ed (F), P	reserv	ed (P) o	r Filten	ad and	Preserv	ed (F/P)	wolec		
	Copy of Invoice with Re	port	☑ NO		Select Invoice D	Distribution: 🛭 EM	AIL MAIL C] FAX	F/P							ightharpoonup			$\sqcup \!\!\!\! \perp$	_	
Company:					Email 1 or Fax	ap@baffinland.co	m		1								- 1			- 1	
Contact:					Email 2	commercial@baff	nland.com		1										1 1	- 1	S.
	Project	Information			Oi	l and Gas Require	d Fields (client	use)	1						1				1 1	- 1	aj.
ALS Account #	/ Quote #:	23642 /Q42455			AFE/Cost Center:		PO#		1												Number of Containers
Job #:	MS-08 Eff Characteriza	tion			Major/Minor Code:		Routing Code:]								- 1	1		ı	Ģ O
PO / AFE:	4500057496				Requisitioner:				1	1					l				1 1		ber
LSD:					Location:] [- 1						1 1		<u> </u>
ALS Lab Wor	rk Order# (lab use on	n 123	35680	Q	ALS Contact:		Sampler:	KB/AZ	BIM-MMER-EF	, n											2
ALS Sample #	Sar	nple Identificati	on and/or Coordi	nates		Date	Time	Comple Tors	Į≨	Ě				- 1				-1	1		
(lab use only)	(ті	nis description wi	ill appear on the re	eport)		(dd-mmm-yy)	(hh:mm)	Sample Type	I ₩	Cyanide								\perp			
	MS-08		1. 1. 1.			30-Sep-19	9:20	Water	E0	E0											8
	MS-0802					30-Sep-19	9:20	Water	E0	E0			Ī				\top				8
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			Special Instruct	None (Co	acifu Critoria to a	dd on report by clic	king on the drop	down liet below	 			SAMPL	E CO	NDITI	ON A	SREC	SEIVE	D (lab	use only		
Drinking	Water (DW) Samples ¹	(client use)	Special ilistruct	uons / Sp		tronic COC only)	king on the grop	down hat below	Froze	n	_	П				bserva		Yes		No	
Are samples tak	en from a Regulated DW	System?					4.		Ice P	acks		Ice Cut	oes		Custo	dy sea	al intac	t Yes		No	
	S . ☑ NO								Cooli	ng Initi							_				
Are samples for	human drinking water us	se?								INIIT	AL COO	ER TEM	PERA	TURES	℃	\dashv		NAL COC	DLER TEM	PERAT	URES °C
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	SHIPMENT RE	LEASE (client us	se)			INITIAL SHIPMEN	IT RECEPTION	(lab use only)					FIN	AL SH	IPME	NT R	ECEP	TION (I	ab use o	nly)	
Released By: Ke	endra Button	Date: 30-Sep-19)	Time:	Received by:		Date:		Time:	-	Receiv	ved by:			10	Ī)ate:	00	e f	$G \mid ^{!}$	9.15
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Baffinland Iron Mine's Corporation (Oakville)

ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 01-OCT-19

Report Date: 24-OCT-19 13:49 (MT)

Version: FINAL REV. 2

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2356925 Project P.O. #: 4500057496

Job Reference: MS-08 REFERENCE AND EXPOSURE

C of C Numbers: Legal Site Desc:

Comments: ADDITIONAL 02-OCT-19 09:49

24-OCT-2019 With Full Package reporting

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



L2356925 CONTD....
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Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch	
L2356925-1 MS-08-DS Sampled By: AZ/LM on 30-SEP-19 @ 12:50 Matrix: WATER								
Physical Tests								
Conductivity	170		3.0	umhos/cm		05-OCT-19	R4860539	
Hardness (as CaCO3)	73.2	HTC	0.50	mg/L		04-OCT-19		
рН	7.94		0.10	pH units		01-OCT-19	R4851198	
Total Suspended Solids	3.2		2.0	mg/L		01-OCT-19	R4851221	
Total Dissolved Solids	96		20	mg/L		01-OCT-19	R4851401	
Turbidity	3.38		0.10	NTU		01-OCT-19	R4851213	
Anions and Nutrients								
Alkalinity, Total (as CaCO3)	72		10	mg/L		05-OCT-19	R4860539	
Ammonia, Total (as N)	0.013		0.010	mg/L		07-OCT-19	R4860725	
Chloride (CI)	6.98		0.50	mg/L		04-OCT-19	R4859139	
Fluoride (F)	0.025		0.020	mg/L		04-OCT-19	R4859139	
Nitrate (as N)	0.074		0.020	mg/L		04-OCT-19	R4859139	
Total Kjeldahl Nitrogen	<0.15		0.15	mg/L	07-OCT-19	07-OCT-19	R4860925	
Phosphorus, Total	0.0073		0.0030	mg/L	04-OCT-19	07-OCT-19	R4860606	
Sulfate (SO4)	6.80		0.30	mg/L		04-OCT-19	R4859139	
Organic / Inorganic Carbon								
Dissolved Carbon Filtration Location	LAB					04-OCT-19	R4859597	
Dissolved Organic Carbon	2.31		0.50	mg/L	04-OCT-19	07-OCT-19	R4860638	
Total Organic Carbon	2.42		0.50	mg/L		07-OCT-19	R4860639	
Total Metals								
Aluminum (AI)-Total	0.144		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Arsenic (As)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Barium (Ba)-Total	0.00999		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Boron (B)-Total	<0.010		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Calcium (Ca)-Total	14.7		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Cesium (Cs)-Total	0.000019		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Copper (Cu)-Total	0.0012		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Iron (Fe)-Total	0.140		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Lead (Pb)-Total	0.000128		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Lithium (Li)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637	
Magnesium (Mg)-Total	8.88		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Manganese (Mn)-Total	0.00469		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		07-OCT-19	R4860448	
Molybdenum (Mo)-Total	0.000286		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Nickel (Ni)-Total	0.00072		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637	
Phosphorus (P)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637	

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356925-1 MS-08-DS Sampled By: AZ/LM on 30-SEP-19 @ 12:50 Matrix: WATER							
Total Metals							
Potassium (K)-Total	1.01		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Rubidium (Rb)-Total	0.00156		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Selenium (Se)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Silicon (Si)-Total	1.26		0.10	mg/L	04-OCT-19	04-OCT-19	R4859637
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Sodium (Na)-Total	2.95		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Strontium (Sr)-Total	0.0147		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Sulfur (S)-Total	2.38		0.50	mg/L	04-OCT-19	04-OCT-19	R4859637
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Thallium (TI)-Total	<0.000010		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Thorium (Th)-Total	0.00012		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Titanium (Ti)-Total	0.00799		0.00030	mg/L	04-OCT-19	04-OCT-19	R4859637
Tungsten (W)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Uranium (U)-Total	0.00331		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Vanadium (V)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	04-OCT-19	04-OCT-19	R4859637
Zirconium (Zr)-Total	0.00031		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Dissolved Metals			0.00020				
Dissolved Mercury Filtration Location	FIELD					04-OCT-19	R4859193
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	04-OCT-19	07-OCT-19	R4860451
Radiological Parameters							
Ra-226	<0.0080		0.0080	Bq/L	10-OCT-19	21-OCT-19	R4851666
L2356925-2 MS-08-US Sampled By: AZ/LM on 30-SEP-19 @ 13:20 Matrix: WATER							
Physical Tests							
Conductivity	167		3.0	umhos/cm		05-OCT-19	R4860539
Hardness (as CaCO3)	72.2	HTC	0.50	mg/L		04-OCT-19	
рН	7.97		0.10	pH units		01-OCT-19	R4851198
Total Suspended Solids	2.4		2.0	mg/L		01-OCT-19	R4851221
Total Dissolved Solids	107		20	mg/L		01-OCT-19	R4851401
Turbidity	3.32		0.10	NTU		01-OCT-19	R4851213
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	73		10	mg/L		05-OCT-19	R4860539
Ammonia, Total (as N)	<0.010		0.010	mg/L		07-OCT-19	R4860725
Chloride (CI)	7.20		0.50	mg/L		04-OCT-19	R4859139
Fluoride (F)	0.027		0.020	mg/L		04-OCT-19	R4859139
Nitrate (as N)	0.074		0.020	mg/L		04-OCT-19	R4859139
Total Kjeldahl Nitrogen	<0.15		0.15	mg/L	07-OCT-19	07-OCT-19	R4860925
Phosphorus, Total	0.0084		0.0030	mg/L	04-OCT-19	07-OCT-19	R4860606
Sulfate (SO4)	4.48		0.30	mg/L		04-OCT-19	R4859139

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356925-2 MS-08-US Sampled By: AZ/LM on 30-SEP-19 @ 13:20 Matrix: WATER							
Anions and Nutrients Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					04-OCT-19	R4859597
Dissolved Organic Carbon	2.24		0.50	mg/L	04-OCT-19	07-OCT-19	R4860638
Total Organic Carbon	2.47		0.50	mg/L		07-OCT-19	R4860639
Total Metals	2		0.00	9, =			
Aluminum (Al)-Total	0.123		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Arsenic (As)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Barium (Ba)-Total	0.0102		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Boron (B)-Total	<0.010		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Calcium (Ca)-Total	14.7		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Cesium (Cs)-Total	0.000019		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Copper (Cu)-Total	0.0011		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Iron (Fe)-Total	0.121		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Lead (Pb)-Total	0.000099		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Lithium (Li)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Magnesium (Mg)-Total	8.62		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Manganese (Mn)-Total	0.00215		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		07-OCT-19	R4860448
Molybdenum (Mo)-Total	0.000289		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Nickel (Ni)-Total	0.00055		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Phosphorus (P)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Potassium (K)-Total	1.02		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Rubidium (Rb)-Total	0.00151		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Selenium (Se)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Silicon (Si)-Total	1.24		0.10	mg/L	04-OCT-19	04-OCT-19	R4859637
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Sodium (Na)-Total	3.13		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Strontium (Sr)-Total	0.0148		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Sulfur (S)-Total	1.66		0.50	mg/L	04-OCT-19	04-OCT-19	R4859637
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Thallium (TI)-Total	<0.000010		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Thorium (Th)-Total	0.00013		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Titanium (Ti)-Total	0.00718		0.00030	mg/L	04-OCT-19	04-OCT-19	R4859637
Tungsten (W)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356925-2 MS-08-US Sampled By: AZ/LM on 30-SEP-19 @ 13:20 Matrix: WATER							
Total Metals							
Uranium (U)-Total	0.00358		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Vanadium (V)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	04-OCT-19	04-OCT-19	1
Zirconium (Zr)-Total	0.00034		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					04-OCT-19	R4859193
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-OCT-19	07-OCT-19	R4860451
Radiological Parameters							
Ra-226	<0.0069		0.0069	Bq/L	10-OCT-19	21-OCT-19	R4851666
L2356925-3 MS-08-US02 Sampled By: AZ/LM on 30-SEP-19 @ 13:20 Matrix: WATER							
Physical Tests							
Conductivity	<3.0		3.0	umhos/cm		05-OCT-19	R4860539
Hardness (as CaCO3)	<0.50	HTC	0.50	mg/L		04-OCT-19	
рН	6.13		0.10	pH units		01-OCT-19	
Total Suspended Solids	<2.0		2.0	mg/L		01-OCT-19	R4851221
Total Dissolved Solids	24		20	mg/L		01-OCT-19	R4851401
Turbidity	<0.10		0.10	NTU		01-OCT-19	R4851213
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	<10		10	mg/L		05-OCT-19	
Ammonia, Total (as N)	<0.010		0.010	mg/L		07-OCT-19	R4860725
Chloride (CI)	<0.50		0.50	mg/L		04-OCT-19	R4859139
Fluoride (F)	<0.020		0.020	mg/L		04-OCT-19	R4859139
Nitrate (as N)	<0.020		0.020	mg/L		04-OCT-19	R4859139
Total Kjeldahl Nitrogen	<0.15		0.15	mg/L	07-OCT-19	07-OCT-19	R4860925
Phosphorus, Total	<0.0030		0.0030	mg/L	04-OCT-19	07-OCT-19	
Sulfate (SO4)	<0.30		0.30	mg/L		04-OCT-19	R4859139
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					04-OCT-19	R4859597
Dissolved Organic Carbon	<0.50		0.50	mg/L	04-OCT-19	07-OCT-19	R4860638
Total Organic Carbon	0.72		0.50	mg/L		07-OCT-19	R4860639
Total Metals					04 00T 40	04.007.40	
Aluminum (Al)-Total	<0.0050		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	04-OCT-19		R4859637
Arsenic (As)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Barium (Ba)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Boron (B)-Total	<0.010		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Cadmium (Cd)-Total	<0.000050		0.0000050	mg/L	04-OCT-19		R4859637
Calcium (Ca)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637

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

L2356925 CONTD....
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Version: FINAL RE\

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2356925-3 MS-08-US02 Sampled By: AZ/LM on 30-SEP-19 @ 13:20 Matrix: WATER							
Total Metals							
Cesium (Cs)-Total	<0.000010		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Copper (Cu)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Iron (Fe)-Total	<0.010		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Lead (Pb)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Lithium (Li)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Magnesium (Mg)-Total	<0.0050		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Manganese (Mn)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		07-OCT-19	R4860448
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Phosphorus (P)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Potassium (K)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Rubidium (Rb)-Total	<0.00020		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Selenium (Se)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Silicon (Si)-Total	<0.10		0.10	mg/L	04-OCT-19	04-OCT-19	R4859637
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Sodium (Na)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Strontium (Sr)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Sulfur (S)-Total	<0.50		0.50	mg/L	04-OCT-19	04-OCT-19	R4859637
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Thallium (TI)-Total	<0.000010		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Thorium (Th)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Titanium (Ti)-Total	<0.00030		0.00030	mg/L	04-OCT-19	04-OCT-19	R4859637
Tungsten (W)-Total	<0.00010		0.00010	mg/L	04-OCT-19		R4859637
Uranium (U)-Total	<0.000010		0.000010	mg/L	04-OCT-19	04-OCT-19	
Vanadium (V)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	04-OCT-19	04-OCT-19	R4859637
Zirconium (Zr)-Total	<0.00020		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD				04.007.15		R4859193
Mercury (Hg)-Dissolved Radiological Parameters	<0.000050		0.0000050	mg/L	04-OCT-19	07-OCT-19	R4860451
Ra-226	<0.0066		0.0066	Bq/L	10-OCT-19	21-OCT-19	R4851666
				<u> </u>			

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

Reference Information

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QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Total	MS-B	L2356925-1, -2, -3
Matrix Spike	Iron (Fe)-Total	MS-B	L2356925-1, -2, -3
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2356925-1, -2, -3
Matrix Spike	Silicon (Si)-Total	MS-B	L2356925-1, -2, -3
Matrix Spike	Sodium (Na)-Total	MS-B	L2356925-1, -2, -3
Matrix Spike	Strontium (Sr)-Total	MS-B	L2356925-1, -2, -3
Matrix Spike	Uranium (U)-Total	MS-B	L2356925-1, -2, -3

Sample Parameter Qualifier key listed:

Qualifier	Description

HTC Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).

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

Test Method References:

ALS Test Code	S Test Code Matrix Test Description		Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
This analysis is carried colourimetric method.	out using pro	cedures adapted from EPA Method 310	.2 "Alkalinity". Total Alkalinity is determined using the methyl orange

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.

infrared detector.

EC-SCREEN-WT Water Conductivity Screen (Internal Use APHA 2510 Only)

Offig

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

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 EPA 1631E (mod)
CVAAS

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)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WT 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.

Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental

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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.

NO3-IC-WT Water Nitrate in Water by IC EPA 300.1 (mod)

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

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

Water samples are analyzed directly by a calibrated pH meter.

RA226-MMER-FC Water Ra226 by Alpha Scint, MDC=0.01 EPA 903.1

Bq/L

SO4-IC-N-WT 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-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D

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 the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the sample under defined conditions with the light scattered by the light scattered by the light scattered by the light scattered by the light scattered by the light scattered by the light scattered by the light scattere

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
FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, CANADA

Chain of Custody Numbers:

MS-08 REFERENCE AND EXPOSURE

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GLOSSARY OF REPORT TERMS

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

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

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

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2356925 Report Date: 24-OCT-19 Page 1 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT Water	r						
Batch R4860539							
WG3183018-4 DUP	WG3183018-3	}					
Alkalinity, Total (as CaCO3)	<10	<10	RPD-NA	mg/L	N/A	20	05-OCT-19
WG3183018-2 LCS							
Alkalinity, Total (as CaCO3)		105.3		%		85-115	05-OCT-19
WG3183018-1 MB							
Alkalinity, Total (as CaCO3)		<10		mg/L		10	05-OCT-19
CL-IC-N-WT Water	r						
Batch R4859139							
WG3181734-24 DUP	WG3181734-2	:3					
Chloride (CI)	6.98	6.98		mg/L	0.0	20	04-OCT-19
WG3181734-22 LCS							
Chloride (CI)		102.1		%		90-110	04-OCT-19
WG3181734-21 MB							
Chloride (CI)		<0.50		mg/L		0.5	04-OCT-19
WG3181734-25 MS	WG3181734-2	:3					
Chloride (CI)		100.1		%		75-125	04-OCT-19
DOC-WT Water	r						
Batch R4860638							
WG3182797-3 DUP	L2356925-1						
Dissolved Organic Carbon	2.31	2.05		mg/L	12	20	07-OCT-19
WG3182797-2 LCS							
Dissolved Organic Carbon		107.3		%		80-120	07-OCT-19
WG3182797-1 MB							
Dissolved Organic Carbon		<0.50		mg/L		0.5	07-OCT-19
WG3182797-4 MS	L2356925-1						
Dissolved Organic Carbon		102.6		%		70-130	07-OCT-19
EC-WT Water	r						
Batch R4860539							
WG3183018-4 DUP	WG3183018-3	;					
Conductivity	<3.0	<3.0	RPD-NA	umhos/cm	N/A	10	05-OCT-19
WG3183018-2 LCS							
Conductivity		100.5		%		90-110	05-OCT-19
WG3183018-1 MB						·· ·	
Conductivity		<3.0		umhos/cm		3	05-OCT-19
F-IC-N-WT Water	r						



Quality Control Report

Workorder: L2356925 Report Date: 24-OCT-19 Page 2 of 12

Baffinland Iron Mine's Corporation (Oakville) Client:

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WT	Water							
Batch R4859139								
WG3181734-24 DUP Fluoride (F)		WG3181734-2 3 0.025	3 0.025		mg/L	0.1	20	04-OCT-19
WG3181734-22 LCS Fluoride (F)			103.8		%		90-110	04-OCT-19
WG3181734-21 MB Fluoride (F)			<0.020		mg/L		0.02	04-OCT-19
WG3181734-25 MS Fluoride (F)		WG3181734-23	3 101.9		%		75-125	04-OCT-19
HG-D-CVAA-WT	Water							
Batch R4860451								
WG3182354-3 DUP Mercury (Hg)-Dissolved		L2357716-1 <0.0000050	<0.000005	C RPD-NA	mg/L	N/A	20	07-OCT-19
WG3182354-2 LCS Mercury (Hg)-Dissolved			99.8		%		80-120	07-OCT-19
WG3182354-1 MB Mercury (Hg)-Dissolved			<0.000005	С	mg/L		0.000005	07-OCT-19
WG3182354-4 MS Mercury (Hg)-Dissolved		L2357716-2	95.8		%		70-130	07-OCT-19
HG-T-CVAA-WT	Water							
Batch R4860448								
WG3182348-3 DUP Mercury (Hg)-Total		L2357716-1 <0.000050	<0.000005	C RPD-NA	mg/L	N/A	20	07-OCT-19
WG3182348-2 LCS Mercury (Hg)-Total			98.3		%		80-120	07-OCT-19
WG3182348-1 MB			-0.000005	C	ma/l		0.000005	07.007.15
Mercury (Hg)-Total			<0.000005	L	mg/L		0.000005	07-OCT-19
WG3182348-4 MS Mercury (Hg)-Total		L2357716-2	98.8		%		70-130	07-OCT-19
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-4 DUP Aluminum (Al)-Total		WG3182336-3 0.118	0.114		mg/L	3.4	20	04-OCT-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Barium (Ba)-Total		0.0112	0.0109		mg/L	2.4	20	04-OCT-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-OCT-19



Workorder: L2356925 Report Date: 24-OCT-19 Page 3 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-4 DUP Boron (B)-Total		WG3182336-3 < 0.010	<0.010	RPD-NA	mg/L	N/A	20	04-OCT-19
Cadmium (Cd)-Total		<0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	04-OCT-19
Calcium (Ca)-Total		16.5	16.5		mg/L	0.4	20	04-OCT-19
Chromium (Cr)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-OCT-19
Cesium (Cs)-Total		0.000014	0.000015		mg/L	4.3	20	04-OCT-19
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Copper (Cu)-Total		<0.0010	0.0010	RPD-NA	mg/L	N/A	20	04-OCT-19
Iron (Fe)-Total		0.117	0.115		mg/L	2.2	20	04-OCT-19
Lead (Pb)-Total		0.000077	0.000080		mg/L	4.1	20	04-OCT-19
Lithium (Li)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	04-OCT-19
Magnesium (Mg)-Total		10.2	10.1		mg/L	1.0	20	04-OCT-19
Manganese (Mn)-Total		0.00247	0.00246		mg/L	0.2	20	04-OCT-19
Molybdenum (Mo)-Total		0.000321	0.000323		mg/L	0.8	20	04-OCT-19
Nickel (Ni)-Total		0.00058	0.00057		mg/L	1.0	20	04-OCT-19
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	04-OCT-19
Potassium (K)-Total		1.09	1.09		mg/L	0.1	20	04-OCT-19
Rubidium (Rb)-Total		0.00154	0.00158		mg/L	2.1	20	04-OCT-19
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-OCT-19
Silicon (Si)-Total		1.26	1.29		mg/L	2.6	20	04-OCT-19
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-OCT-19
Sodium (Na)-Total		3.41	3.39		mg/L	0.5	20	04-OCT-19
Strontium (Sr)-Total		0.0167	0.0167		mg/L	0.2	20	04-OCT-19
Sulfur (S)-Total		2.64	2.70		mg/L	2.2	25	04-OCT-19
Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-OCT-19
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	04-OCT-19
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	25	04-OCT-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Titanium (Ti)-Total		0.00541	0.00550		mg/L	1.5	20	04-OCT-19
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Uranium (U)-Total		0.00415	0.00407		mg/L	2.0	20	04-OCT-19
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	04-OCT-19
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	04-OCT-19
Zirconium (Zr)-Total		0.00026	0.00028		mg/L			04-OCT-19



Workorder: L2356925 Report Date: 24-OCT-19 Page 4 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637	•							
WG3182336-4 DUP		WG3182336-						
Zirconium (Zr)-Total		0.00026	0.00028		mg/L	5.3	20	04-OCT-19
WG3182336-2 LCS Aluminum (Al)-Total			106.5		%		80-120	04-OCT-19
Antimony (Sb)-Total			103.5		%		80-120	04-OCT-19
Arsenic (As)-Total			100.9		%		80-120	04-OCT-19
Barium (Ba)-Total			104.0		%		80-120	04-OCT-19
Beryllium (Be)-Total			100.9		%		80-120	04-OCT-19
Bismuth (Bi)-Total			98.0		%		80-120	04-OCT-19
Boron (B)-Total			98.7		%		80-120	04-OCT-19
Cadmium (Cd)-Total			102.5		%		80-120	04-OCT-19
Calcium (Ca)-Total			100.1		%		80-120	04-OCT-19
Chromium (Cr)-Total			102.0		%		80-120	04-OCT-19
Cesium (Cs)-Total			99.3		%		80-120	04-OCT-19
Cobalt (Co)-Total			101.5		%		80-120	04-OCT-19
Copper (Cu)-Total			101.0		%		80-120	04-OCT-19
Iron (Fe)-Total			101.2		%		80-120	04-OCT-19
Lead (Pb)-Total			100.9		%		80-120	04-OCT-19
Lithium (Li)-Total			99.9		%		80-120	04-OCT-19
Magnesium (Mg)-Total			102.4		%		80-120	04-OCT-19
Manganese (Mn)-Total			102.1		%		80-120	04-OCT-19
Molybdenum (Mo)-Tota	al		101.4		%		80-120	04-OCT-19
Nickel (Ni)-Total			99.9		%		80-120	04-OCT-19
Phosphorus (P)-Total			106.9		%		70-130	04-OCT-19
Potassium (K)-Total			103.1		%		80-120	04-OCT-19
Rubidium (Rb)-Total			105.0		%		80-120	04-OCT-19
Selenium (Se)-Total			99.4		%		80-120	04-OCT-19
Silicon (Si)-Total			105.9		%		60-140	04-OCT-19
Silver (Ag)-Total			102.5		%		80-120	04-OCT-19
Sodium (Na)-Total			101.8		%		80-120	04-OCT-19
Strontium (Sr)-Total			102.1		%		80-120	04-OCT-19
Sulfur (S)-Total			102.9		%		80-120	04-OCT-19
Thallium (TI)-Total			99.3		%		80-120	04-OCT-19
Tellurium (Te)-Total			100.8		%		80-120	04-OCT-19
Thorium (Th)-Total			98.0		%		70-130	04-OCT-19



Workorder: L2356925 Report Date: 24-OCT-19 Page 5 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-2 LCS Tin (Sn)-Total			101.0		%		80-120	04-OCT-19
Titanium (Ti)-Total			98.3		%		80-120	04-OCT-19
Tungsten (W)-Total			100.5		%		80-120	04-OCT-19
Uranium (U)-Total			101.6		%		80-120	04-OCT-19
Vanadium (V)-Total			103.3		%		80-120	04-OCT-19
Zinc (Zn)-Total			99.2		%		80-120	04-OCT-19
Zirconium (Zr)-Total			101.2		%		80-120	04-OCT-19
WG3182336-1 MB			<0.0050		ma/l		0.005	04 007 40
Aluminum (Al)-Total			<0.0050		mg/L		0.005	04-OCT-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Arsenic (As)-Total Barium (Ba)-Total			<0.00010		mg/L mg/L		0.0001	04-OCT-19 04-OCT-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	
Bismuth (Bi)-Total			<0.00010		mg/L		0.0001	04-OCT-19 04-OCT-19
Boron (B)-Total			<0.010	O	mg/L		0.000	04-OCT-19
Cadmium (Cd)-Total			<0.00000	5(mg/L		0.000005	04-OCT-19
Calcium (Ca)-Total			<0.050	JC	mg/L		0.05	04-OCT-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Cesium (Cs)-Total			<0.00001		mg/L		0.00001	04-OCT-19
Cobalt (Co)-Total			<0.0001		mg/L		0.0001	04-OCT-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	04-OCT-19
Iron (Fe)-Total			<0.010		mg/L		0.01	04-OCT-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	04-OCT-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-OCT-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	04-OCT-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Molybdenum (Mo)-Total			<0.00005	0	mg/L		0.00005	04-OCT-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Phosphorus (P)-Total			<0.050		mg/L		0.05	04-OCT-19
Potassium (K)-Total			<0.050		mg/L		0.05	04-OCT-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	04-OCT-19
Selenium (Se)-Total			<0.00005	0	mg/L		0.00005	04-OCT-19
Silicon (Si)-Total			<0.10		mg/L		0.1	04-OCT-19
Silver (Ag)-Total			<0.00005	0	mg/L		0.00005	04-OCT-19



Workorder: L2356925 Report Date: 24-OCT-19 Page 6 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637 WG3182336-1 MB Sodium (Na)-Total			<0.050		mg/L		0.05	04-OCT-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	04-OCT-19
Sulfur (S)-Total			<0.50		mg/L		0.5	04-OCT-19
Thallium (TI)-Total			<0.0001	Λ	mg/L		0.00001	04-OCT-19
Tellurium (Te)-Total			<0.00001		mg/L		0.00001	04-OCT-19
Thorium (Th)-Total			<0.00020		mg/L		0.0002	
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Titanium (Ti)-Total			<0.00010		mg/L		0.0001	04-OCT-19 04-OCT-19
Tungsten (W)-Total			<0.00030		mg/L		0.0003	
Uranium (U)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Zinc (Zn)-Total			<0.0030		mg/L		0.0003	04-OCT-19 04-OCT-19
Zirconium (Zr)-Total			<0.0000		mg/L		0.0002	04-OCT-19
WG3182336-5 MS		WG3182336-			g, <u>_</u>		0.0002	04-001-19
Aluminum (Al)-Total		WG3102330-	90.4		%		70-130	04-OCT-19
Antimony (Sb)-Total			98.3		%		70-130	04-OCT-19
Arsenic (As)-Total			95.7		%		70-130	04-OCT-19
Barium (Ba)-Total			91.9		%		70-130	04-OCT-19
Beryllium (Be)-Total			94.8		%		70-130	04-OCT-19
Bismuth (Bi)-Total			90.8		%		70-130	04-OCT-19
Boron (B)-Total			92.9		%		70-130	04-OCT-19
Cadmium (Cd)-Total			94.9		%		70-130	04-OCT-19
Calcium (Ca)-Total			N/A	MS-B	%		-	04-OCT-19
Chromium (Cr)-Total			96.5		%		70-130	04-OCT-19
Cesium (Cs)-Total			95.9		%		70-130	04-OCT-19
Cobalt (Co)-Total			94.9		%		70-130	04-OCT-19
Copper (Cu)-Total			93.1		%		70-130	04-OCT-19
Iron (Fe)-Total			N/A	MS-B	%		-	04-OCT-19
Lead (Pb)-Total			94.3		%		70-130	04-OCT-19
Lithium (Li)-Total			91.4		%		70-130	04-OCT-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	04-OCT-19
Manganese (Mn)-Total			94.5		%		70-130	04-OCT-19
Molybdenum (Mo)-Tota	I		96.8		%		70-130	04-OCT-19
Nickel (Ni)-Total			93.1		%		70-130	04-OCT-19



Workorder: L2356925 Report Date: 24-OCT-19 Page 7 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-5 MS		WG3182336-6	1010		0/			
Phosphorus (P)-Total			104.2		%		70-130	04-OCT-19
Potassium (K)-Total			93.6		%		70-130	04-OCT-19
Rubidium (Rb)-Total			95.8		%		70-130	04-OCT-19
Selenium (Se)-Total			94.7		%		70-130	04-OCT-19
Silicon (Si)-Total			N/A	MS-B	%		-	04-OCT-19
Silver (Ag)-Total			95.9		%		70-130	04-OCT-19
Sodium (Na)-Total			N/A	MS-B	%		-	04-OCT-19
Strontium (Sr)-Total			N/A	MS-B	%		-	04-OCT-19
Sulfur (S)-Total			93.4		%		70-130	04-OCT-19
Thallium (TI)-Total			91.6		%		70-130	04-OCT-19
Tellurium (Te)-Total			91.9		%		70-130	04-OCT-19
Thorium (Th)-Total			95.1		%		70-130	04-OCT-19
Tin (Sn)-Total			96.3		%		70-130	04-OCT-19
Titanium (Ti)-Total			94.8		%		70-130	04-OCT-19
Tungsten (W)-Total			95.7		%		70-130	04-OCT-19
Uranium (U)-Total			N/A	MS-B	%		-	04-OCT-19
Vanadium (V)-Total			97.5		%		70-130	04-OCT-19
Zinc (Zn)-Total			90.2		%		70-130	04-OCT-19
Zirconium (Zr)-Total			93.6		%		70-130	04-OCT-19
NH3-F-WT	Water							
Batch R4860725								
WG3183728-3 DUP Ammonia, Total (as N)		L2357716-1 < 0.010	<0.010	RPD-NA	mg/L	N/A	20	07-OCT-19
WG3183728-2 LCS Ammonia, Total (as N)			99.9		%		85-115	07-OCT-19
WG3183728-1 MB			<0.010				0.01	
Ammonia, Total (as N) WG3183728-4 MS		L2357716-1	<0.010		mg/L		0.01	07-OCT-19
Ammonia, Total (as N)			104.4		%		75-125	07-OCT-19
NO3-IC-WT	Water							
Batch R4859139		W00404 7 04	_					
WG3181734-24 DUP Nitrate (as N)		WG3181734-2 3 0.073	3 0.074		mg/L	0.3	20	04-OCT-19
WG3181734-22 LCS					J	0.0		31 331 10
Nitrate (as N)			101.5				90-110	



Test

Quality Control Report

Qualifier

Workorder: L2356925 Report Date: 24-OCT-19 Page 8 of 12

Units

RPD

Limit

Analyzed

Client: Baffinland Iron Mine's Corporation (Oakville)

Matrix

2275 Upper Middle Rd. E. Suite #300

Reference

Result

Oakville ON L6H 0C3

	matrix	11010101100	rrooure	- Cuannoi	• · · · · · · · · · · · · · · · · · · ·	5		7 thaiy20a
NO3-IC-WT	Water							
Batch R4859139 WG3181734-22 LCS Nitrate (as N)			101.5		%		90-110	04-OCT-19
WG3181734-21 MB Nitrate (as N)			<0.020		mg/L		0.02	04-OCT-19
WG3181734-25 MS Nitrate (as N)		WG3181734-23	3 98.8		%		75-125	04-OCT-19
P-T-COL-WT	Water							
Batch R4860606 WG3182577-3 DUP Phosphorus, Total		L2356925-1 0.0073	0.0071		mg/L	3.3	20	07-OCT-19
WG3182577-2 LCS Phosphorus, Total			100.1		%		80-120	07-OCT-19
WG3182577-1 MB Phosphorus, Total			<0.0030		mg/L		0.003	07-OCT-19
WG3182577-4 MS Phosphorus, Total		L2356925-1	89.2		%		70-130	07-OCT-19
PH-BF	Water							
Batch R4851198 WG3177985-2 DUP pH		L2356874-1 7.16	7.16	J	pH units	0.00	0.2	01-OCT-19
WG3177985-1 LCS pH			7.01		pH units		6.9-7.1	01-OCT-19
SO4-IC-N-WT	Water							
Batch R4859139 WG3181734-24 DUP Sulfate (SO4)		WG3181734-23 6.79	3 6.80		mg/L	0.0	20	04-OCT-19
WG3181734-22 LCS Sulfate (SO4)			102.6		%		90-110	04-OCT-19
WG3181734-21 MB Sulfate (SO4)			<0.30		mg/L		0.3	04-OCT-19
WG3181734-25 MS Sulfate (SO4)		WG3181734-23	3 101.2		%		75-125	04-OCT-19
SOLIDS-TDS-BF	Water							
Batch R4851401 WG3178028-3 DUP Total Dissolved Solids WG3178028-2 LCS		L2356940-1 3130	3180		mg/L	1.7	20	01-OCT-19
1100110020-2 200								



Workorder: L2356925 Report Date: 24-OCT-19 Page 9 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-BF	Water							
Batch R4851401								
WG3178028-2 LCS Total Dissolved Solids			104.5		%		85-115	01-OCT-19
WG3178028-1 MB Total Dissolved Solids			<20		mg/L		20	01-OCT-19
SOLIDS-TSS-BF	Water							
Batch R4851221								
WG3178016-3 DUP Total Suspended Solids		L2356874-2 72.0	73.0		mg/L	1.4	25	01-OCT-19
WG3178016-2 LCS Total Suspended Solids			101.0		%		85-115	01-OCT-19
WG3178016-1 MB Total Suspended Solids			<2.0		mg/L		2	01-OCT-19
TKN-WT	Water							
Batch R4860925								
WG3183637-3 DUP Total Kjeldahl Nitrogen		L2357716-1 <0.15	<0.15	RPD-NA	mg/L	N/A	20	07-OCT-19
WG3183637-2 LCS Total Kjeldahl Nitrogen			100.3		%		75-125	07-OCT-19
WG3183637-1 MB Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	07-OCT-19
WG3183637-4 MS Total Kjeldahl Nitrogen		L2357716-1	88.9		%		70-130	07-OCT-19
TOC-WT	Water							
Batch R4860639								
WG3183590-3 DUP Total Organic Carbon		L2356925-1 2.42	2.45		mg/L	1.1	20	07-OCT-19
WG3183590-2 LCS Total Organic Carbon			106.7		%		80-120	07-OCT-19
WG3183590-1 MB Total Organic Carbon			<0.50		mg/L		0.5	07-OCT-19
WG3183590-4 MS Total Organic Carbon		L2356925-1	101.6		%		70-130	07-OCT-19
TURBIDITY-BF	Water							
Batch R4851213								
WG3177999-3 DUP Turbidity		L2356874-1 14.2	13.9		NTU	2.1	15	01-OCT-19
WG3177999-2 LCS								



Workorder: L2356925 Report Date: 24-OCT-19 Page 10 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-BF	Water							
Batch R4851213 WG3177999-2 LCS Turbidity			114.0		%		85-115	01-OCT-19
WG3177999-1 MB Turbidity			<0.10		NTU		0.1	01-OCT-19

Workorder: L2356925 Report Date: 24-OCT-19

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

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

ALS Control Limit (Data Quality Objectives) Limit DUP **Duplicate** RPD Relative Percent Difference N/A Not Available LCS Laboratory Control Sample

SRM Standard Reference Material

MS Matrix Spike

Matrix Spike Duplicate MSD

ADE Average Desorption Efficiency

MB Method Blank

Internal Reference Material IRM 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.

Page 11 of 12

Workorder: L2356925 Report Date: 24-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Organic / Inorganic Carbon							
Dissolved Organic Carbon							
	1	30-SEP-19 12:50	04-OCT-19 18:00	3	4	days	EHT
	2	30-SEP-19 13:20	04-OCT-19 18:00	3	4	days	EHT
	3	30-SEP-19 13:20	04-OCT-19 18:00	3	4	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 L2356925 were received on 01-OCT-19 06:00.

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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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

Page 12 of 12



Ft. Collins, Colorado LIMS Version: 6.915 Page 1 of 1

Tuesday, October 22, 2019

Rick Hawthorne
ALS Environmental
60 Northland Rd, Unit 1
Waterloo Canada, ON N2V 2B8

Re: ALS Workorder: 1910177

Project Name:

Project Number: L2356925

Dear Mr. Hawthorne:

Three water samples were received from ALS Environmental, on 10/8/2019. The samples were scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental Katie M. OBrien

Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALC Environmo	ntal Fart Callina
ALS ENVIORING	ntal – Fort Collins I
Accreditation Body	License or Certification Number
AIHA	
	214884
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1910177

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1910177

Client Name: ALS Environmental

Client Project Name:

Client Project Number: L2356925 Client PO Number: L2356925

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L2356925-1	1910177-1		WATER	30-Sep-19	
L2356925-2	1910177-2		WATER	30-Sep-19	
L2356925-3	1910177-3		WATER	30-Sep-19	





1200177

Subcontract Request Form

L2356925

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA

NOTES: Please reference on final report and invoice: PO#

225 COMMERCE DRIVE FORT COLLINS,CO 80524

Please see enclosed 3 sam	ple(s) in <u>3</u> Cor	ntainer(s)		
SAMPLE NUMBER ANALYTI	CAL REQUIRED	DATE SA	AMPLED DUE DATE	Priority Flag
L2356925-1 MS-08-DS Ra226 by	Alpha Scint, MDC=0.01 Bo	9/ 30/ 2 g/L (RA226-MMER-FC 1)	019 10/22/2019	E
L2356925-2 MS-08-US Ra226 by	Alpha Scint, MDC=0.01 Bo	9/ 30/ 2 q/L (RA226-MMER-FC 1)	019 10/22/2019	E
L2356925-3 MS-08-US02 Ra226 by	Alpha Scint, MDC=0.01 Be	9/ 30/ 2 q/L (RA226-MMER-FC 1)	019 10/22/2019	E
Subcontract Info Contact: Analysis and reporting info contact:	Mary-Lynn Pike (519) Rick Hawthorne 60 NORTHLAND ROAL WATERLOO,ON N2V 2 Phone: (519) 886-6	D, UNIT 1 2B8	د.Hawthorne@alsç	global.com
Please email confirmation of recei	pt to: Rick.l	lawthorne@alsgloba	l.com	
Shipped By: Received By:	$\overline{}$	Shipped:	(19 12.	.50
_	Data	Verified:		
Verified By:	Date	vermeu.		



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

	Client:	MSWa	+~~~ / c	0	Work	order No:	(ac	ハナラ	7	
Proje	ct Manager:	MS WA	ک		Initials	<u> 75</u> ~	Date:	rols	وارم	- -
1. Are airbi	ills / shippir	ng documents prese	nt and/or re	movable?				DROP OFF	YES	NO
2. Are cust	ody seals or	n shipping containe	rs intact?					NONE	YES	NO *
3. Are cust	ody seals or	n sample containers	intact?					NONE	YES	NO *
4. Is there a	COC (cha	in-of-custody) prese	ent?						YES	NO *
		ment with samples and salyses, etc.)	received? (IDs, dates, t	imes, # o	f samples,	# of conta	ainers,	(YES	NO *
6. Are shor	t-hold samp	oles present?							YES	(NO
7. Are all s	amples with	nin holding times fo	r the reques	sted analys	es?				YES	NO *
8. Were all	sample con	tainers received int	act? (not be	roken or le	aking)				YES	NO *
9. Is there s	ufficient sa	mple for the reques	ted analyse	s?					(YES	NO *
10. Are all sa	amples in th	ne proper containers	for the req	uested ana	lyses?				YES	NO *
II. Are all a	queous sam	ples preserved corre	ectly, if req	uired? (exc	luding v	olatiles)		N/A	YES	NO *
		niring no headspace iameter? (i.e. size o			EE, rado	on) free of t	oubbles	N/A	YES	NO
13. Were the	samples sh	ipped on ice?							YES	NO
14. Were coo	oler tempera	atures measured at (0.1-6.0°C?	IR gun used*:	#1	(#3)	#4	RAD	(YES)	NO
		Cooler #	\	usea .			H-1	Carci		
		Temperature (°C)	5.7							
	No. of cu	stody seals on cooler	<u> </u>							
DOT Survey/ Acceptance Information	E	xternal µR/hr reading:	12							
	Back	ground µR/hr reading:	\3							
Were externa	al μR/hr reading	gs ≤ two times background	and within DO	Γ acceptance c	riteria? 🗴	E\$ / NO / NA	(If no, see	Form 008.)		
* Please prov	ide details h	ere for NO responses	to gray boxe	es above - fo	r 2 thru	5 & 7 thru 1	2, notify P	M & con	tinue w/ lo	gin.
If applicable, v		contacted? YES / NO / I		client bot		vs ALS la	b ID's do	ouble-ch Date/Tir		". TEM

Form 201r28.xls (10/07/2019)

12-0

EXPRESS WORLDWIDE

2019-10-07 DCV83.0.1 / *12-140



80524 FORT COLLINS, UNITED STATES OF AMERICA

Origin: YHM

US - DEN - DEN

C

ay Tim

Date: 2019--10--07 Pce/Shpt Weight
./24.2 LB

Piece 1/1

Content Description Water Sample





(2L)U880524+48000001



(J) JD01 4600 0071 2459 3321

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 22-Oct-19

 Project:
 L2356925
 Work Order:
 1910177

 Sample ID:
 L2356925-1
 Lab ID:
 1910177-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 9/30/2019 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Emanation - Method 903.1		SO	P 783	Prep	Date: 10/10/2019	PrepBy: TRW
Ra-226	0.0066 (+/- 0.0056)	U	0.008	BQ/I	NA	10/21/2019 13:40
Carr: BARIUM	96.4		40-110	%REC	DL = NA	10/21/2019 13:40

AR Page 1 of 4 **8 of 12**

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 22-Oct-19

 Project:
 L2356925
 Work Order:
 1910177

 Sample ID:
 L2356925-2
 Lab ID:
 1910177-2

Legal Location: Matrix: WATER

Collection Date: 9/30/2019 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Em	anation - Method 903.1	SOF	783	Prep	Date: 10/10/2019	PrepBy: TRW
Ra-226	0.0047 (+/- 0.0047)	U	0.0069	BQ/I	NA	10/21/2019 13:40
Carr: BARIUM	94.3		40-110	%REC	DL = NA	10/21/2019 13:40

AR Page 2 of 4 9 of 12

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 22-Oct-19

 Project:
 L2356925
 Work Order:
 1910177

 Sample ID:
 L2356925-3
 Lab ID:
 1910177-3

Legal Location: Matrix: WATER

Collection Date: 9/30/2019 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Em	anation - Method 903.1	SOI	P 783	Prep	Date: 10/10/2019	PrepBy: TRW
Ra-226	0.00044 (+/- 0.0034)	U	0.0066	BQ/I	NA	10/21/2019 13:40
Carr: BARIUM	97.4		40-110	%REC	DL = NA	10/21/2019 13:40

AR Page 3 of 4 **10 of 12**

LIMS Version: 6.915

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 22-Oct-19

Project: L2356925 **Work Order:** 1910177

Sample ID: L2356925-3 Lab ID: 1910177-3
Legal Location: Matrix: WATER

Collection Date: 9/30/2019 Percent Moisture:

Analyses Result Qual Limit Units Factor Dilution

Report Dilution
Factor Date Analyzed

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested

MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.

E - Analyte concentration exceeds the upper level of the calibration range.

J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).

A - A tentatively identified compound is a suspected aldol-condensation product.

X - The analyte was diluted below an accurate quantitation level.

* - The spike recovery is equal to or outside the control criteria used.

+ - The relative percent difference (RPD) equals or exceeds the control criteria.

G - A pattern resembling gasoline was detected in this sample.

D - A pattern resembling diesel was detected in this sample

M - A pattern resembling motor oil was detected in this sample.

C - A pattern resembling crude oil was detected in this sample.

4 - A pattern resembling JP-4 was detected in this sample.

5 - A pattern resembling JP-5 was detected in this sample.

H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.

L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.

Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:

- gasoline

- JP-8

dieselmineral spirits

mineral spirits
 motor oil

- Stoddard solvent

- bunker C

Client: ALS Environmental

Work Order: 1910177 **Project:** L2356925

Date: 10/22/2019 12:5

QC BATCH REPORT

Batch ID: R	RE191010-1-1	Instrument ID Alp	ha Scin		Method: F	Radium-226	by Rade	on Emanation					
LCS	Sample ID: RE191010-1				Į	Jnits: BQ/I		Analys	is Date: 1	e: 10/21/2019 14:15			
Client ID:		Run II	D: RE191010 -	1A			1	Prep Date: 10/1	0/2019	DF:	NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual	
Ra-226		1.85 (+/- 0.461)	0.00675	1.72		108	67-120					Р	
Carr: BARI	UM	16800		17940		93.7	40-110						
LCSD	Sample ID: RE191010-1				Į	Jnits: BQ/I		Analys	is Date: 1	0/21/20	19 14:1	5	
Client ID:		Run II	D: RE191010 -	1A			I	Prep Date: 10/1	0/2019	DF:	NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual	
Ra-226		1.71 (+/- 0.427)	0.0152	1.72		99.2	67-120		1.85	0.2	2.1	P,M3	
Carr: BARI	UM	17300		17930		96.6	40-110		16800				
МВ	Sample ID: RE191010-1				Į	Jnits: BQ/I		Analys	is Date: 1	0/21/20	19 14:1	5	
Client ID:		Run II	D: RE191010 -	1A			1	Prep Date: 10/1	0/2019	DF:	NA		
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual	
Ra-226		0.00045 (+/- 0.0030)	0.0059									U	
Carr: BARI	UM	17800		17930		99.1	40-110						
The follow	ving samples were analyze	ed in this batch:	1910 ⁻	177-1	19101	177-2	191	0177-3					

QC Page: 1 of 1



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

Affix ALS barcode label here (lab use only)

COC Number: 15 -

1 of

Page

Canada Toll Free: 1 800 668 9878 www.alsglobal.com

	www.aisglobai.com																			
Report To	Contact and compa	ny name below will app	pear on the final rep	ort	Report Format / Distribution				Select S	Service L	vice Level Below - Please confirm all E&P TATs with your AM - surcharges will apply									
Company:	Baffinland Iron Mines C	Corp.			Select Report F	ormat: 🔽 PDF	✓ EXCEL ✓ EC	D (DIGITAL)		Re	gular [l	R] 🗌 Sta	andard ⁻	ΓΑΤ if re	ceived b	y 3 pm	- busines	s days -	no surcha	rges apply
Contact:	Wiliam Bowden and Co	nnor Devereaux			Quality Control ((QC) Report with Re	eport 🗸 YES	☐ NO	۲ ays)	4 (day [P4] 🗆		СУ	1	Busin	ess day	/ [E1]		
Phone:	647-253-0596 EXT 601	16			Compare Result	s to Criteria on Report -	provide details belo	w if box checked	1 day [P3] 2 day [P2]] 🗆		EMERGENCY	s	ame D	ay, We	ekend	or	_
	Company address below	will appear on the fina	l report		Select Distributi	on: 🔽 EMAIL	☐ MAIL ☐	FAX	E g Statutory holiday [E0]							V				
Street:	2275 Upper Middle Rd.	. E., Suite #300			Email 1 or Fax	Email 1 or Fax bimcore@alsglobal.com				Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm							nm			
City/Province:	Oakville, ON				Email 2	Email 2				For tests that can not be performed according to the service level selected, you will be contacted.										
Postal Code:	L6H 0C3				Email 3					Analysis Request										
Invoice To	Same as Report To	✓ YES	□ NO			Invoice Dis	stribution			Indic	ate Filte	ed (F), Pres	erved (F	P) or Filte	ered and	l Presei	rved (F/P) below		
	Copy of Invoice with Re	port YES	√ NO		Select Invoice D	Distribution: 🔽 EMA	AIL MAIL [FAX	F/P											
Company:					Email 1 or Fax	ap@baffinland.cor	n													
Contact:					Email 2	commercial@baffi														હ
	Project I	Information			Oi	l and Gas Require	d Fields (client	use)												aine
ALS Account #	/ Quote #:	23642 /Q42455			AFE/Cost Center:		PO#													ont
Job #:	MS-08 Reference and E	Exposure			Major/Minor Code:		Routing Code:													of C
PO / AFE:	4500057496				Requisitioner:															ber
LSD:					Location:]											Number of Containers
ALS Lab Wo	rk Order # (lab use onl	y) L2356925			ALS Contact:	t: Sampler: AZ/LM			BIM-MMER-EFF											2
ALS Sample #	Sar	mple Identification	n and/or Coord	inates		Date	Time	Compute Tyme	Ψ											
(lab use only)	(TI	nis description will	appear on the re	eport)		(dd-mmm-yy)	(hh:mm)	Sample Type	BIM											
	MS-08-DS					30-Sep-19	12:50	Water	E0											7
	MS-08-US					30-Sep-19	13:20	Water	E0											7
	MS-08-US02					30-Sep-19	13:20	Water	E0											7
Special Instructions / Specify Criteria to add on report by clicking on the drop-down list				down list below				SAMPLE (COND	ITION	AS RE	CEIV	ED (lab	use o	nly)					
Drinking water (DW) Samples (Client use) (electronic COC only)				Froze	en					Observ			_							
-	en from a Regulated DW	rom a Regulated DW System? ☑ №				Ice Pa Cooli	acks ng Initia		Ice Cubes		Cust	ody se	al inta	ct Ye	s	No				
Are samples for human drinking water use?							INIITI	AL COO	ER TEMPE	RATUR	ES ºC		Г	FINAL CO	OLER 1	TEMPERA	TURES °C			
☐ YES ☑ NO										7										
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only				e only)										
Released by: Ke	endra Button	Release Date: 1-0	Oct-19	Time: 6:30	Received by:		Date:		Time:	:	Recei	ed by:J. S	treete	r		Date:	OCT 1/	19		Time:6:30AM
				1	1		1		i											



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 01-OCT-19

Report Date: 24-OCT-19 13:52 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2357232
Project P.O. #: 4500057496
Job Reference: MS-08 WT TOX

C of C Numbers: Legal Site Desc:

Comments: ADDITIONAL 02-OCT-19 09:46

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



L2357232 CONTD.... PAGE 2 of 7 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2357232-1 MS-08 Sampled By: KB/LM on 01-OCT-19 @ 09:15 Matrix: WATER							
Physical Tests							
Conductivity	5040		3.0	umhos/cm		03-OCT-19	R4858920
Hardness (as CaCO3)	3990		1.3	mg/L		03-OCT-19	
pH	8.79		0.10	pH units		02-OCT-19	R4853590
Total Suspended Solids	6.0		2.0	mg/L		01-OCT-19	R4853597
Total Dissolved Solids	5620		20	mg/L		02-OCT-19	R4854358
Turbidity	4.52		0.10	NTU		02-OCT-19	R4853592
Anions and Nutrients							
Acidity (as CaCO3)	2.3		2.0	mg/L		06-OCT-19	R4860194
Alkalinity, Total (as CaCO3)	39		10	mg/L		03-OCT-19	R4858920
Ammonia, Total (as N)	3.79	DLHC	0.10	mg/L		03-OCT-19	R4858766
Chloride (CI)	17.2	DLDS	5.0	mg/L		03-OCT-19	R4858736
Fluoride (F)	<0.20	DLDS	0.20	mg/L		03-OCT-19	R4858736
Nitrate (as N)	16.7	DLDS	0.20	mg/L		03-OCT-19	R4858736
Total Kjeldahl Nitrogen	4.38		0.15	mg/L	03-OCT-19	04-OCT-19	R4859216
Phosphorus, Total	<0.0030		0.0030	mg/L	03-OCT-19	04-OCT-19	R4858789
Sulfate (SO4)	4070	DLDS	3.0	mg/L	00 00 1 10	03-OCT-19	R4858736
Cyanides	4070		0.0	mg/L		00 001 10	144000700
Cyanide, Total	0.0128		0.0020	mg/L		03-OCT-19	R4857839
Organic / Inorganic Carbon	0.0.20		0.0020				
Dissolved Carbon Filtration Location	LAB					03-OCT-19	R4858483
Dissolved Organic Carbon	3.82		0.50	mg/L	03-OCT-19	04-OCT-19	R4858934
Total Organic Carbon	4.16		0.50	mg/L		04-OCT-19	R4858932
Total Metals				· ·			
Aluminum (Al)-Total	0.082	DLHC	0.050	mg/L	03-OCT-19	03-OCT-19	R4857778
Antimony (Sb)-Total	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857778
Arsenic (As)-Total	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857778
Barium (Ba)-Total	0.0120	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857778
Beryllium (Be)-Total	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857778
Bismuth (Bi)-Total	<0.00050	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857778
Boron (B)-Total	<0.10	DLHC	0.10	mg/L	03-OCT-19	03-OCT-19	R4857778
Cadmium (Cd)-Total	<0.000050	DLHC	0.000050	mg/L	03-OCT-19	03-OCT-19	R4857778
Calcium (Ca)-Total	507	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857778
Cesium (Cs)-Total	<0.00010	DLHC	0.00010	mg/L	03-OCT-19	03-OCT-19	R4857778
Chromium (Cr)-Total	<0.0050	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	R4857778
Cobalt (Co)-Total	0.0050	DLHC	0.0030	mg/L	03-OCT-19	03-OCT-19	R4857778
Copper (Cu)-Total	<0.010	DLHC	0.010	mg/L	03-OCT-19	03-OCT-19	R4857778
Iron (Fe)-Total	0.42	DLHC	0.10	mg/L	03-OCT-19	03-OCT-19	R4857778
Lead (Pb)-Total	<0.00050	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857778
Lithium (Li)-Total	0.030	DLHC		_	03-OCT-19	03-OCT-19	
,		DLHC	0.010	mg/L			R4857778
Magnesium (Mg)-Total	664		0.050	mg/L	03-OCT-19	03-OCT-19	R4857778
Manganese (Mn)-Total	1.12	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	R4857778
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		04-OCT-19	R4858970

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

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Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2357232-1 MS-08 Sampled By: KB/LM on 01-OCT-19 @ 09:15 Matrix: WATER							
Total Metals							
Molybdenum (Mo)-Total	0.00141	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857778
Nickel (Ni)-Total	0.0071	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	R4857778
Phosphorus (P)-Total	<0.50	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857778
Potassium (K)-Total	6.91	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857778
Rubidium (Rb)-Total	0.0082	DLHC	0.0020	mg/L	03-OCT-19	03-OCT-19	R4857778
Selenium (Se)-Total	0.00642	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857778
Silicon (Si)-Total	<1.0	DLHC	1.0	mg/L	03-OCT-19	03-OCT-19	R4857778
Silver (Ag)-Total	<0.00050	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857778
Sodium (Na)-Total	6.41	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857778
Strontium (Sr)-Total	1.58	DLHC	0.010	mg/L	03-OCT-19	03-OCT-19	R4857778
Sulfur (S)-Total	1350	DLHC	5.0	mg/L	03-OCT-19	03-OCT-19	R4857778
Tellurium (Te)-Total	<0.0020	DLHC	0.0020	mg/L	03-OCT-19	03-OCT-19	R4857778
Thallium (TI)-Total	<0.00010	DLHC	0.00010	mg/L	03-OCT-19	03-OCT-19	R4857778
Thorium (Th)-Total	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857778
Tin (Sn)-Total	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857778
Titanium (Ti)-Total	0.0037	DLHC	0.0030	mg/L	03-OCT-19	03-OCT-19	R4857778
Tungsten (W)-Total	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857778
Uranium (U)-Total	0.00190	DLHC	0.00010	mg/L	03-OCT-19	03-OCT-19	R4857778
Vanadium (V)-Total	<0.0050	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	R4857778
Zinc (Zn)-Total	<0.030	DLHC	0.030	mg/L	03-OCT-19		R4857778
Zirconium (Zr)-Total	<0.0020	DLHC	0.0020	mg/L	03-OCT-19	03-OCT-19	R4857778
Dissolved Metals							
Dissolved Mercury Filtration Location	FIELD					04-OCT-19	
Dissolved Metals Filtration Location	FIELD	DILIC		,,	00 00T 40	03-OCT-19	
Aluminum (Al)-Dissolved	<0.050	DLHC	0.050	mg/L	03-OCT-19	03-OCT-19	R4857779
Antimony (Sb)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	
Arsenic (As)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	
Barium (Ba)-Dissolved	0.0117	DLHC DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857779
Beryllium (Be)-Dissolved Bismuth (Bi)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-OCT-19 03-OCT-19	03-OCT-19 03-OCT-19	
Boron (B)-Dissolved	<0.00050 <0.10	DLHC	0.00050 0.10	mg/L mg/L	03-OCT-19		R4857779
Cadmium (Cd)-Dissolved	<0.00050	DLHC	0.000050	mg/L	03-OCT-19	03-OCT-19	
Calcium (Ca)-Dissolved	509	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	
Cesium (Cs)-Dissolved	<0.00010	DLHC	0.00010	mg/L	03-OCT-19		R4857779
Chromium (Cr)-Dissolved	<0.0050	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	
Cobalt (Co)-Dissolved	0.0046	DLHC	0.0030	mg/L	03-OCT-19	03-OCT-19	
Copper (Cu)-Dissolved	0.0048	DLHC	0.0010	mg/L	03-OCT-19		R4857779
Iron (Fe)-Dissolved	<0.10	DLHC	0.0020	mg/L	03-OCT-19	03-OCT-19	
Lead (Pb)-Dissolved	<0.00050	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	
Lithium (Li)-Dissolved	0.033	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857779
Magnesium (Mg)-Dissolved	661	DLHC	0.010	mg/L	03-OCT-19	03-OCT-19	
g. solam (g) slootifud			<u> </u>	y/ L	30 001 10	30 001 10	1.4007770

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

L2357232 CONTD.... PAGE 4 of 7

Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2357232-1 MS-08 Sampled By: KB/LM on 01-OCT-19 @ 09:15							
Matrix: WATER							
Dissolved Metals							
Manganese (Mn)-Dissolved	1.10	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	R4857779
Mercury (Hg)-Dissolved	<0.000050		0.0000050	mg/L	04-OCT-19	04-OCT-19	R4858972
Molybdenum (Mo)-Dissolved	0.00156	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857779
Nickel (Ni)-Dissolved	0.0067	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	R4857779
Phosphorus (P)-Dissolved	<0.50	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857779
Potassium (K)-Dissolved	6.97	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857779
Rubidium (Rb)-Dissolved	0.0079	DLHC	0.0020	mg/L	03-OCT-19	03-OCT-19	R4857779
Selenium (Se)-Dissolved	0.00690	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857779
Silicon (Si)-Dissolved	<0.50	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857779
Silver (Ag)-Dissolved	<0.00050	DLHC	0.00050	mg/L	03-OCT-19	03-OCT-19	R4857779
Sodium (Na)-Dissolved	6.41	DLHC	0.50	mg/L	03-OCT-19	03-OCT-19	R4857779
Strontium (Sr)-Dissolved	1.63	DLHC	0.010	mg/L	03-OCT-19	03-OCT-19	R4857779
Sulfur (S)-Dissolved	1370	DLHC	5.0	mg/L	03-OCT-19	03-OCT-19	R4857779
Tellurium (Te)-Dissolved	<0.0020	DLHC	0.0020	mg/L	03-OCT-19	03-OCT-19	R4857779
Thallium (TI)-Dissolved	<0.00010	DLHC	0.00010	mg/L	03-OCT-19	03-OCT-19	R4857779
Thorium (Th)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857779
Tin (Sn)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857779
Titanium (Ti)-Dissolved	<0.0030	DLHC	0.0030	mg/L	03-OCT-19	03-OCT-19	R4857779
Tungsten (W)-Dissolved	<0.0010	DLHC	0.0010	mg/L	03-OCT-19	03-OCT-19	R4857779
Uranium (U)-Dissolved	0.00185	DLHC	0.00010	mg/L	03-OCT-19	03-OCT-19	R4857779
Vanadium (V)-Dissolved	<0.0050	DLHC	0.0050	mg/L	03-OCT-19	03-OCT-19	R4857779
Zinc (Zn)-Dissolved	<0.010	DLHC	0.010	mg/L	03-OCT-19	03-OCT-19	R4857779
Zirconium (Zr)-Dissolved	<0.0020	DLHC	0.0020	mg/L	03-OCT-19	03-OCT-19	R4857779
Radiological Parameters				D //	00 00T 40	47.007.40	D 10-1000
Ra-226	0.018		0.0035	Bq/L	08-OCT-19	17-OCT-19	R4851666
* Refer to Referenced Information for Qualifiers (if any) and	l Mathandalanı	1			l .	l .	<u>'</u>

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

L2357232 CONTD....

PAGE 5 of 7 Version: FINAL

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2357232-1
Matrix Spike	Lithium (Li)-Dissolved	MS-B	L2357232-1
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2357232-1
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L2357232-1
Matrix Spike	Potassium (K)-Dissolved	MS-B	L2357232-1
Matrix Spike	Rubidium (Rb)-Dissolved	MS-B	L2357232-1
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2357232-1
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2357232-1
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L2357232-1
Matrix Spike	Uranium (U)-Dissolved	MS-B	L2357232-1
Matrix Spike	Calcium (Ca)-Total	MS-B	L2357232-1
Matrix Spike	Iron (Fe)-Total	MS-B	L2357232-1
Matrix Spike	Lithium (Li)-Total	MS-B	L2357232-1
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2357232-1
Matrix Spike	Manganese (Mn)-Total	MS-B	L2357232-1
Matrix Spike	Potassium (K)-Total	MS-B	L2357232-1
Matrix Spike	Rubidium (Rb)-Total	MS-B	L2357232-1
Matrix Spike	Sodium (Na)-Total	MS-B	L2357232-1
Matrix Spike	Strontium (Sr)-Total	MS-B	L2357232-1
Matrix Spike	Sulfur (S)-Total	MS-B	L2357232-1
Matrix Spike	Uranium (U)-Total	MS-B	L2357232-1
Matrix Spike	Ammonia, Total (as N)	MS-B	L2357232-1
Matrix Spike	Phosphorus, Total	MS-B	L2357232-1

Sample Parameter Qualifier key listed:

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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).
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-TITR-TB	Water	Acidity	APHA 2310 B modified

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

enapoint.

Water

Alkalinity, Total (as CaCO3)

EPA 310.2

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

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).

CN-TOT-WT

Water

Cyanide, Total

ISO 14403-2

Total cyanide is determined by the combination of UV digestion and distillation. Cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

When using this method, high levels of thiocyanate in samples can cause false positives at ~1-2% of the thiocyanate concentration. For samples with detectable cyanide analyzed by this method, ALS recommends analysis for thiocyanate to check for this potential interference

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

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Reference Information

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.

Fluoride in Water by IC F-IC-N-WT Water 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**

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.

Water Dissolved Mercury in Water by HG-D-CVAA-WT EPA 1631E (mod)

CVAAS

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 Total Mercury in Water by CVAAS EPA 1631E (mod)

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 APHA 3030B/6020A (mod)

ICPMS

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 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.

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.

NO3-IC-WT Water Nitrate in Water by IC EPA 300.1 (mod)

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

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.

APHA 4500 H-Electrode

Water samples are analyzed directly by a calibrated pH meter.

RA226-MMER-FC Water Ra226 by Alpha Scint, MDC=0.01 EPA 903.1

Bq/L

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

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

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Reference Information

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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-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D

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
FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
TB	ALS ENVIRONMENTAL - THUNDER BAY, 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 wwt - milligrams per kilogram based on wet weight of sample

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2357232 Report Date: 24-OCT-19

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Client:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ACY-TITR-TB	Water							
Batch R4860	_							
WG3183287-8 LG Acidity (as CaCO3)			94.7		%		85-115	06-OCT-19
WG3183287-7 M					4			
Acidity (as CaCO3)			<2.0		mg/L		2	06-OCT-19
ALK-WT Batch R4858	Water							
	UP	WG3181643-3 39	39		mg/L	0.6	20	03-OCT-19
WG3181643-2 L (Alkalinity, Total (as			104.4		%		85-115	03-OCT-19
WG3181643-1 M Alkalinity, Total (as			<10		mg/L		10	03-OCT-19
CL-IC-N-WT	Water							
Batch R4858								
WG3180434-14 DI Chloride (CI)	UP	L2358193-2 1.07	1.07		mg/L	0.5	20	03-OCT-19
WG3180434-12 L0 Chloride (CI)	CS		102.0		%		90-110	03-OCT-19
WG3180434-11 M Chloride (CI)	В		<0.50		mg/L		0.5	03-OCT-19
WG3180434-15 M Chloride (CI)	S	L2358193-2	99.4		%		75-125	03-OCT-19
CN-TOT-WT	Water							
Batch R4857		1 0055054 0						
WG3177861-3 DI Cyanide, Total	UP	L2355354-9 <0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-OCT-19
WG3177861-2 LC Cyanide, Total	CS		97.4		%		80-120	03-OCT-19
WG3177861-1 M Cyanide, Total	В		<0.0020		mg/L		0.002	03-OCT-19
WG3177861-4 M Cyanide, Total	S	L2355354-9	96.8		%		70-130	03-OCT-19
DOC-WT	Water							
Batch R4858		1 0057000 4						
WG3181358-3 DI Dissolved Organic (UP Carbon	L2357232-1 3.82	3.99		mg/L	4.3	20	04-OCT-19
WG3181358-2 LC	cs							



Workorder: L2357232 Report Date: 24-OCT-19 Page 2 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
DOC-WT	Water							
Batch R4858934 WG3181358-2 LCS Dissolved Organic Carbo	on		105.8		%		80-120	04-OCT-19
WG3181358-1 MB Dissolved Organic Carbo	on		<0.50		mg/L		0.5	04-OCT-19
WG3181358-4 MS Dissolved Organic Carbo	on	L2357232-1	106.2		%		70-130	04-OCT-19
EC-WT	Water							
Batch R4858920 WG3181643-4 DUP Conductivity		WG3181643-3 5040	5030		umhos/cm	0.2	10	03-OCT-19
WG3181643-2 LCS Conductivity			101.4		%		90-110	03-OCT-19
WG3181643-1 MB Conductivity			<3.0		umhos/cm		3	03-OCT-19
F-IC-N-WT	Water							
Batch R4858736 WG3180434-14 DUP Fluoride (F)		L2358193-2 0.042	0.043		mg/L	1.5	20	03-OCT-19
WG3180434-12 LCS Fluoride (F)			103.5		%		90-110	03-OCT-19
WG3180434-11 MB Fluoride (F)			<0.020		mg/L		0.02	03-OCT-19
WG3180434-15 MS Fluoride (F)		L2358193-2	99.8		%		75-125	03-OCT-19
HG-D-CVAA-WT	Water							
Batch R4858972 WG3181846-4 DUP Mercury (Hg)-Dissolved		WG3181846-3 <0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	04-OCT-19
WG3181846-2 LCS Mercury (Hg)-Dissolved			109.0		%		80-120	04-OCT-19
WG3181846-1 MB Mercury (Hg)-Dissolved			<0.0000050	:	mg/L		0.000005	04-OCT-19
WG3181846-6 MS Mercury (Hg)-Dissolved		WG3181846-5	108.8		%		70-130	04-OCT-19
HG-T-CVAA-WT	Water							



Workorder: L2357232 Report Date: 24-OCT-19 Page 3 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-WT	Water							
Batch R4858970								
WG3181845-4 DUP Mercury (Hg)-Total		WG3181845-3 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	04-OCT-19
WG3181845-2 LCS Mercury (Hg)-Total			106.0		%		80-120	04-OCT-19
WG3181845-1 MB Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	04-OCT-19
WG3181845-6 MS Mercury (Hg)-Total		WG3181845-5	97.3		%		70-130	04-OCT-19
MET-D-CCMS-WT	Water							
Batch R4857779								
WG3180561-4 DUP		WG3180561-3	0.050	DDD 114	a /l	> 1/4		
Aluminum (Al)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	03-OCT-19
Antimony (Sb)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Arsenic (As)-Dissolved		<0.0010 0.0117	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Barium (Ba)-Dissolved			0.0118	DDD 114	mg/L	0.5	20	03-OCT-19
Beryllium (Be)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Bismuth (Bi)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Boron (B)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-OCT-19
Cadmium (Cd)-Dissolved	ג	<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-OCT-19
Calcium (Ca)-Dissolved		509	495		mg/L	2.9	20	03-OCT-19
Cesium (Cs)-Dissolved	a.	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Chromium (Cr)-Dissolved	3	<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-OCT-19
Cobalt (Co)-Dissolved		0.0046	0.0045		mg/L	2.5	20	03-OCT-19
Copper (Cu)-Dissolved		0.0050	0.0047		mg/L	6.7	20	03-OCT-19
Iron (Fe)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-OCT-19
Lead (Pb)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Lithium (Li)-Dissolved		0.033	0.030		mg/L	9.0	20	03-OCT-19
Magnesium (Mg)-Dissolv		661	651		mg/L	1.5	20	03-OCT-19
Manganese (Mn)-Dissolv		1.10	1.09		mg/L	1.5	20	03-OCT-19
Molybdenum (Mo)-Dissol	lved	0.00156	0.00160		mg/L	2.6	20	03-OCT-19
Nickel (Ni)-Dissolved		0.0067	0.0066		mg/L	1.8	20	03-OCT-19
Phosphorus (P)-Dissolve	ed	<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-OCT-19
Potassium (K)-Dissolved		6.97	6.84		mg/L	1.8	20	03-OCT-19
Rubidium (Rb)-Dissolved	I	0.0079	0.0080		mg/L	1.8	20	03-OCT-19
Selenium (Se)-Dissolved	l	0.00690	0.00635		mg/L	8.3	20	03-OCT-19



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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R4857779								
WG3180561-4 DUP Silicon (Si)-Dissolved		WG3180561- <0.50	3 <0.50	RPD-NA	mg/L	N/A	20	03-OCT-19
Silver (Ag)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Sodium (Na)-Dissolved		6.41	6.30	INI D-INA	mg/L	1.8	20	03-OCT-19
Strontium (Sr)-Dissolved	h	1.63	1.59		mg/L	2.7	20	03-OCT-19
Sulfur (S)-Dissolved	u	1370	1350		mg/L	1.8	20	03-OCT-19
Tellurium (Te)-Dissolve	d	<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-OCT-19
Thallium (TI)-Dissolved	-	<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Thorium (Th)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Tin (Sn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Titanium (Ti)-Dissolved		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	03-OCT-19
Tungsten (W)-Dissolved	d	<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Uranium (U)-Dissolved		0.00185	0.00186	=	mg/L	0.2	20	03-OCT-19
Vanadium (V)-Dissolved	d	<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-OCT-19
Zinc (Zn)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-OCT-19
Zirconium (Zr)-Dissolve	d	<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-OCT-19
WG3180561-2 LCS								
Aluminum (Al)-Dissolve	d		107.8		%		80-120	03-OCT-19
Antimony (Sb)-Dissolve	d		100.7		%		80-120	03-OCT-19
Arsenic (As)-Dissolved			103.2		%		80-120	03-OCT-19
Barium (Ba)-Dissolved			99.2		%		80-120	03-OCT-19
Beryllium (Be)-Dissolved	d		98.7		%		80-120	03-OCT-19
Bismuth (Bi)-Dissolved			98.0		%		80-120	03-OCT-19
Boron (B)-Dissolved			98.3		%		80-120	03-OCT-19
Cadmium (Cd)-Dissolve			105.7		%		80-120	03-OCT-19
Calcium (Ca)-Dissolved			99.1		%		80-120	03-OCT-19
Cesium (Cs)-Dissolved			98.3		%		80-120	03-OCT-19
Chromium (Cr)-Dissolve	ed		105.9		%		80-120	03-OCT-19
Cobalt (Co)-Dissolved			104.1		%		80-120	03-OCT-19
Copper (Cu)-Dissolved			102.7		%		80-120	03-OCT-19
Iron (Fe)-Dissolved			100.7		%		80-120	03-OCT-19
Lead (Pb)-Dissolved			102.9		%		80-120	03-OCT-19
Lithium (Li)-Dissolved Magnesium (Mg)-Dissol	had		95.7		%		80-120	03-OCT-19
iviagnesium (ivig)-DISS0I	iveu		111.1		%		80-120	03-OCT-19



Workorder: L2357232 Report Date: 24-OCT-19 Page 5 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R48577	779							
WG3180561-2 LC Manganese (Mn)-Di			104.4		%		00.400	00 OOT 40
Molybdenum (Mo)-D			96.1		%		80-120	03-OCT-19
			102.6		%		80-120	03-OCT-19
Nickel (Ni)-Dissolved Phosphorus (P)-Diss			102.6		%		80-120	03-OCT-19
Potassium (K)-Disso					%		80-120	03-OCT-19
Rubidium (Rb)-Disso			100.9 107.6		%		80-120	03-OCT-19
, ,					%		80-120	03-OCT-19
Selenium (Se)-Disso			103.3				80-120	03-OCT-19
Silicon (Si)-Dissolve			103.6		%		60-140	03-OCT-19
Silver (Ag)-Dissolved			95.6		%		80-120	03-OCT-19
Sodium (Na)-Dissolv			108.8		%		80-120	03-OCT-19
Strontium (Sr)-Disso			100.5		%		80-120	03-OCT-19
Sulfur (S)-Dissolved			102.6		%		80-120	03-OCT-19
Tellurium (Te)-Disso			95.3		%		80-120	03-OCT-19
Thallium (TI)-Dissolv			100.1		%		80-120	03-OCT-19
Thorium (Th)-Dissol	vea		102.2		%		80-120	03-OCT-19
Tin (Sn)-Dissolved			105.4		%		80-120	03-OCT-19
Titanium (Ti)-Dissolv			101.7		%		80-120	03-OCT-19
Tungsten (W)-Disso			98.6		%		80-120	03-OCT-19
Uranium (U)-Dissolv			97.1		%		80-120	03-OCT-19
Vanadium (V)-Disso	olved		106.3		%		80-120	03-OCT-19
Zinc (Zn)-Dissolved			102.3		%		80-120	03-OCT-19
Zirconium (Zr)-Disso			96.3		%		80-120	03-OCT-19
WG3180561-1 ME Aluminum (Al)-Disso			<0.0050		mg/L		0.005	03-OCT-19
Antimony (Sb)-Disso			<0.00010		mg/L		0.0001	03-OCT-19
Arsenic (As)-Dissolv			<0.00010		mg/L		0.0001	03-OCT-19
Barium (Ba)-Dissolv			<0.00010		mg/L		0.0001	03-OCT-19
Beryllium (Be)-Disso			<0.00010		mg/L		0.0001	03-OCT-19
Bismuth (Bi)-Dissolv			<0.000050		mg/L		0.00005	03-OCT-19
Boron (B)-Dissolved			<0.010		mg/L		0.01	03-OCT-19
Cadmium (Cd)-Diss			<0.000005	5C	mg/L		0.000005	03-OCT-19
Calcium (Ca)-Dissol			<0.050		mg/L		0.05	03-OCT-19
Cesium (Cs)-Dissolv			<0.000010	0	mg/L		0.00001	03-OCT-19
Chromium (Cr)-Diss			<0.00050	-	mg/L		0.0005	03-OCT-19
5 5 (61) Dioo			.0.0000		y, =		0.0000	00-001-19



Workorder: L2357232 Report Date: 24-OCT-19 Page 6 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R48577	779							
WG3180561-1 ME Cobalt (Co)-Dissolve			<0.00010		mg/L		0.0001	03-OCT-19
Copper (Cu)-Dissolv	/ed		<0.00020		mg/L		0.0002	03-OCT-19
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-OCT-19
Lead (Pb)-Dissolved	I		<0.000050)	mg/L		0.00005	03-OCT-19
Lithium (Li)-Dissolve	ed		<0.0010		mg/L		0.001	03-OCT-19
Magnesium (Mg)-Dis	ssolved		<0.0050		mg/L		0.005	03-OCT-19
Manganese (Mn)-Di	ssolved		<0.00050		mg/L		0.0005	03-OCT-19
Molybdenum (Mo)-D	oissolved		<0.000050)	mg/L		0.00005	03-OCT-19
Nickel (Ni)-Dissolved	b		<0.00050		mg/L		0.0005	03-OCT-19
Phosphorus (P)-Diss	solved		<0.050		mg/L		0.05	03-OCT-19
Potassium (K)-Disso	olved		<0.050		mg/L		0.05	03-OCT-19
Rubidium (Rb)-Disso	olved		<0.00020		mg/L		0.0002	03-OCT-19
Selenium (Se)-Disso	olved		<0.000050)	mg/L		0.00005	03-OCT-19
Silicon (Si)-Dissolve	d		< 0.050		mg/L		0.05	03-OCT-19
Silver (Ag)-Dissolved	d		<0.000050)	mg/L		0.00005	03-OCT-19
Sodium (Na)-Dissolv	/ed		< 0.050		mg/L		0.05	03-OCT-19
Strontium (Sr)-Disso	lved		<0.0010		mg/L		0.001	03-OCT-19
Sulfur (S)-Dissolved			< 0.50		mg/L		0.5	03-OCT-19
Tellurium (Te)-Disso	olved		<0.00020		mg/L		0.0002	03-OCT-19
Thallium (TI)-Dissolv	/ed		<0.000010)	mg/L		0.00001	03-OCT-19
Thorium (Th)-Dissol	ved		<0.00010		mg/L		0.0001	03-OCT-19
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	03-OCT-19
Titanium (Ti)-Dissolv	ved		<0.00030		mg/L		0.0003	03-OCT-19
Tungsten (W)-Disso	lved		<0.00010		mg/L		0.0001	03-OCT-19
Uranium (U)-Dissolv	red		<0.000010)	mg/L		0.00001	03-OCT-19
Vanadium (V)-Disso	lved		<0.00050		mg/L		0.0005	03-OCT-19
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	03-OCT-19
Zirconium (Zr)-Disso	olved		<0.00020		mg/L		0.0002	03-OCT-19
WG3180561-5 MS Aluminum (Al)-Disso		WG3180561-3	89.9		%		70-130	03-OCT-19
Antimony (Sb)-Disso	olved		92.6		%		70-130	03-OCT-19
Arsenic (As)-Dissolv	red		100.5		%		70-130	03-OCT-19
Beryllium (Be)-Disso	olved		91.1		%		70-130	03-OCT-19
Bismuth (Bi)-Dissolv	red		90.3		%		70-130	03-OCT-19



Workorder: L2357232 Report Date: 24-OCT-19 Page 7 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-WT	Water							
Batch R4857779)							
WG3180561-5 MS Cadmium (Cd)-Dissolv	ad	WG3180561-3	00.7		%		70.400	00 007 40
` ,			89.7 N/A	MC D			70-130	03-OCT-19
Calcium (Ca)-Dissolved			N/A 91.7	MS-B	%		-	03-OCT-19
Cesium (Cs)-Dissolved					%		70-130	03-OCT-19
Chromium (Cr)-Dissolv	ea		100.1		%		70-130	03-OCT-19
Iron (Fe)-Dissolved			79.7		%		70-130	03-OCT-19
Lead (Pb)-Dissolved			93.9	MO 5	%		70-130	03-OCT-19
Lithium (Li)-Dissolved	h d		N/A	MS-B	%		-	03-OCT-19
Magnesium (Mg)-Disso			N/A	MS-B	%		-	03-OCT-19
Manganese (Mn)-Disso			N/A	MS-B	%		-	03-OCT-19
Molybdenum (Mo)-Diss	solved		82.1		%		70-130	03-OCT-19
Nickel (Ni)-Dissolved			72.8		%		70-130	03-OCT-19
Phosphorus (P)-Dissol			106.7		%		70-130	03-OCT-19
Potassium (K)-Dissolve			N/A	MS-B	%		-	03-OCT-19
Rubidium (Rb)-Dissolv			N/A	MS-B	%		-	03-OCT-19
Selenium (Se)-Dissolve	ed		89.5		%		70-130	03-OCT-19
Silver (Ag)-Dissolved			85.9		%		70-130	03-OCT-19
Sodium (Na)-Dissolved			N/A	MS-B	%		-	03-OCT-19
Strontium (Sr)-Dissolve	ed		N/A	MS-B	%		-	03-OCT-19
Sulfur (S)-Dissolved			N/A	MS-B	%		-	03-OCT-19
Tellurium (Te)-Dissolve	ed		86.1		%		70-130	03-OCT-19
Thallium (TI)-Dissolved			93.4		%		70-130	03-OCT-19
Thorium (Th)-Dissolved	t		92.0		%		70-130	03-OCT-19
Tin (Sn)-Dissolved			96.2		%		70-130	03-OCT-19
Titanium (Ti)-Dissolved	I		97.2		%		70-130	03-OCT-19
Tungsten (W)-Dissolve	d		95.3		%		70-130	03-OCT-19
Uranium (U)-Dissolved			N/A	MS-B	%		-	03-OCT-19
Vanadium (V)-Dissolve	d		102.9		%		70-130	03-OCT-19
Zinc (Zn)-Dissolved			92.6		%		70-130	03-OCT-19
Zirconium (Zr)-Dissolve	ed		91.9		%		70-130	03-OCT-19
MET-T-CCMS-WT	Water							
Batch R4857778	;							
WG3180546-4 DUP Aluminum (Al)-Total		WG3180546-3 0.082	0.096		mg/L	16	20	03-OCT-19
Antimony (Sb)-Total		<0.0010	<0.0010					



Workorder: L2357232 Report Date: 24-OCT-19 Page 8 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Metr-CCMS-WT R4857778 R4857778 R4857778 R4857778 R4857778 R4857778 R4857778 R4857778 R50-1014 R50-1	Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
WG3180546-4 DUP WG3180546-3 - A0,0010 <0,0010	MET-T-CCMS-WT	Water							
Arsenic (As)-Total	Batch R4857778								
Barium (Ba)-Total 0.0120 0.0124 mg/L 3.9 20 03-OCT-19 Beryllium (Be)-Total <0.0010 <0.0010 RPD-NA mg/L N/A 20 03-OCT-19 Bismuth (Bi)-Total <0.00050 <0.00050 RPD-NA mg/L N/A 20 03-OCT-19 Boron (B)-Total <0.10 <0.10 RPD-NA mg/L N/A 20 03-OCT-19 Cadmium (Ca)-Total <0.000050 <0.000050 RPD-NA mg/L N/A 20 03-OCT-19 Calcium (Ca)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 03-OCT-19 Chronium (Cr)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 03-OCT-19 Copper (Cu)-Total <0.0010 <0.0010 RPD-NA mg/L N/A 20 03-OCT-19 Iron (Fe)-Total <0.42 <0.44 mg/L 4.3 20 03-OCT-19 Lead (Pb)-Total <0.022 <0.04 mg/L 4.7 <th></th> <th></th> <th></th> <th><0.0010</th> <th>RPD-NA</th> <th>mg/L</th> <th>N/A</th> <th>20</th> <th>03-OCT-19</th>				<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Beryllium (Be)-Total	Arsenic (As)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Bismuth (Bi)-Total	Barium (Ba)-Total		0.0120	0.0124		mg/L	3.9	20	03-OCT-19
Boron (B)-Total	Beryllium (Be)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Cadmium (Cd)-Total <0.000050 <0.000050 RPD-NA mg/L N/A 20 03-OCT-19 Calcium (Ca)-Total 507 514 mg/L 1.4 20 03-OCT-19 Chromium (Cr)-Total <0.00050	Bismuth (Bi)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Calcium (Ca)-Total 507 514 mg/L 1.4 20 03-OCT-19 Chromium (Cr)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 03-OCT-19 Cesium (Cs)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Cobalt (Co)-Total 0.0050 0.0056 mg/L 9.9 20 03-OCT-19 Cobalt (Co)-Total 0.0050 0.0056 mg/L N/A 20 03-OCT-19 Iron (Fe)-Total 0.42 0.44 mg/L N/A 20 03-OCT-19 Iron (Fe)-Total 0.42 0.44 mg/L N/A 20 03-OCT-19 Lithium (L)-Total 0.0050 0.0050 RPD-NA mg/L N/A 20 03-OCT-19 Lithium (L)-Total 0.030 0.031 mg/L N/A 20 03-OCT-19 Lithium (L)-Total 0.030 0.031 mg/L 2.0 20 03-OCT-19 Magnesium (Mg)-Total 664 696 mg/L 4.7 20 03-OCT-19 Magnesium (Mo)-Total 1.12 1.17 mg/L 4.6 20 03-OCT-19 Malybdenum (Mo)-Total 0.00141 0.00150 mg/L 6.0 20 03-OCT-19 Nickel (Ni)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Phosphorus (P)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Rubidium (Rb)-Total 6.91 7.28 mg/L 5.2 20 03-OCT-19 Rubidium (Rb)-Total 0.0082 0.089 mg/L 8.4 20 03-OCT-19 Selenium (Se)-Total 0.00642 0.00677 mg/L 5.4 20 03-OCT-19 Silicon (Si)-Total 6.41 6.70 mg/L N/A 20 03-OCT-19 Silicon (Si)-Total 1.58 1.64 mg/L N/A 20 03-OCT-19 Silicon (Si)-Total 1.58 1.64 mg/L N/A 20 03-OCT-19 Suffur (S)-Total 1.58 1.64 mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 <0.0010 RPD-NA mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 25 03-OCT-19 Thallium (Ti)-Total 0.00010 RPD-NA mg/L N/A 25 03-OCT-19 Thorium (Ti)-Total 0.00010 RPD-NA mg/L N/A 25 03-OCT-19 Thorium (Ti)-Total 0.00010 RPD-NA mg/L N/A 20 03-OCT-19	Boron (B)-Total		<0.10	<0.10	RPD-NA	mg/L	N/A	20	03-OCT-19
Chromium (Cr)-Total <0.0050 <0.0050 RPD-NA mg/L N/A 20 03-OCT-19 Cesium (Cs)-Total <0.00010	Cadmium (Cd)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	03-OCT-19
Cesium (Cs)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Cobalt (Co)-Total 0.0050 0.0056 mg/L 9.9 20 03-OCT-19 Copper (Cu)-Total <0.010	Calcium (Ca)-Total		507	514		mg/L	1.4	20	03-OCT-19
Cobalt (Co)-Total 0.0050 0.0056 mg/L 9,9 20 03-OCT-19 Copper (Cu)-Total <0.010	Chromium (Cr)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-OCT-19
Copper (Cu)-Total <0.010 <0.010 RPD-NA mg/L N/A 20 03-OCT-19 Iron (Fe)-Total 0.42 0.44 mg/L 4.3 20 03-OCT-19 Lead (Pb)-Total 0.00050 <0.00050	Cesium (Cs)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Iron (Fe)-Total 0.42 0.44 mg/L 4.3 20 03-OCT-19 Lead (Pb)-Total <0.00050	Cobalt (Co)-Total		0.0050	0.0056		mg/L	9.9	20	03-OCT-19
Lead (Pb)-Total <0.00050 <0.00050 RPD-NA mg/L N/A 20 03-OCT-19 Lithium (Li)-Total 0.030 0.031 mg/L 2.0 20 03-OCT-19 Magnesium (Mg)-Total 664 696 mg/L 4.7 20 03-OCT-19 Manganese (Mn)-Total 1.12 1.17 mg/L 4.6 20 03-OCT-19 Molybdenum (Mo)-Total 0.00141 0.00150 mg/L 6.0 20 03-OCT-19 Nickel (Ni)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Phosphorus (P)-Total <0.50	Copper (Cu)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	03-OCT-19
Lithium (Li)-Total 0.030 0.031 mg/L 2.0 20 03-OCT-19 Magnesium (Mg)-Total 664 696 mg/L 4.7 20 03-OCT-19 Manganese (Mn)-Total 1.12 1.17 mg/L 4.6 20 03-OCT-19 Molybdenum (Mo)-Total 0.00141 0.00150 mg/L 6.0 20 03-OCT-19 Nickel (Ni)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Phosphorus (P)-Total 0.50 <0.50	Iron (Fe)-Total		0.42	0.44		mg/L	4.3	20	03-OCT-19
Magnesium (Mg)-Total 664 696 mg/L 4.7 20 03-OCT-19 Manganese (Mn)-Total 1.12 1.17 mg/L 4.6 20 03-OCT-19 Molybdenum (Mo)-Total 0.00141 0.00150 mg/L 6.0 20 03-OCT-19 Nickel (Ni)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Phosphorus (P)-Total <0.50	Lead (Pb)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Manganese (Mn)-Total 1.12 1.17 mg/L 4.6 20 03-OCT-19 Molybdenum (Mo)-Total 0.00141 0.00150 mg/L 6.0 20 03-OCT-19 Nickel (Ni)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Phosphorus (P)-Total <0.50	Lithium (Li)-Total		0.030	0.031		mg/L	2.0	20	03-OCT-19
Molybdenum (Mo)-Total 0.00141 0.00150 mg/L 6.0 20 03-OCT-19 Nickel (Ni)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Phosphorus (P)-Total <0.50	Magnesium (Mg)-Total		664	696		mg/L	4.7	20	03-OCT-19
Nickel (Ni)-Total 0.0071 0.0108 J mg/L 0.0037 0.01 03-OCT-19 Phosphorus (P)-Total <0.50	Manganese (Mn)-Total		1.12	1.17		mg/L	4.6	20	03-OCT-19
Phosphorus (P)-Total <0.50 <0.50 RPD-NA mg/L N/A 20 03-OCT-19 Potassium (K)-Total 6.91 7.28 mg/L 5.2 20 03-OCT-19 Rubidium (Rb)-Total 0.0082 0.0089 mg/L 8.4 20 03-OCT-19 Selenium (Se)-Total 0.00642 0.00677 mg/L 5.4 20 03-OCT-19 Silicon (Si)-Total <1.0	Molybdenum (Mo)-Total		0.00141	0.00150		mg/L	6.0	20	03-OCT-19
Potassium (K)-Total 6.91 7.28 mg/L 5.2 20 03-OCT-19 Rubidium (Rb)-Total 0.0082 0.0089 mg/L 8.4 20 03-OCT-19 Selenium (Se)-Total 0.00642 0.00677 mg/L 5.4 20 03-OCT-19 Silicon (Si)-Total <1.0	Nickel (Ni)-Total		0.0071	0.0108	J	mg/L	0.0037	0.01	03-OCT-19
Rubidium (Rb)-Total 0.0082 0.0089 mg/L 8.4 20 03-OCT-19 Selenium (Se)-Total 0.00642 0.00677 mg/L 5.4 20 03-OCT-19 Silicon (Si)-Total <1.0	Phosphorus (P)-Total		<0.50	<0.50	RPD-NA	mg/L	N/A	20	03-OCT-19
Selenium (Se)-Total 0.00642 0.00677 mg/L 5.4 20 03-OCT-19 Silicon (Si)-Total <1.0	Potassium (K)-Total		6.91	7.28		mg/L	5.2	20	03-OCT-19
Silicon (Si)-Total <1.0 <1.0 RPD-NA mg/L N/A 20 03-OCT-19 Silver (Ag)-Total <0.00050	Rubidium (Rb)-Total		0.0082	0.0089		mg/L	8.4	20	03-OCT-19
Silver (Ag)-Total <0.00050 <0.00050 RPD-NA mg/L N/A 20 03-OCT-19 Sodium (Na)-Total 6.41 6.70 mg/L 4.4 20 03-OCT-19 Strontium (Sr)-Total 1.58 1.64 mg/L 3.7 20 03-OCT-19 Sulfur (S)-Total 1350 1420 mg/L 4.8 25 03-OCT-19 Thallium (TI)-Total <0.00010	Selenium (Se)-Total		0.00642	0.00677		mg/L	5.4	20	03-OCT-19
Sodium (Na)-Total 6.41 6.70 mg/L 4.4 20 03-OCT-19 Strontium (Sr)-Total 1.58 1.64 mg/L 3.7 20 03-OCT-19 Sulfur (S)-Total 1350 1420 mg/L 4.8 25 03-OCT-19 Thallium (TI)-Total <0.00010	Silicon (Si)-Total		<1.0	<1.0	RPD-NA	mg/L	N/A	20	03-OCT-19
Strontium (Sr)-Total 1.58 1.64 mg/L 3.7 20 03-OCT-19 Sulfur (S)-Total 1350 1420 mg/L 4.8 25 03-OCT-19 Thallium (TI)-Total <0.00010	Silver (Ag)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	03-OCT-19
Sulfur (S)-Total 1350 1420 mg/L 4.8 25 03-OCT-19 Thallium (TI)-Total <0.00010	Sodium (Na)-Total		6.41	6.70		mg/L	4.4	20	03-OCT-19
Thallium (TI)-Total <0.00010 <0.00010 RPD-NA mg/L N/A 20 03-OCT-19 Tellurium (Te)-Total <0.0020	Strontium (Sr)-Total		1.58	1.64		mg/L	3.7	20	03-OCT-19
Tellurium (Te)-Total <0.0020 <0.0020 RPD-NA mg/L N/A 20 03-OCT-19 Thorium (Th)-Total <0.0010	Sulfur (S)-Total		1350	1420		mg/L	4.8	25	03-OCT-19
Thorium (Th)-Total <0.0010 <0.0010 RPD-NA mg/L N/A 25 03-OCT-19 Tin (Sn)-Total <0.0010 <0.0010 RPD-NA mg/L N/A 20 03-OCT-19	Thallium (TI)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	03-OCT-19
Tin (Sn)-Total <0.0010 <0.0010 RPD-NA mg/L N/A 20 03-OCT-19	Tellurium (Te)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-OCT-19
	Thorium (Th)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	25	03-OCT-19
Titanium (Ti)-Total 0.0037 0.0033 mg/L 03-OCT-19	Tin (Sn)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
	Titanium (Ti)-Total		0.0037	0.0033		mg/L			03-OCT-19



Workorder: L2357232 Report Date: 24-OCT-19 Page 9 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4857778								
WG3180546-4 DUP Titanium (Ti)-Total		WG3180546-3 0.0037	0.0033		mg/L	10	20	03-OCT-19
Tungsten (W)-Total		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	03-OCT-19
Uranium (U)-Total		0.00190	0.00192		mg/L	1.2	20	03-OCT-19
Vanadium (V)-Total		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	03-OCT-19
Zinc (Zn)-Total		<0.030	< 0.030	RPD-NA	mg/L	N/A	20	03-OCT-19
Zirconium (Zr)-Total		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	03-OCT-19
WG3180546-2 LCS Aluminum (Al)-Total			103.5		%		80-120	03-OCT-19
Antimony (Sb)-Total			97.8		%		80-120	03-OCT-19
Arsenic (As)-Total			97.5		%		80-120	03-OCT-19
Barium (Ba)-Total			96.1		%		80-120	03-OCT-19
Beryllium (Be)-Total			91.3		%		80-120	03-OCT-19
Bismuth (Bi)-Total			90.9		%		80-120	03-OCT-19
Boron (B)-Total			89.6		%		80-120	03-OCT-19
Cadmium (Cd)-Total			99.9		%		80-120	03-OCT-19
Calcium (Ca)-Total			94.2		%		80-120	03-OCT-19
Chromium (Cr)-Total			98.5		%		80-120	03-OCT-19
Cesium (Cs)-Total			95.1		%		80-120	03-OCT-19
Cobalt (Co)-Total			97.4		%		80-120	03-OCT-19
Copper (Cu)-Total			96.7		%		80-120	03-OCT-19
Iron (Fe)-Total			95.0		%		80-120	03-OCT-19
Lead (Pb)-Total			95.2		%		80-120	03-OCT-19
Lithium (Li)-Total			90.5		%		80-120	03-OCT-19
Magnesium (Mg)-Total			102.0		%		80-120	03-OCT-19
Manganese (Mn)-Total			99.1		%		80-120	03-OCT-19
Molybdenum (Mo)-Total			92.0		%		80-120	03-OCT-19
Nickel (Ni)-Total			96.8		%		80-120	03-OCT-19
Phosphorus (P)-Total			98.2		%		70-130	03-OCT-19
Potassium (K)-Total			95.9		%		80-120	03-OCT-19
Rubidium (Rb)-Total			99.2		%		80-120	03-OCT-19
Selenium (Se)-Total			99.0		%		80-120	03-OCT-19
Silicon (Si)-Total			98.6		%		60-140	03-OCT-19
Silver (Ag)-Total			92.0		%		80-120	03-OCT-19



Workorder: L2357232 Report Date: 24-OCT-19 Page 10 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4857778								
WG3180546-2 LCS Sodium (Na)-Total			104.1		%		80-120	03-OCT-19
Strontium (Sr)-Total			99.7		%		80-120	03-OCT-19
Sulfur (S)-Total			92.6		%		80-120	03-OCT-19
Thallium (TI)-Total			94.8		%		80-120	03-OCT-19
Tellurium (Te)-Total			90.8		%		80-120	03-OCT-19
Thorium (Th)-Total			95.5		%		70-130	03-OCT-19
Tin (Sn)-Total			97.2		%		80-120	03-OCT-19
Titanium (Ti)-Total			96.3		%		80-120	03-OCT-19
Tungsten (W)-Total			93.2		%		80-120	03-OCT-19
Uranium (U)-Total			91.0		%		80-120	03-OCT-19
Vanadium (V)-Total			100.4		%		80-120	03-OCT-19
Zinc (Zn)-Total			94.8		%		80-120	03-OCT-19
Zirconium (Zr)-Total			91.6		%		80-120	03-OCT-19
WG3180546-1 MB Aluminum (Al)-Total			<0.0050		mg/L		0.005	03-OCT-19
Antimony (Sb)-Total			<0.00010	1	mg/L		0.0001	03-OCT-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	03-OCT-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	03-OCT-19
Beryllium (Be)-Total			<0.00010)	mg/L		0.0001	03-OCT-19
Bismuth (Bi)-Total			<0.00005		mg/L		0.00005	03-OCT-19
Boron (B)-Total			<0.010		mg/L		0.01	03-OCT-19
Cadmium (Cd)-Total			<0.00000	50	mg/L		0.000005	03-OCT-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	03-OCT-19
Chromium (Cr)-Total			<0.00050)	mg/L		0.0005	03-OCT-19
Cesium (Cs)-Total			<0.00001	0	mg/L		0.00001	03-OCT-19
Cobalt (Co)-Total			<0.00010)	mg/L		0.0001	03-OCT-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	03-OCT-19
Iron (Fe)-Total			<0.010		mg/L		0.01	03-OCT-19
Lead (Pb)-Total			<0.00005	0	mg/L		0.00005	03-OCT-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	03-OCT-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	03-OCT-19
Manganese (Mn)-Total			<0.00050	1	mg/L		0.0005	03-OCT-19
Molybdenum (Mo)-Total			<0.00005	0	mg/L		0.00005	03-OCT-19
Nickel (Ni)-Total			<0.00050	1	mg/L		0.0005	03-OCT-19



Workorder: L2357232 Report Date: 24-OCT-19 Page 11 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4857778								
WG3180546-1 MB Phosphorus (P)-Total			<0.050		mg/L		0.05	03-OCT-19
Potassium (K)-Total			< 0.050		mg/L		0.05	03-OCT-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	03-OCT-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	03-OCT-19
Silicon (Si)-Total			<0.10		mg/L		0.1	03-OCT-19
Silver (Ag)-Total			<0.000050)	mg/L		0.00005	03-OCT-19
Sodium (Na)-Total			< 0.050		mg/L		0.05	03-OCT-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	03-OCT-19
Sulfur (S)-Total			<0.50		mg/L		0.5	03-OCT-19
Thallium (TI)-Total			<0.000010)	mg/L		0.00001	03-OCT-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	03-OCT-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	03-OCT-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	03-OCT-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	03-OCT-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	03-OCT-19
Uranium (U)-Total			<0.000010)	mg/L		0.00001	03-OCT-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	03-OCT-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	03-OCT-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	03-OCT-19
WG3180546-5 MS Aluminum (Al)-Total		WG3180546-3	108.9		%		70-130	03-OCT-19
Antimony (Sb)-Total			98.3		%		70-130	03-OCT-19
Arsenic (As)-Total			103.3		%		70-130	03-OCT-19
Barium (Ba)-Total			105.3		%		70-130	03-OCT-19
Beryllium (Be)-Total			94.7		%		70-130	03-OCT-19
Bismuth (Bi)-Total			93.6		%		70-130	03-OCT-19
Boron (B)-Total			90.1		%		70-130	03-OCT-19
Cadmium (Cd)-Total			99.5		%		70-130	03-OCT-19
Calcium (Ca)-Total			N/A	MS-B	%		-	03-OCT-19
Chromium (Cr)-Total			103.7		%		70-130	03-OCT-19
Cesium (Cs)-Total			97.2		%		70-130	03-OCT-19
Cobalt (Co)-Total			104.1		%		70-130	03-OCT-19
Copper (Cu)-Total			101.5		%		70-130	03-OCT-19
Iron (Fe)-Total			N/A	MS-B	%		-	03-OCT-19



Workorder: L2357232 Report Date: 24-OCT-19 Page 12 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4857778								
WG3180546-5 MS		WG3180546-3			0/			
Lead (Pb)-Total			95.4	140 D	%		70-130	03-OCT-19
Lithium (Li)-Total			N/A	MS-B	%		-	03-OCT-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	03-OCT-19
Manganese (Mn)-Total			N/A	MS-B	%		-	03-OCT-19
Molybdenum (Mo)-Total			98.0		%		70-130	03-OCT-19
Nickel (Ni)-Total			101.8		%		70-130	03-OCT-19
Phosphorus (P)-Total			98.6		%		70-130	03-OCT-19
Potassium (K)-Total			N/A	MS-B	%		-	03-OCT-19
Rubidium (Rb)-Total			N/A	MS-B	%		-	03-OCT-19
Selenium (Se)-Total			106.8		%		70-130	03-OCT-19
Silicon (Si)-Total			108.3		%		70-130	03-OCT-19
Silver (Ag)-Total			90.0		%		70-130	03-OCT-19
Sodium (Na)-Total			N/A	MS-B	%		-	03-OCT-19
Strontium (Sr)-Total			N/A	MS-B	%		-	03-OCT-19
Sulfur (S)-Total			N/A	MS-B	%		-	03-OCT-19
Thallium (TI)-Total			95.5		%		70-130	03-OCT-19
Tellurium (Te)-Total			84.7		%		70-130	03-OCT-19
Thorium (Th)-Total			90.4		%		70-130	03-OCT-19
Tin (Sn)-Total			98.7		%		70-130	03-OCT-19
Titanium (Ti)-Total			93.8		%		70-130	03-OCT-19
Tungsten (W)-Total			101.0		%		70-130	03-OCT-19
Uranium (U)-Total			N/A	MS-B	%		-	03-OCT-19
Vanadium (V)-Total			108.0		%		70-130	03-OCT-19
Zinc (Zn)-Total			100.9		%		70-130	03-OCT-19
Zirconium (Zr)-Total			87.0		%		70-130	03-OCT-19
NH3-F-WT	Water							
Batch R4858766								
WG3181797-15 DUP Ammonia, Total (as N)		L2357232-1 3.79	3.77		mg/L	0.4	20	03-OCT-19
WG3181797-14 LCS Ammonia, Total (as N)			99.5		%		85-115	03-OCT-19
WG3181797-13 MB Ammonia, Total (as N)			<0.010		mg/L		0.01	03-OCT-19
WG3181797-16 MS		L2357232-1			-			



Workorder: L2357232 Report Date: 24-OCT-19 Page 13 of 16

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NH3-F-WT Batch R4858766 WG3181797-16 MS Ammonia, Total (as N)	Water	L2357232-1	N/A	MS-B	%		-	03-OCT-19
NO3-IC-WT Batch R4858736 WG3180434-14 DUP	Water	L2358193-2						
Nitrate (as N) WG3180434-12 LCS Nitrate (as N)		<0.020	<0.020	RPD-NA	mg/L %	N/A	20 90-110	03-OCT-19
WG3180434-11 MB Nitrate (as N) WG3180434-15 MS		L2358193-2	<0.020		mg/L		0.02	03-OCT-19
Nitrate (as N) P-T-COL-WT	Water		96.8		%		75-125	03-OCT-19
Batch R4858789 WG3181368-3 DUP Phosphorus, Total		L2356976-1 0.331	0.328		mg/L	0.9	20	04-OCT-19
WG3181368-2 LCS Phosphorus, Total			98.7		%		80-120	04-OCT-19
WG3181368-1 MB Phosphorus, Total			<0.0030		mg/L		0.003	04-OCT-19
WG3181368-4 MS Phosphorus, Total		L2356976-1	N/A	MS-B	%		-	04-OCT-19
PH-BF	Water							
Batch R4853590 WG3178736-2 DUP pH		L2356948-1 6.82	6.83	J	pH units	0.01	0.2	02-OCT-19
WG3178736-1 LCS pH			7.02		pH units		6.9-7.1	02-OCT-19
SO4-IC-N-WT	Water							
Batch R4858736								
WG3180434-14 DUP Sulfate (SO4)		L2358193-2 12.0	12.0		mg/L	0.1	20	03-OCT-19
WG3180434-12 LCS Sulfate (SO4)			102.4		%		90-110	03-OCT-19
WG3180434-11 MB Sulfate (SO4)			<0.30		mg/L		0.3	03-OCT-19



Workorder: L2357232 Report Date: 24-OCT-19

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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-N-WT Batch R4858736	Water							
WG3180434-15 MS Sulfate (SO4)		L2358193-2	100.7		%		75-125	03-OCT-19
SOLIDS-TDS-BF	Water							
Batch R4854358 WG3178747-3 DUP Total Dissolved Solids		L2356948-3 519	463		mg/L	11	20	02-OCT-19
WG3178747-2 LCS Total Dissolved Solids			97.5		%		85-115	02-OCT-19
WG3178747-1 MB Total Dissolved Solids			<20		mg/L		20	02-OCT-19
SOLIDS-TSS-BF	Water							
Batch R4853597 WG3178742-3 DUP Total Suspended Solids		L2357326-1 122	124		mg/L	1.6	25	01-OCT-19
WG3178742-2 LCS Total Suspended Solids			98.4		%		85-115	01-OCT-19
WG3178742-1 MB Total Suspended Solids			<2.0		mg/L		2	01-OCT-19
TKN-WT	Water							
Batch R4859216 WG3181133-3 DUP Total Kjeldahl Nitrogen		L2355174-4 0.20	0.21		mg/L	7.8	20	04-OCT-19
WG3181133-2 LCS Total Kjeldahl Nitrogen			107.3		%		75-125	04-OCT-19
WG3181133-1 MB Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	04-OCT-19
WG3181133-4 MS Total Kjeldahl Nitrogen		L2355174-4	102.2		%		70-130	04-OCT-19
TOC-WT	Water							
Batch R4858932		1 0057000 4						
WG3181671-3 DUP Total Organic Carbon		L2357232-1 4.16	4.25		mg/L	2.1	20	04-OCT-19
WG3181671-2 LCS Total Organic Carbon			106.3		%		80-120	04-OCT-19
WG3181671-1 MB Total Organic Carbon			<0.50		mg/L		0.5	04-OCT-19



Workorder: L2357232

Report Date: 24-OCT-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TOC-WT	Water							_
Batch R4858932 WG3181671-4 MS Total Organic Carbon		L2357232-1	104.4		%		70-130	04-OCT-19
TURBIDITY-BF	Water							
Batch R4853592								
WG3178737-3 DUP		L2357383-1						
Turbidity		4.36	4.34		NTU	0.5	15	02-OCT-19
WG3178737-2 LCS Turbidity			110.0		%		85-115	02-OCT-19
WG3178737-1 MB Turbidity			<0.10		NTU		0.1	02-OCT-19

Workorder: L2357232 Report Date: 24-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville) Page 16 of 16

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit ALS Control Limit (Data Quality Objectives)
DUP Duplicate

RPD Relative Percent Difference

N/A Not Available

LCS Laboratory Control Sample SRM Standard Reference Material

MS Matrix Spike

MSD Matrix Spike Duplicate

ADE Average Desorption Efficiency

MB Method Blank

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

Sample Parameter Qualifier Definitions:

Qualifier	Description
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 predetermined data quality objectives to provide confidence in the accuracy of associated test results.

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



Ft. Collins, Colorado LIMS Version: 6.914 Page 1 of 1

Monday, October 21, 2019

Rick Hawthorne
ALS Environmental
60 Northland Rd, Unit 1
Waterloo Canada, ON N2V 2B8

Re: ALS Workorder: 1910111

Project Name:

Project Number: L2357232

Dear Mr. Hawthorne:

One water sample was received from ALS Environmental, on 10/4/2019. The sample was scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental

Katie M. OBrien

Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALOE :							
ALS Environme	ntal – Fort Collins						
Accreditation Body	License or Certification Number						
AIHA	214884						
Alaska (AK)	UST-086						
Alaska (AK)	CO01099						
Arizona (AZ)	AZ0742						
California (CA)	06251CA						
Colorado (CO)	CO01099						
Florida (FL)	E87914						
Idaho (ID)	CO01099						
Kansas (KS)	E-10381						
Kentucky (KY)	90137						
PJ-LA (DoD ELAP/ISO 170250)	95377						
Louisiana (LA)	05057						
Maryland (MD)	285						
Missouri (MO)	175						
Nebraska(NE)	NE-OS-24-13						
Nevada (NV)	CO000782008A						
New York (NY)	12036						
North Dakota (ND)	R-057						
Oklahoma (OK)	1301						
Pennsylvania (PA)	68-03116						
Tennessee (TN)	2976						
Texas (TX)	T104704241						
Utah (UT)	CO01099						
Washington (WA)	C1280						



1910111

Radium-226:

The sample was prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1910111

Client Name: ALS Environmental

Client Project Name:

Client Project Number: L2357232 Client PO Number: L2357232

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L2357232-1	1910111-1		WATER	01-Oct-19	

WATERLOO



Subcontract Request Form

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA

225 COMMERCE DRIVE FORT COLLINS,CO 80524

Please see enclosed 1 san	nple(s) in 1 C	Container(s)			
SAMPLE NUMBER ANALYTI	CAL REQUIRED		DATE SAI	MPLED DUE DATE	Priority Flag
L2357232-1 MS-08 Ra226 by	Alpha Scint, MDC=0.01	. Bq/L (RA226-MME	10/ 1/ 20 ER-FC 1)	19 10/22/2019	E
Subcontract Info Contact: Analysis and reporting info contact:	Mary-Lynn Pike (5: Rick Hawthorne 60 NORTHLAND RO WATERLOO,ON N2 Phone: (519) 88	DAD, UNIT 1 V 2B8	mail: Rick	.Hawthorne@a	lsglobal.com
Please email confirmation of rece	•	k.Hawthorne@a			J - 2 2 23
Shipped By:	Da	ite Shipped:			
Received By: Chumble	Da	te Received:	10-4-	19	13:10
Verified By:	Da	te Verified:	· · · · · · · · · · · · · · · · · · ·		
·		mperature:			

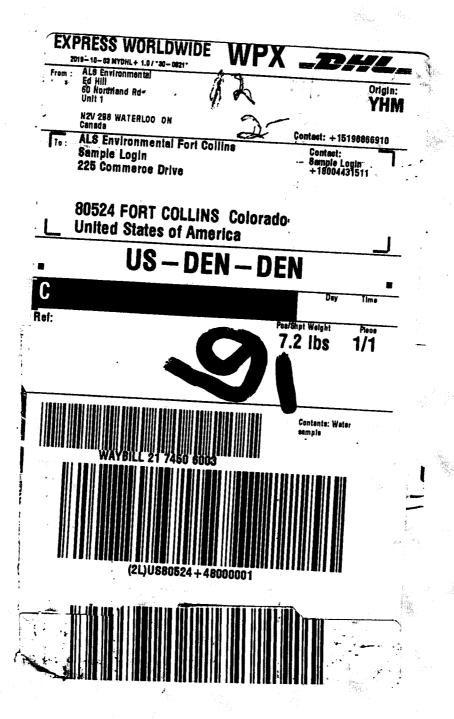


ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: AG-Water DO	Workorder No:	19	101	11	_
Project Manager:	Initials:	Date	10-1	4-19	<u>></u>
Are airbills / shipping documents present and/or removable?			DROP OFF	YES	NO
2 Are custody seals on shipping containers intact?			NONE	(YES)	NO *
3. Are custody seals on sample containers intact?			NONE	YES	NO *
4. Is there a COC (chain-of-custody) present?				YES	NO *
Is the COC in agreement with samples received? (IDs, dates, t matrix, requested analyses, etc.)	imes, # of samples,	# of cont	ainers,	YES	NO *
6. Are short-hold samples present?				YES	(NO)
7. Are all samples within holding times for the requested analys	es?			YES	NO *
8. Were all sample containers received intact? (not broken or le	aking)			YES	NO *
9 Is there sufficient sample for the requested analyses?				(YES)	NO *
10. Are all samples in the proper containers for the requested ana	lyses?			(YES	NO *
11. Are all aqueous samples preserved correctly, if required? (exc	cluding volatiles)		N/A	YES	NO *
12. Are all aqueous non-preserved samples pH 4-9?			N/A)	YES	NO *
Are all samples requiring no headspace (VOC, GRO, RSK/M > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	EE, radon) free of b	oubbles	N/A	YES	NO
14. Were the samples shipped on ice?				YES	NO
15. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*:	#1 #3	#4	RAD ONLY	YES	NO
Cooler #:					
Temperature (°C): 44					
No. of custody seals on cooler:					
Acceptance Information External µR/hr reading:					
Background μR/hr reading:					
Were external µR/hr readings ≤ two times background and within DOT acceptance c	riteria? (YES) NO / NA	(If no, see	Form 008.)		
* Please provide details here for NO responses to gray boxes above - fo	or 2 thru 5 & 7 thru 1	2, notify l	'M & cont	inue w/ lo	gin.
All ice was melted.					
	ttle ID's vs ALS la	b ID's d	ouble-ch	ecked by	<u>ا: قد</u>
If applicable, was the client contacted? YES / NO / NA Contact:	1.1.		_ Date/Tin	ne:	
Project Manager Signature / Date:	10/7/19		_		

Form 201r27.xls (02/11/2019)

*IR Gun #1, VWR SN 170560549 *IR Gun #3, VWR SN 170647571 *IR Gun #4, Oakton, SN 2372220101-0002



SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 21-Oct-19

 Project:
 L2357232
 Work Order:
 1910111

 Sample ID:
 L2357232-1
 Lab ID:
 1910111-1

 Legal Location:
 Matrix:
 WATER

Collection Date: 10/1/2019 **Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Ema	anation - Method 903.1	SOF	783	Prep	Date: 10/8/2019	PrepBy: TRW
Ra-226	0.018 (+/- 0.0075)		0.0035	BQ/I	NA	10/17/2019 14:05
Carr: BARIUM	99.8		40-110	%REC	DL = NA	10/17/2019 14:05

SAMPLE SUMMARY REPORT

Date: 21-Oct-19 **Client:** ALS Environmental

Project: L2357232 **Work Order:** 1910111 L2357232-1 **Lab ID:** 1910111-1 Sample ID:

Legal Location: Matrix: WATER

Collection Date: 10/1/2019 **Percent Moisture:**

Report **Dilution Analyses** Result **Oual** Limit Units **Date Analyzed Factor**

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested

MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

- B Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
- E Analyte concentration exceeds the upper level of the calibration range.
- J Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
- A A tentatively identified compound is a suspected aldol-condensation product.
- X The analyte was diluted below an accurate quantitation level.
- * The spike recovery is equal to or outside the control criteria used.
- + The relative percent difference (RPD) equals or exceeds the control criteria.
- G A pattern resembling gasoline was detected in this sample.
- D A pattern resembling diesel was detected in this sample
- M A pattern resembling motor oil was detected in this sample.
- C A pattern resembling crude oil was detected in this sample.
- 4 A pattern resembling JP-4 was detected in this sample.
- 5 A pattern resembling JP-5 was detected in this sample.
- H Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel - mineral spirits
- motor oil
- Stoddard solvent
- bunker C

ALS -- Fort Collins LIMS Version: 6.914

Client: ALS Environmental

Work Order: 1910111 **Project:** L2357232

Date: 10/21/2019 8:25

QC BATCH REPORT

LCS	Sample ID:	RE191008-2				Ur	nits: BQ/I		Analysi	s Date: 1	0/17/20	19 14:4	0
Client ID:			Run II	D: RE191008 -2	2A			ı	Prep Date: 10/8	/2019	DF:	NA	
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226			1.58 (+/- 0.393)	0.0155	1.72		91.6	67-120					P,Y1,M3
Carr: BARII	UM		16500		16380		101	40-110					Y1
LCSD	Sample ID:	RE191008-2				Ur	nits: BQ/I		Analysi	s Date: 1	0/17/20	19 14:4	0
Client ID:			Run II	D: RE191008 -2	2A			ı	Prep Date: 10/8	/2019	DF:	NA	
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226			1.49 (+/- 0.373)	0.0178	1.72		86.7	67-120		1.58	0.2	2.1	P,Y1,M3
Carr: BARII	UM		16500		16390		101	40-110		16500			Y1
МВ	Sample ID:	RE191008-2				Ur	nits: BQ/I		Analysi	s Date: 1	0/17/20	19 14:4	0
Client ID:			Run II	D: RE191008 -2	2A			F	Prep Date: 10/8	/2019	DF:	NA	
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226			0.0023 (+/- 0.0027)	0.0041									Y1,U
Carr: BARII	UM		16600		16380		102	40-110					Y1

QC Page: 1 of 1



AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, ON NOB 2JO Tel. (519) 763-4412

Fax. (519) 763-4419

TOXICITY TEST REPORT

Daphnia magna EPS 1/RM/14 Page 1 of 2

Work Order: Sample Number:

240458 60925

SAMPLE IDENTIFICATION

Company:

ALS Laboratory Group, Waterloo

Date Collected:

2019-10-01

Location:

Waterloo ON

Time Collected:

09:15

Job Number:

L2357232-1

Date Received:

Substance:

2019-10-03

Sampling Method:

L2357232-1 MS-08 Grab

Time Received: Temperature on Receipt: 11:00 6.0 °C

Sampled By:

KB/LM

Date Tested:

2019-10-03

Sample Description: Clear, light yellow, odourless.

Test Method:

Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Environment

Canada EPS 1/RM/14 (Second Edition, December 2000, with February 2016 amendments).

48-HOUR TEST RESULTS						
Substance	Effect	Value				
Control	Mean Immobility	0.0 %				
	Mean Mortality	0.0 %				
100%	Mean Immobility	0.0 %				
	Mean Mortality	0.0 %				

The results reported relate only to the sample tested and as received.

TEST ORGANISM

TEST CONDITIONS

Species:

Daphnia magna Dm19-19

Time to First Brood: Average Brood Size: 8.2 days

Organism Batch: Culture Mortality:

1.9% (previous 7 days)

40.1 young

Sample Treatment:

pH Adjustment:

None None

None

Number of Replicates: Organisms / Replicate: 3 10

Pre-aeration Rate: Pre-aeration Time:

~30 mL/min/L 30 minutes

Organisms / Test Level: Organism Loading Rate:

30 15.0 mL/organism

Test Aeration: Hardness Adjustment: None

Impaired Control Organisms: 0.0% Test Method Deviation(s):

None

REFERENCE TOXICANT DATA

Toxicant: Date Tested: Sodium Chloride 2019-10-01

Historical Mean LC50: Warning Limits (\pm 2SD):

6.4 g/L 5.8 - 7.1 g/L

LC50: 95% Confidence Limits: 6.9 g/L 6.4 - 7.4 g/L

Organism Batch:

Dm19-19 KJW, SV

Statistical Method:

Linear Regression (MLE)

Analyst(s):

COMMENTS

All test validity criteria as specified in the test method were satisfied.

Date:

Approved By:



TOXICITY TEST REPORT

Daphnia magna

EPS 1/RM/14

Page 2 of 2

Work Order: Sample Number: 60925

240458

* adjusted for temperature and barometric pressure

TEST DATA

	*				IESI DATA				
	Initial Water	Chomisto	(1009/.) •	р Н 8.7	Dissolved O ₂ (mg/L) 10.4	Conductivity (µmhos/cm) 5030	Temperature (°C) 20.0	O ₂ Saturation (%)* 123	Hardness (as CaCO ₃ 468 mg/L
	initial water	Chemisti	y (100 /0).			3030	20.0	123	400 mg/L
D	2010 10 02	14.45		0 HC	DURS				
Date & Time Analyst(s) :	2019-10-03 SV/KJW (SV)	14:45							
Concentration (%)	Replicate	Dead	Immobile	рН	Dissolved O ₂	Conductivity	Temperature	O ₂ Saturation (%)*	Hardness
100	Α	0	0	8.6	9.2	5040	20.0	108	468
100	В	0	0	8.6	9.2	5040	20.0	108	468
00	C	0	0	8.6	9.2	5040	20.0	108	468
Control	Α	0	0	8.5	8.6	763	20.0	100	220
Control	В	0	0	8.5	8.6	763	20.0	100	220
Control	C	0	0	8.5	8.6	763	20.0	100	220
Notes:									
		od-sere moto-sere		24 H	OURS				
Date & Time Analyst(s):	2019-10-04 KJW (SV)	14:45							
Concentration (%)	Replicate	Dead	Immobile	pН	Dissolved O ₂	Conductivity	Temperature		
00	A	-	0	-	_	_	20.0		
00	В	-	1	_	_	_	20.0		
00	C	-	0	_	_		20.0		
Control	Α	_	0	_		_	20.0		
Control	В	_	0	_	-	_	20.0		
Control	C	-	0	_	-	-	20.0		
Notes:	Test organisms the test chambe		0% concentr	ation ap	peared to be ad	hered to gas bu	bbles on the si	des and bottom of	
				48 H	OURS				
Date & Time Analyst(s):	2019-10-05 SV	14:45							
Concentration (%)	Replicate	Dead	Immobile	р Н	Dissolved O ₂	Conductivity	Temperature		
100	Α	0	0	7.8	8.1	5030	20.0		
00	В	0	0	7.9	8.3	5020	20.0		
100	C	0	0	7.8	8.3	5020	20.0		
Control	Α	0	0	8.5	8.4	777	20.0		
Control	В	0	0	8.5	8.4	778	20.0		
Control	C	0	0	8.5	8.5	789	20.0		
Notes:	Test organisms the test chambe		0% concentr	ation ap	peared to be ad	hered to gas bu	bbles on the si	des and bottom of	
			Number	immobil	e does not inclu	ide number dea	d.		
= not measured/r adjusted for temporal	· -	matria ==	00011#0				Test Data Rev	riewed By:	JL

Date:

2019-10-07



AquaTox Testing & Consulting Inc. B-11 Nicholas Beaver Road Puslinch, ON NOB 2J0 Tel. (519) 763-4412 Fax. (519) 763-4419

TOXICITY TEST REPORT

Rainbow Trout EPS 1/RM/13 Page 1 of 2

Work Order: Sample Number: 240458 60925

SAMPLE IDENTIFICATION

Company:

ALS Laboratory Group, Waterloo

Date Collected:

2019-10-01

Location:

Waterloo ON

Time Collected:

09:15

Job Number:

L2357232-1

Date Received:

2019-10-03

Substance:

L2357232-1 MS-08

Time Received:

11:00

Sampling Method:

Grab

Temperature on Receipt: Date Tested:

6.0 °C 2019-10-03

Sampled By: Sample Description:

KB/LM Clear, light yellow, odourless.

Test Method(s):

Reference Method for Determining Acute Lethality of Liquid Effluents to Rainbow Trout. Environment Canada, EPS 1/RM/13 (2nd Edition, December 2000, with May 2007 and February 2016 amendments).

96-HOUR TEST RESULTS Substance **Effect** Value Control 0.0 % Mean Impairment 0.0 % Mean Mortality 100% Mean Impairment 0.0 %

The results reported relate only to the sample tested and as received.

Mean Mortality

TEST ORGANISM

Test Organism:

Oncorhynchus mykiss

Average Fork Length ($\pm 2 \text{ SD}$):

0.0 %

39.8 mm (± 2.3)

Organism Batch:

T19-18

Range of Fork Lengths:

38 - 42 mm

Control Sample Size:

Average Wet Weight (± 2 SD):

 $0.49 \text{ g } (\pm 0.12)$

Cumulative stock tank mortality rate: 0.1% (previous 7 days)

Range of Wet Weights:

0.38 - 0.58 g

Control organisms showing stress:

0 (at test completion)

Organism Loading Rate:

0.2 g/L

TEST CONDITIONS

Sample Treatment:

None

Volume Tested (L):

21

pH Adjustment:

None

Number of Replicates:

1

Test Aeration:

Yes

Organisms Per Replicate:

10 10

Pre-aeration/Aeration Rate: Total Pre-Aeration Time:

 $6.5 \pm 1 \text{ mL/min/L}$ 120 minutes

Organisms Per Test Level: Test Method Deviation(s):

None

REFERENCE TOXICANT DATA

Toxicant:

LC50:

Potassium Chloride

Date Tested:

2019-10-01

Organism Batch:

T19-18

Historical Mean LC50:

3769 mg/L 3141 - 4522 mg/L

95% Confidence Limits:

3375 mg/L

Warning Limits (± 2SD):

3021 - 3683 mg/L

Analyst(s):

KP, ALC, AW

Statistical Method:

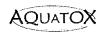
Linear Regression (MLE)

COMMENTS

•All test validity criteria as specified in the test method were satisfied.

Approved By:

Accredited to ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA)



TOXICITY TEST REPORT Rainbow Trout

EPS 1/RM/13 Page 2 of 2

Work Order: 240458 Sample Number: 60925

TEST DATA

			TEST	DATA			
Initial Water Chemistry (100%):			рН 8.9	Dissolved O ₂ (mg/L) 10.6	Conductivity (µmhos/cm) 5085	Temperature (°C) 14.0	O ₂ Saturation (%)* 111
After 30 min pro		•	8.7	9.5	5070	14.0	101
•							
C.N. C. T. M. C. C. C. C. C. C. C. C. C. C. C. C. C.			0 HC	DURS			
Date & Time Analyst(s):	2019-10-03 MDH	14:30					
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	O ₂ Saturation*
100% Control	0	0 0	8.6 8.2	9.3 9.3	5072 793	14.5 15.0	100 98
Notes:							
			24 H	OURS			
Date & Time Analyst(s):	2019-10-04 МDН	14:30	24 11	OURS			
Concentration	Dead	Impaired	рН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	_	_	_	15.0	
Control	0	0	-			15.0	
Notes:							
			48 H	OURS			
Date & Time Analyst(s):	2019-10-05 AW	14:30	,011				
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100% Control	0 0	0	- -	_	- Tarriera	15.0 15.0	
Notes:							
	····		72 H	OURS			
Date & Time Analyst(s):	2019-10-06 AW	14:30	/2 11	OURS			
Concentration	Dead	Impaired	pН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	_	_	_	15.0	
Control	0	0	_	_	-	15.0	
Notes:							
			96 H	OURS			
Date & Time Analyst(s):	2019-10-07 ALC(TL)	14:30	-	-			
Concentration	Dead	Impaired	рН	Dissolved O ₂	Conductivity	Temperature	
100%	0	0	7.5	9.5	5087	14.5	
Control	0	0	8.2	9.7	743	14.5	
Notes:							
"-" = not measure	d/not required						
Number impaired	does not include				Test Data Re	viewed By:	JL
adjusted for temp	perature and baro	metric pressure			Date:	2019	-10-07

CHAIN OF CUSTODY RECORD





Shipping Address: AquaTox Testing & Consulting Inc.
B-11 Nicholas Beaver Road
Puslinch, Ontario Canada N0B 2J0

Voice: (519) 763-4412 Fax: (519) 763-4419

Clent: A1 & Environmental of Daffield

t ALS Environmental c/o Baffinland Iron Mine

Quote # (2019): 162705399-19

Phone: (519) 886-6910

Affiliation: Baffinland Iron Mine / ALS Environmental

Field Sampler Name (print): KB/LM

P.O. Number: 4500057496

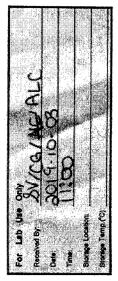
Custody Relinquished by: Kendra Button Date/Time Shipped: 01-Oct-19/19:00

Sample Storage (prior to shipping):

Fax: (519) 886-9047

Contact: Rick Hawthorne (ALS) / Martina Rendas (Aquatox)

		Sample Identification			***************************************	Analys	Analyses Requested	ested			Ø	mple Met	Sample Method and Volume
Date Collected (yyyy-mm-dd)	Time Collected (e.g. 14:30, 24 hr clock)	1255 7832 - 1	Aquatox famp, on Sample Number arrival	Rainbow Trout Single Concentration	Rambow Trout LC50 Daphnia magna Single Concentration	060.1 engem einfideG	wonniki baertia? Survivus & Growth	Cenodephnie dubie Survival & Reproduction Cemne minor Growth	Pseudokirchnenella Pseudokirchnenella Growth	Other (piease specify below)	dsn	Composite # @	# of Containers and Volume (eg 2 x 11,, 5 x 101, etc.)
	09:15	MS-08	0.9138/09	>	`						>	2)	2 x 10LCarboy



Please list any special requests or instructions:	Rush TAT, pH required, daily updates.	Report Distribution: bimcore@alsqlobal.com, rick.hawthorne@alsqlobal.com	
/	J		





Subcontract Request Form

Subcontract To:

AQUATOX TESTING AND CONSULTING

11B NICHOLAS BEAVER ROAD RR3 GUELPH,ON N1H 6H9

NOTES:	Please reference on fin ALS requires QC data	•		<u>2357232</u> uits.	15.0	
Please see	e enclosed 1 sa	mple(s) ii	n <u>Ω</u> Container	(s)		
SAMPLE NUMBER	ANALY	TICAL REQU	JIRED	DATE	SAMPLED DUE DATE	Priority Flag
L2357232-	1 MS-08			10/1/	2019	E
	Special	Request Aqu	Jatox (SPECIAL REQUES	T2-AQT 14)	10/8/2019	
	Special	Request Aqu	Jatox (SPECIAL REQUES	Γ-AQT 14)	10/8/2019	
Subcontract	Info Contact:	Mary-Ly	ynn Pike (519) 886-69	010		
Analysis and	d reporting info contact:		wthorne	•		
			THLAND ROAD, UNIT LOO,ON N2V 2B8	1		
			(519) 886-6910	Email: Ri	ck.Hawthorne@als	global.com
Please ema	ail confirmation of rec	eipt to:	Rick.Hawtho	rne@alsglob	al.com	
Shipped By:			Date Shipped	•		
Received By	·		Date Received	d:		
Verified By:			Date Verified:			
			Temperature:			
Sample Inte	grity Issues:					

S Environmental

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

Canada Toll Free: 1 800 668 9878



L2357232-COFC

COC Number: 15 -

www.alsglobal.com																								
Report To	Contact and compa	ny name below will app	ear on the final repo	ort		Report Format	/ Distribution		Gelect .					drm all E&P TATs with your AM - surcharges will apply Standard TAT if received by 3 pm - business days - no surcharges apply										
Company:	Baffinland Iron Mines C	Corp.		-	Select Report Fo	ormat: 🗹 PDF	☑ EXCEL ☑ EDI	D (DIGITAL)		Re	gular	[R] [Stand	lard TA1	if rece						_			
Contact:	Wiliam Bowden and Co	nnor Devereaux			Quality Control ((QC) Report with Re	eport ☑ YES	□ NO	≥ 8	4	day (P	4]			Ϋ́СΥ	1 E	Busine	ess da	y [E1]	1	[7		
Phone:	647-253-0596 EXT 601	16			☐ Compare Results	to Criteria on Report -	provide details below	if box checked	PRIORITY (Business Day	3	day [P	lay [P3] 🗆		Same Day, Weeker Statutory holiday					Γ	J				
	Company address below	will appear on the final	report		Select Distribution	on: 🗹 EMAIL	□ MAIL □ F	AX	id (Bus)	2	day [P	2]			ä		Statuto	ory ho	liday	[E0]				
Street:	2275 Upper Middle Rd	E., Suite #300			Email 1 or Fax	bimcore@alsgloba	l.com						ed for a											
City/Province:	Oakville, ON				Email 2				For tes	ts that c	an not be	perform	ned acco					_	will be c	ontacte	d			
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	Copy of Invoice with Re	port	☑ NO			Distribution: EMA		FAX	F/P		L						\dashv	_	_	+	-			
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ALS Lab Wor	rk Order# (lab use onl	n 1255	57232		ALS Contact:		Sampler:	KB/LM	BIM-MMER-WT	_											i.	_		
ALS Sample # (lab use only)	1	nple Identification				Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BIM-MI	Group														
	MS-08					1-Oct-19	9:15	Water	E0	E1						П					Т	12		
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Spacial Instructions / S				tions / Sp	Specify Criteria to add on report by clicking on the drop-down list below							SAMI	PLE C	CONDITION AS RECEIVED (lab use only)										
Drinking	Water (DW) Samples	(client use)	Opoolal monac		(electronic COC only)				Froze	en			_							No				
•	en from a Regulated DW	System?						<u></u>		acks ng Init	iated	Ice C	Cubes Custody seal intact Yes No											
	human drinking water us	se?	1 extra gen che	m include	ed.				INITIAL COOLER TEM					ATURE	s °C		FINAL COOLER TEMPERAT				URES °C			
•	s 🗵 NO																12	1.2	<u></u>					
		LEASE (client use)			INITIAL SHIPMEN	IT RECEPTION	(lab use only)					Fil	NAL Ş	HIPM									
Released By: Ke		Date: 01-Oct-19		Time: 13:10	Received by:		Date:		Time	:	Rece	ived b	y: /	H			Date:	oc7	19		Ţ	ime: 100		
				 		1801	TE LABORATO	DV CODY VEI	LOW	CLIEN	IT COE	ov.										OCTOBER 2015 FRON		



Baffinland Iron Mine's Corporation (Oakville) ATTN: William Bowden/Connor Devereaux

2275 Upper Middle Rd. E.

Suite #300

Oakville ON L6H 0C3

Date Received: 01-OCT-19

Report Date: 24-OCT-19 13:53 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2357716 Project P.O. #: 4500057496

Job Reference: MS-08 REFERENCE AND EXPOSURE

C of C Numbers: Legal Site Desc:

Comments: ADDITIONAL 02-OCT-19 09:37

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



L2357716 CONTD.... PAGE 2 of 8 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2357716-1 MS-08-DS Sampled By: KB/CD on 01-OCT-19 @ 17:30 Matrix: WATER							
Physical Tests							
Conductivity	199		3.0	umhos/cm		05-OCT-19	R4860731
Hardness (as CaCO3)	83.0	HTC	0.50	mg/L		04-OCT-19	
рН	8.08		0.10	pH units		02-OCT-19	R4853590
Total Suspended Solids	2.8		2.0	mg/L		01-OCT-19	R4853597
Total Dissolved Solids	90	DLDS	13	mg/L		06-OCT-19	R4860417
Turbidity	3.36	PEHT	0.10	NTU		05-OCT-19	R4860048
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	85		10	mg/L		05-OCT-19	R4860731
Ammonia, Total (as N)	<0.010		0.010	mg/L		07-OCT-19	R4860725
Chloride (CI)	8.20		0.50	mg/L		04-OCT-19	R4859139
Fluoride (F)	0.027		0.020	mg/L		04-OCT-19	R4859139
Nitrate (as N)	0.082		0.020	mg/L		04-OCT-19	R4859139
Total Kjeldahl Nitrogen	<0.15		0.15	mg/L	07-OCT-19	07-OCT-19	R4860925
Phosphorus, Total	0.0050		0.0030	mg/L	04-OCT-19	07-OCT-19	R4860606
Sulfate (SO4)	7.65		0.30	mg/L		04-OCT-19	R4859139
Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					04-OCT-19	R4859599
Dissolved Organic Carbon	1.60		0.50	mg/L	04-OCT-19	07-OCT-19	R4860640
Total Organic Carbon	2.19		0.50	mg/L		07-OCT-19	R4860639
Total Metals							
Aluminum (AI)-Total	0.118		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Arsenic (As)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Barium (Ba)-Total	0.0112		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Boron (B)-Total	<0.010		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Calcium (Ca)-Total	16.5		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Cesium (Cs)-Total	0.000014		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Copper (Cu)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Iron (Fe)-Total	0.117		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Lead (Pb)-Total	0.000077		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Lithium (Li)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Magnesium (Mg)-Total	10.2		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Manganese (Mn)-Total	0.00247		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Mercury (Hg)-Total	<0.000050		0.0000050	mg/L		07-OCT-19	R4860448
Molybdenum (Mo)-Total	0.000321		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Nickel (Ni)-Total	0.00058		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Phosphorus (P)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637

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

L2357716 CONTD.... PAGE 3 of 8 Version: FINAL

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2357716-1 MS-08-DS Sampled By: KB/CD on 01-OCT-19 @ 17:30 Matrix: WATER							
Total Metals							
Potassium (K)-Total	1.09		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Rubidium (Rb)-Total	0.00154		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Selenium (Se)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Silicon (Si)-Total	1.26		0.10	mg/L	04-OCT-19	04-OCT-19	R4859637
Silver (Ag)-Total	<0.00050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Sodium (Na)-Total	3.41		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Strontium (Sr)-Total	0.0167		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Sulfur (S)-Total	2.64		0.50	mg/L	04-OCT-19	04-OCT-19	R4859637
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Thallium (TI)-Total	<0.00010		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Thorium (Th)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Titanium (Ti)-Total	0.00541		0.00030	mg/L	04-OCT-19	04-OCT-19	R4859637
Tungsten (W)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Uranium (U)-Total	0.00415		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Vanadium (V)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	04-OCT-19	04-OCT-19	R4859637
Zirconium (Zr)-Total	0.00026		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Dissolved Metals	0.00020		0.00020				
Dissolved Mercury Filtration Location	FIELD					04-OCT-19	R4859193
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-OCT-19	07-OCT-19	R4860451
Radiological Parameters							
Ra-226	0.0094		0.0046	Bq/L	10-OCT-19	21-OCT-19	R4851666
L2357716-2 MS-08-US Sampled By: KB/CD on 01-OCT-19 @ 18:00 Matrix: WATER							
Physical Tests							
Conductivity	192		3.0	umhos/cm		05-OCT-19	R4860731
Hardness (as CaCO3)	81.1	HTC	0.50	mg/L		04-OCT-19	
рН	8.08		0.10	pH units		02-OCT-19	R4853590
Total Suspended Solids	2.0		2.0	mg/L		01-OCT-19	R4853597
Total Dissolved Solids	85	DLDS	13	mg/L		06-OCT-19	R4860417
Turbidity	1.88	PEHT	0.10	NTU		05-OCT-19	R4860048
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	85		10	mg/L		05-OCT-19	R4860731
Ammonia, Total (as N)	<0.010		0.010	mg/L		07-OCT-19	R4860725
Chloride (CI)	8.41		0.50	mg/L		04-OCT-19	R4859139
Fluoride (F)	0.030		0.020	mg/L		04-OCT-19	R4859139
Nitrate (as N)	0.074		0.020	mg/L		04-OCT-19	R4859139
Total Kjeldahl Nitrogen	<0.15		0.15	mg/L	07-OCT-19	07-OCT-19	R4860925
Phosphorus, Total	0.0042		0.0030	mg/L	04-OCT-19	07-OCT-19	R4860606
Sulfate (SO4)	5.26		0.30	mg/L		04-OCT-19	R4859139

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2357716-2 MS-08-US Sampled By: KB/CD on 01-OCT-19 @ 18:00 Matrix: WATER							
Anions and Nutrients Organic / Inorganic Carbon							
Dissolved Carbon Filtration Location	LAB					04-OCT-19	R4859599
Dissolved Organic Carbon	1.68		0.50	mg/L	04-OCT-19	07-OCT-19	R4860640
Total Organic Carbon	2.22		0.50	mg/L		07-OCT-19	R4860639
Total Metals				Ü			
Aluminum (Al)-Total	0.0844		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Antimony (Sb)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Arsenic (As)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Barium (Ba)-Total	0.0111		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Beryllium (Be)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Boron (B)-Total	<0.010		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Calcium (Ca)-Total	16.6		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Cesium (Cs)-Total	0.000011		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Chromium (Cr)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Cobalt (Co)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Copper (Cu)-Total	0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Iron (Fe)-Total	0.066		0.010	mg/L	04-OCT-19	04-OCT-19	R4859637
Lead (Pb)-Total	0.000062		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Lithium (Li)-Total	<0.0010		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Magnesium (Mg)-Total	9.63		0.0050	mg/L	04-OCT-19	04-OCT-19	R4859637
Manganese (Mn)-Total	0.00121		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		07-OCT-19	R4860448
Molybdenum (Mo)-Total	0.000364		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Nickel (Ni)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	R4859637
Phosphorus (P)-Total	<0.050		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Potassium (K)-Total	1.10		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Rubidium (Rb)-Total	0.00161		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Selenium (Se)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Silicon (Si)-Total	1.31		0.10	mg/L	04-OCT-19	04-OCT-19	R4859637
Silver (Ag)-Total	<0.000050		0.000050	mg/L	04-OCT-19	04-OCT-19	R4859637
Sodium (Na)-Total	3.68		0.050	mg/L	04-OCT-19	04-OCT-19	R4859637
Strontium (Sr)-Total	0.0170		0.0010	mg/L	04-OCT-19	04-OCT-19	R4859637
Sulfur (S)-Total	1.92		0.50	mg/L	04-OCT-19	04-OCT-19	R4859637
Tellurium (Te)-Total	<0.00020		0.00020	mg/L	04-OCT-19	04-OCT-19	R4859637
Thallium (TI)-Total	<0.000010		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Thorium (Th)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Tin (Sn)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637
Titanium (Ti)-Total	0.00375		0.00030	mg/L	04-OCT-19	04-OCT-19	R4859637
Tungsten (W)-Total	<0.00010		0.00010	mg/L	04-OCT-19	04-OCT-19	R4859637

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

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2357716-2 MS-08-US Sampled By: KB/CD on 01-OCT-19 @ 18:00 Matrix: WATER							
Total Metals							
Uranium (U)-Total	0.00450		0.000010	mg/L	04-OCT-19	04-OCT-19	R4859637
Vanadium (V)-Total	<0.00050		0.00050	mg/L	04-OCT-19	04-OCT-19	
Zinc (Zn)-Total	<0.0030		0.0030	mg/L	04-OCT-19	04-OCT-19	
Zirconium (Zr)-Total	0.00026		0.00020	mg/L	04-OCT-19	04-OCT-19	
Dissolved Metals	0.00020		0.00020	1119/2	04 001 10	04 001 10	114033037
Dissolved Mercury Filtration Location	FIELD					04-OCT-19	R4859193
Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	04-OCT-19	07-OCT-19	
Radiological Parameters	10.000000		0.0000000	9, =	0.00	0. 00	111000101
Ra-226	0.0081		0.0059	Bq/L	10-OCT-19	21-OCT-19	R4851666

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

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Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)	
Matrix Spike	Calcium (Ca)-Total	MS-B	L2357716-1, -2	
Matrix Spike	Iron (Fe)-Total	MS-B	L2357716-1, -2	
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2357716-1, -2	
Matrix Spike	Silicon (Si)-Total	MS-B	L2357716-1, -2	
Matrix Spike	Sodium (Na)-Total	MS-B	L2357716-1, -2	
Matrix Spike	Strontium (Sr)-Total	MS-B	L2357716-1, -2	
Matrix Spike	Uranium (U)-Total	MS-B	L2357716-1, -2	

Sample Parameter Qualifier key listed:

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
PEHT	Parameter Exceeded Recommended Holding Time Prior to Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-WT	Water	Alkalinity, Total (as CaCO3)	EPA 310.2
This analysis is carri	ed out using pro	cedures adapted from EPA Method 31	0.2 "Alkalinity". Total Alkalinity is determined using the methyl orange

colourimetric method.

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.

illitated detector.

EC-SCREEN-WT Water Conductivity Screen (Internal Use APHA 2510

Only

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

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 EPA 1631E (mod)

CVAAS

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)

Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

MET-T-CCMS-WT 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.

Reference Information

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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.

NO3-IC-WT Water Nitrate in Water by IC EPA 300.1 (mod)
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

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

Water samples are analyzed directly by a calibrated pH meter.

RA226-MMER-FC Water Ra226 by Alpha Scint, MDC=0.01 EPA 903.1

Bq/L

SO4-IC-N-WT 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-WT Water Total Dissolved Solids APHA 2540C

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.

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-WT Water Total Kjeldahl Nitrogen APHA 4500-Norg D

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-WT 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
FC	ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, CANADA

Chain of Custody Numbers:

MS-08 REFERENCE AND EXPOSURE

L2357716 CONTD....

Reference Information

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GLOSSARY OF REPORT TERMS

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

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

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

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

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

< - Less than.

D.L. - The reporting limit.

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

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

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



Workorder: L2357716 Report Date: 24-OCT-19

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Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-WT Batch R4860731	Water							
WG3183025-4 DUP Alkalinity, Total (as CaC	:O3)	WG3183025-3 85	85		mg/L	0.4	20	05-OCT-19
WG3183025-2 LCS Alkalinity, Total (as CaC	O3)		106.0		%		85-115	05-OCT-19
WG3183025-1 MB Alkalinity, Total (as CaC	O3)		<10		mg/L		10	05-OCT-19
CL-IC-N-WT	Water							
Batch R4859139 WG3181734-24 DUP Chloride (CI)		WG3181734-2 6.98	3 6.98		mg/L	0.0	20	04-OCT-19
WG3181734-22 LCS Chloride (Cl)			102.1		%	0.0	90-110	04-OCT-19
WG3181734-21 MB Chloride (CI)			<0.50		mg/L		0.5	04-OCT-19
WG3181734-25 MS Chloride (CI)		WG3181734-2	3 100.1		%		75-125	04-OCT-19
DOC-WT	Water							
Batch R4860640 WG3182798-7 DUP Dissolved Organic Carb	on	L2356948-1 14.2	14.8		mg/L	4.0	20	07-OCT-19
WG3182798-6 LCS Dissolved Organic Carb	on		96.4		%		80-120	07-OCT-19
WG3182798-5 MB Dissolved Organic Carb	on		<0.50		mg/L		0.5	07-OCT-19
WG3182798-8 MS Dissolved Organic Carb	on	L2356948-1	93.6		%		70-130	07-OCT-19
EC-WT	Water							
Batch R4860731 WG3183025-4 DUP Conductivity		WG3183025-3 199	196		umhos/cm	1.4	10	05-OCT-19
WG3183025-2 LCS Conductivity			100.4		%		90-110	05-OCT-19
WG3183025-1 MB Conductivity			<3.0		umhos/cm		3	05-OCT-19
F-IC-N-WT	Water							



Workorder: L2357716 Report Date: 24-OCT-19 Page 2 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F-IC-N-WT	Water							
Batch R4859139 WG3181734-24 DUP Fluoride (F)		WG3181734-2 3	3 0.025		mg/L	0.1	20	04-OCT-19
WG3181734-22 LCS Fluoride (F)			103.8		%		90-110	04-OCT-19
WG3181734-21 MB Fluoride (F)			<0.020		mg/L		0.02	04-OCT-19
WG3181734-25 MS Fluoride (F)		WG3181734-23	3 101.9		%		75-125	04-OCT-19
HG-D-CVAA-WT	Water							
Batch R4860451								
WG3182354-3 DUP Mercury (Hg)-Dissolved		L2357716-1 <0.000050	<0.0000050	RPD-NA	mg/L	N/A	20	07-OCT-19
WG3182354-2 LCS Mercury (Hg)-Dissolved			99.8		%		80-120	07-OCT-19
WG3182354-1 MB Mercury (Hg)-Dissolved			<0.0000050	2	mg/L		0.000005	07-OCT-19
WG3182354-4 MS Mercury (Hg)-Dissolved		L2357716-2	95.8		%		70-130	07-OCT-19
HG-T-CVAA-WT	Water							
Batch R4860448 WG3182348-3 DUP Mercury (Hg)-Total		L2357716-1 <0.000050	<0.0000050	C RPD-NA	mg/L	N/A	20	07-OCT-19
WG3182348-2 LCS Mercury (Hg)-Total			98.3		%		80-120	07-OCT-19
WG3182348-1 MB Mercury (Hg)-Total			<0.0000050	<u> </u>	mg/L		0.000005	07-OCT-19
WG3182348-4 MS Mercury (Hg)-Total		L2357716-2	98.8		%		70-130	07-OCT-19
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-4 DUP Aluminum (Al)-Total		WG3182336-3 0.118	0.114		mg/L	3.4	20	04-OCT-19
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Arsenic (As)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Barium (Ba)-Total		0.0112	0.0109		mg/L	2.4	20	04-OCT-19
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	04-OCT-19



Workorder: L2357716 Report Date: 24-OCT-19 Page 3 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-4 DUP Boron (B)-Total		WG3182336-3 < 0.010	<0.010	DDD NA	ma/l	N1/A	20	04 007 40
Cadmium (Cd)-Total		<0.010	<0.000050	RPD-NA RPD-NA	mg/L mg/L	N/A N/A	20	04-OCT-19
Calcium (Ca)-Total		16.5	16.5	RPD-NA	mg/L		20	04-OCT-19
Chromium (Cr)-Total		<0.00050	<0.00050	DDD NA	mg/L	0.4	20	04-OCT-19
Cesium (Cs)-Total		0.000014	0.000015	RPD-NA	mg/L	N/A	20	04-OCT-19
Cobalt (Co)-Total		<0.00014	<0.00013	DDD NA	mg/L	4.3	20	04-OCT-19
Copper (Cu)-Total		<0.0010	0.0010	RPD-NA	mg/L	N/A	20	04-OCT-19
, ,		0.117	0.0010	RPD-NA	•	N/A	20	04-OCT-19
Iron (Fe)-Total		0.117	0.000080		mg/L	2.2	20	04-OCT-19
Lead (Pb)-Total Lithium (Li)-Total		<0.00017	<0.0010		mg/L mg/L	4.1 N/A	20	04-OCT-19
Magnesium (Mg)-Total		10.2	10.1	RPD-NA	mg/L	N/A	20	04-OCT-19
Manganese (Mn)-Total		0.00247	0.00246		mg/L	1.0	20	04-OCT-19
Molybdenum (Mo)-Total		0.00247	0.00246		mg/L	0.2	20	04-OCT-19
Nickel (Ni)-Total		0.00058	0.000523		mg/L	0.8	20	04-OCT-19
Phosphorus (P)-Total		<0.050	<0.050	DDD NA	mg/L	1.0	20	04-OCT-19
Potassium (K)-Total		1.09	1.09	RPD-NA	mg/L	N/A	20	04-OCT-19
Rubidium (Rb)-Total		0.00154	0.00158		mg/L	0.1 2.1	20 20	04-OCT-19 04-OCT-19
Selenium (Se)-Total		<0.00134	<0.00050	RPD-NA	mg/L	2.1 N/A	20	
Silicon (Si)-Total		1.26	1.29	RPD-NA	mg/L	2.6	20	04-OCT-19
Silver (Ag)-Total		<0.000050	<0.000050	RPD-NA	mg/L	2.6 N/A	20	04-OCT-19 04-OCT-19
Sodium (Na)-Total		3.41	3.39	RPD-NA	mg/L	0.5	20	
Strontium (Sr)-Total		0.0167	0.0167		mg/L	0.3	20	04-OCT-19
Sulfur (S)-Total		2.64	2.70		mg/L	2.2	20 25	04-OCT-19 04-OCT-19
Thallium (TI)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	04-OCT-19
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	04-OCT-19
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	25 25	04-OCT-19
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	04-OCT-19
Titanium (Ti)-Total		0.00541	0.00550	KPD-NA	mg/L	1.5		
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L		20	04-OCT-19 04-OCT-19
Uranium (U)-Total		0.00415	0.00407	KLD-INW	mg/L	N/A	20	04-OCT-19 04-OCT-19
Vanadium (V)-Total		<0.00415	<0.00407	RPD-NA	mg/L	2.0 N/A	20 20	
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA RPD-NA	mg/L	N/A N/A		04-OCT-19
Zirconium (Zr)-Total		0.00026	0.00028	KLD-INW	mg/L	IN/A	20	04-OCT-19
Z11001110111 (Z1)-10101		0.00020	0.00020		my/L			04-OCT-19



Workorder: L2357716 Report Date: 24-OCT-19 Page 4 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-4 DUP Zirconium (Zr)-Total		WG3182336-3 0.00026	0.00028		mg/L	5.3	20	04-OCT-19
WG3182336-2 LCS		0.00020	0.00020		9/ =	3.3	20	04-001-19
Aluminum (Al)-Total			106.5		%		80-120	04-OCT-19
Antimony (Sb)-Total			103.5		%		80-120	04-OCT-19
Arsenic (As)-Total			100.9		%		80-120	04-OCT-19
Barium (Ba)-Total			104.0		%		80-120	04-OCT-19
Beryllium (Be)-Total			100.9		%		80-120	04-OCT-19
Bismuth (Bi)-Total			98.0		%		80-120	04-OCT-19
Boron (B)-Total			98.7		%		80-120	04-OCT-19
Cadmium (Cd)-Total			102.5		%		80-120	04-OCT-19
Calcium (Ca)-Total			100.1		%		80-120	04-OCT-19
Chromium (Cr)-Total			102.0		%		80-120	04-OCT-19
Cesium (Cs)-Total			99.3		%		80-120	04-OCT-19
Cobalt (Co)-Total			101.5		%		80-120	04-OCT-19
Copper (Cu)-Total			101.0		%		80-120	04-OCT-19
Iron (Fe)-Total			101.2		%		80-120	04-OCT-19
Lead (Pb)-Total			100.9		%		80-120	04-OCT-19
Lithium (Li)-Total			99.9		%		80-120	04-OCT-19
Magnesium (Mg)-Total			102.4		%		80-120	04-OCT-19
Manganese (Mn)-Total			102.1		%		80-120	04-OCT-19
Molybdenum (Mo)-Total			101.4		%		80-120	04-OCT-19
Nickel (Ni)-Total			99.9		%		80-120	04-OCT-19
Phosphorus (P)-Total			106.9		%		70-130	04-OCT-19
Potassium (K)-Total			103.1		%		80-120	04-OCT-19
Rubidium (Rb)-Total			105.0		%		80-120	04-OCT-19
Selenium (Se)-Total			99.4		%		80-120	04-OCT-19
Silicon (Si)-Total			105.9		%		60-140	04-OCT-19
Silver (Ag)-Total			102.5		%		80-120	04-OCT-19
Sodium (Na)-Total			101.8		%		80-120	04-OCT-19
Strontium (Sr)-Total			102.1		%		80-120	04-OCT-19
Sulfur (S)-Total			102.9		%		80-120	04-OCT-19
Thallium (TI)-Total			99.3		%		80-120	04-OCT-19
Tellurium (Te)-Total			100.8		%		80-120	04-OCT-19
Thorium (Th)-Total			98.0		%		70-130	04-OCT-19



Workorder: L2357716 Report Date: 24-OCT-19 Page 5 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-2 LCS			404.0		0/			
Tin (Sn)-Total			101.0		%		80-120	04-OCT-19
Titanium (Ti)-Total			98.3 100.5		%		80-120	04-OCT-19
Tungsten (W)-Total					%		80-120	04-OCT-19
Uranium (U)-Total			101.6		%		80-120	04-OCT-19
Vanadium (V)-Total			103.3		%		80-120	04-OCT-19
Zinc (Zn)-Total			99.2		%		80-120	04-OCT-19
Zirconium (Zr)-Total			101.2		%		80-120	04-OCT-19
WG3182336-1 MB Aluminum (Al)-Total			<0.0050		mg/L		0.005	04-OCT-19
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Arsenic (As)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Barium (Ba)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Bismuth (Bi)-Total			<0.000050)	mg/L		0.00005	04-OCT-19
Boron (B)-Total			<0.010		mg/L		0.01	04-OCT-19
Cadmium (Cd)-Total			<0.000005	5C	mg/L		0.000005	04-OCT-19
Calcium (Ca)-Total			< 0.050		mg/L		0.05	04-OCT-19
Chromium (Cr)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Cesium (Cs)-Total			<0.000010)	mg/L		0.00001	04-OCT-19
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Copper (Cu)-Total			<0.0010		mg/L		0.001	04-OCT-19
Iron (Fe)-Total			<0.010		mg/L		0.01	04-OCT-19
Lead (Pb)-Total			<0.000050)	mg/L		0.00005	04-OCT-19
Lithium (Li)-Total			<0.0010		mg/L		0.001	04-OCT-19
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	04-OCT-19
Manganese (Mn)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Molybdenum (Mo)-Tota	I		<0.000050)	mg/L		0.00005	04-OCT-19
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Phosphorus (P)-Total			< 0.050		mg/L		0.05	04-OCT-19
Potassium (K)-Total			<0.050		mg/L		0.05	04-OCT-19
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	04-OCT-19
Selenium (Se)-Total			<0.000050)	mg/L		0.00005	04-OCT-19
Silicon (Si)-Total			<0.10		mg/L		0.1	04-OCT-19
Silver (Ag)-Total			<0.000050)	mg/L		0.00005	04-OCT-19



Workorder: L2357716 Report Date: 24-OCT-19 Page 6 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637 WG3182336-1 MB								
Sodium (Na)-Total			<0.050		mg/L		0.05	04-OCT-19
Strontium (Sr)-Total			<0.0010		mg/L		0.001	04-OCT-19
Sulfur (S)-Total			<0.50		mg/L		0.5	04-OCT-19
Thallium (TI)-Total			<0.000010		mg/L		0.00001	04-OCT-19
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	04-OCT-19
Thorium (Th)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Tin (Sn)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	04-OCT-19
Tungsten (W)-Total			<0.00010		mg/L		0.0001	04-OCT-19
Uranium (U)-Total			<0.000010		mg/L		0.00001	04-OCT-19
Vanadium (V)-Total			<0.00050		mg/L		0.0005	04-OCT-19
Zinc (Zn)-Total			<0.0030		mg/L		0.003	04-OCT-19
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	04-OCT-19
WG3182336-5 MS Aluminum (Al)-Total		WG3182336-6	90.4		%		70-130	04-OCT-19
Antimony (Sb)-Total			98.3		%		70-130	04-OCT-19
Arsenic (As)-Total			95.7		%		70-130	04-OCT-19
Barium (Ba)-Total			91.9		%		70-130	04-OCT-19
Beryllium (Be)-Total			94.8		%		70-130	04-OCT-19
Bismuth (Bi)-Total			90.8		%		70-130	04-OCT-19
Boron (B)-Total			92.9		%		70-130	04-OCT-19
Cadmium (Cd)-Total			94.9		%		70-130	04-OCT-19
Calcium (Ca)-Total			N/A	MS-B	%		-	04-OCT-19
Chromium (Cr)-Total			96.5	0 2	%		70-130	04-OCT-19
Cesium (Cs)-Total			95.9		%		70-130	04-OCT-19
Cobalt (Co)-Total			94.9		%		70-130	04-OCT-19
Copper (Cu)-Total			93.1		%		70-130	04-OCT-19
Iron (Fe)-Total			N/A	MS-B	%		-	04-OCT-19
Lead (Pb)-Total			94.3		%		70-130	04-OCT-19
Lithium (Li)-Total			91.4		%		70-130	04-OCT-19
Magnesium (Mg)-Total			N/A	MS-B	%		-	04-OCT-19
Manganese (Mn)-Total			94.5		%		70-130	04-OCT-19
Molybdenum (Mo)-Total			96.8		%		70-130	04-OCT-19
Nickel (Ni)-Total			93.1		%		70-130	04-OCT-19
			30		, ,		10-130	0 1 -001-19



Workorder: L2357716 Report Date: 24-OCT-19 Page 7 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-WT	Water							
Batch R4859637								
WG3182336-5 MS Phosphorus (P)-Total		WG3182336-	6 104.2		%		70-130	04-OCT-19
Potassium (K)-Total			93.6		%		70-130	04-OCT-19
Rubidium (Rb)-Total			95.8		%		70-130	04-OCT-19
Selenium (Se)-Total			94.7		%		70-130	04-OCT-19
Silicon (Si)-Total			N/A	MS-B	%		-	04-OCT-19
Silver (Ag)-Total			95.9		%		70-130	04-OCT-19
Sodium (Na)-Total			N/A	MS-B	%		-	04-OCT-19
Strontium (Sr)-Total			N/A	MS-B	%		-	04-OCT-19
Sulfur (S)-Total			93.4		%		70-130	04-OCT-19
Thallium (TI)-Total			91.6		%		70-130	04-OCT-19
Tellurium (Te)-Total			91.9		%		70-130	04-OCT-19
Thorium (Th)-Total			95.1		%		70-130	04-OCT-19
Tin (Sn)-Total			96.3		%		70-130	04-OCT-19
Titanium (Ti)-Total			94.8		%		70-130	04-OCT-19
Tungsten (W)-Total			95.7		%		70-130	04-OCT-19
Uranium (U)-Total			N/A	MS-B	%		-	04-OCT-19
Vanadium (V)-Total			97.5		%		70-130	04-OCT-19
Zinc (Zn)-Total			90.2		%		70-130	04-OCT-19
Zirconium (Zr)-Total			93.6		%		70-130	04-OCT-19
NH3-F-WT	Water							
Batch R4860725								
WG3183728-3 DUP Ammonia, Total (as N)		L2357716-1 < 0.010	<0.010	RPD-NA	mg/L	N/A	20	07-OCT-19
WG3183728-2 LCS Ammonia, Total (as N)			99.9	2	%		85-115	07-OCT-19
WG3183728-1 MB								
Ammonia, Total (as N) WG3183728-4 MS		L2357716-1	<0.010		mg/L		0.01	07-OCT-19
Ammonia, Total (as N)		223017101	104.4		%		75-125	07-OCT-19
NO3-IC-WT	Water							
Batch R4859139 WG3181734-24 DUP Nitrate (as N)		WG3181734- 0.073	23 0.074		mg/L	0.3	20	04-OCT-19
WG3181734-22 LCS Nitrate (as N)			101.5				90-110	



Qualifier

Workorder: L2357716 Re

Result

Report Date: 24-OCT-19

RPD

Limit

Units

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Analyzed

Client:

Contact:

Test

Baffinland Iron Mine's Corporation (Oakville)

Reference

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Matrix

NO3-IC-WT	Water					
Batch R4859139 WG3181734-22 LCS Nitrate (as N)		101.5	%		90-110	04-OCT-19
WG3181734-21 MB Nitrate (as N)		<0.020	mg/L		0.02	04-OCT-19
WG3181734-25 MS Nitrate (as N)	WG3181734-2	23 98.8	%		75-125	04-OCT-19
P-T-COL-WT	Water					
Batch R4860606 WG3182577-3 DUP Phosphorus, Total	L2356925-1 0.0073	0.0071	mg/L	3.3	20	07-OCT-19
WG3182577-2 LCS Phosphorus, Total		100.1	%		80-120	07-OCT-19
WG3182577-1 MB Phosphorus, Total		<0.0030	mg/L		0.003	07-OCT-19
WG3182577-4 MS Phosphorus, Total	L2356925-1	89.2	%		70-130	07-OCT-19
PH-BF	Water					
Batch R4853590 WG3178736-2 DUP pH	L2356948-1 6.82	6.83 J	pH units	0.01	0.2	02-OCT-19
WG3178736-1 LCS pH		7.02	pH units		6.9-7.1	02-OCT-19
SO4-IC-N-WT	Water					
Batch R4859139 WG3181734-24 DUP Sulfate (SO4)	WG3181734- 2 6.79	23 6.80	mg/L	0.0	20	04-OCT-19
WG3181734-22 LCS Sulfate (SO4)	0.70	102.6	g %	0.0	90-110	04-OCT-19
WG3181734-21 MB Sulfate (SO4)		<0.30	mg/L		0.3	04-OCT-19
WG3181734-25 MS Sulfate (SO4)	WG3181734-7	23 101.2	%		75-125	04-OCT-19
SOLIDS-TDS-WT	Water					
Batch R4860417 WG3183481-3 DUP Total Dissolved Solids	L2357716-1 90	78	mg/L	14	20	06-OCT-19
WG3183481-2 LCS						



Workorder: L2357716 Report Date: 24-OCT-19 Page 9 of 12

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TDS-WT	Water							
Batch R4860417								
WG3183481-2 LCS Total Dissolved Solids			95.3		%		85-115	06-OCT-19
WG3183481-1 MB Total Dissolved Solids			<10		mg/L		10	06-OCT-19
SOLIDS-TSS-BF	Water							
Batch R4853597								
WG3178742-3 DUP Total Suspended Solids		L2357326-1 122	124		mg/L	1.6	25	01-OCT-19
WG3178742-2 LCS Total Suspended Solids			98.4		%		85-115	01-OCT-19
WG3178742-1 MB Total Suspended Solids			<2.0		mg/L		2	01-OCT-19
TKN-WT	Water							
Batch R4860925								
WG3183637-3 DUP Total Kjeldahl Nitrogen		L2357716-1 <0.15	<0.15	RPD-NA	mg/L	N/A	20	07-OCT-19
WG3183637-2 LCS Total Kjeldahl Nitrogen			100.3		%		75-125	07-OCT-19
WG3183637-1 MB Total Kjeldahl Nitrogen			<0.15		mg/L		0.15	07-OCT-19
WG3183637-4 MS Total Kjeldahl Nitrogen		L2357716-1	88.9		%		70-130	07-OCT-19
TOC-WT	Water							
Batch R4860639								
WG3183590-3 DUP		L2356925-1						
Total Organic Carbon		2.42	2.45		mg/L	1.1	20	07-OCT-19
WG3183590-2 LCS Total Organic Carbon			106.7		%		80-120	07-OCT-19
WG3183590-1 MB Total Organic Carbon			<0.50		mg/L		0.5	07-OCT-19
WG3183590-4 MS Total Organic Carbon		L2356925-1	101.6		%		70-130	07-OCT-19
TURBIDITY-WT	Water							
Batch R4860048								
WG3183230-3 DUP Turbidity		L2358825-1 207	216		NTU	4.3	15	05-OCT-19
WG3183230-2 LCS								



Workorder: L2357716

Report Date: 24-OCT-19

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Client:

Contact:

Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

William Bowden/Connor Devereaux

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TURBIDITY-WT	Water							
Batch R4860048 WG3183230-2 LCS Turbidity			102.0		%		85-115	05-OCT-19
WG3183230-1 MB Turbidity			<0.10		NTU		0.1	05-OCT-19

Workorder: L2357716 Report Date: 24-OCT-19

Baffinland Iron Mine's Corporation (Oakville) Client: Page 11 of 12

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
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.

Workorder: L2357716 Report Date: 24-OCT-19

Client: Baffinland Iron Mine's Corporation (Oakville)

2275 Upper Middle Rd. E. Suite #300

Oakville ON L6H 0C3

Contact: William Bowden/Connor Devereaux

Ct. William Bowden/Connor Devereaux

Hold Time Exceedances:

Sample						
ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
1	01-OCT-19 17:30	05-OCT-19 00:00	48	78	hours	EHT
2	01-OCT-19 18:00	05-OCT-19 00:00	48	78	hours	EHT
	1D 1	1 01-OCT-19 17:30	ID Sampling Date Date Processed 1 01-OCT-19 17:30 05-OCT-19 00:00	ID Sampling Date Date Processed Rec. HT 1 01-OCT-19 17:30 05-OCT-19 00:00 48	ID Sampling Date Date Processed Rec. HT Actual HT 1 01-OCT-19 17:30 05-OCT-19 00:00 48 78	ID Sampling Date Date Processed Rec. HT Actual HT Units 1 01-OCT-19 17:30 05-OCT-19 00:00 48 78 hours

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 L2357716 were received on 01-OCT-19 20:20.

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

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

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

Page 12 of 12



Ft. Collins, Colorado LIMS Version: 6.915 Page 1 of 1

Tuesday, October 22, 2019

Rick Hawthorne
ALS Environmental
60 Northland Rd, Unit 1
Waterloo Canada, ON N2V 2B8

Re: ALS Workorder: 1910179

Project Name:

Project Number: L2357716

Dear Mr. Hawthorne:

Two water samples were received from ALS Environmental, on 10/8/2019. The samples were scheduled for the following analysis:

Radium-226

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental

Katie M. OBrien

Project Manager

ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environme	ALS Environmental – Fort Collins						
7.20							
Accreditation Body	License or Certification Number						
AIHA	214884						
Alaska (AK)	UST-086						
Alaska (AK)	CO01099						
Arizona (AZ)	AZ0742						
California (CA)	06251CA						
Colorado (CO)	CO01099						
Florida (FL)	E87914						
Idaho (ID)	CO01099						
Kansas (KS)	E-10381						
Kentucky (KY)	90137						
PJ-LA (DoD ELAP/ISO 170250)	95377						
Louisiana (LA)	05057						
Maryland (MD)	285						
Missouri (MO)	175						
Nebraska(NE)	NE-OS-24-13						
Nevada (NV)	CO000782008A						
New York (NY)	12036						
North Dakota (ND)	R-057						
Oklahoma (OK)	1301						
Pennsylvania (PA)	68-03116						
Tennessee (TN)	2976						
Texas (TX)	T104704241						
Utah (UT)	CO01099						
Washington (WA)	C1280						



1910179

Radium-226:

The samples were prepared and analyzed according to the current revision of SOP 783.

All acceptance criteria were met.

Sample Number(s) Cross-Reference Table

OrderNum: 1910179

Client Name: ALS Environmental

Client Project Name:

Client Project Number: L2357716 Client PO Number: L2357716

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
L2357716-1	1910179-1		WATER	01-Oct-19	
L2357716-2	1910179-2		WATER	01-Oct-19	





121049-

Subcontract Request Form

Subcontract To:

ALS ENVIRONMENTAL - FORT COLLINS, COLORADO, USA

225 COMMERCE DRIVE FORT COLLINS, CO 80524

NOTES: Please reference on fina	l report and invoice: PO#	<i>2357716</i>		,
ALS requires QC data to	be provided with your final re	sults.		
Please see enclosed 2 sar	mple(s) in 2 Container	·(s)		
SAMPLE NUMBER		DATE S	AMPLED	D
ANALYT	ICAL REQUIRED	371120	DUE DATE	Priority Flag
L2357716-1 MS-08-DS		10/ 1/ 2	019	
Ra226 by	Alpha Scint, MDC=0.01 Bq/L (RA2	226-MMER-FC 1)	10/22/2019	
L2357716-2 MS-08-US		10/ 1/ 2	019	
Ra226 by	Alpha Scint, MDC=0.01 Bq/L (RA2	26-MMER-FC 1)	10/22/2019	
Subcontract Info Contact:	Mary-Lynn Pike (519) 886-6	910		
Analysis and reporting info contact:	Rick Hawthorne			
	60 NORTHLAND ROAD, UNIT	1		
	WATERLOO,ON N2V 2B8	Email: Dial		alabat
	Phone: (519) 886-6910		Hawthorne@als	giobal.com
Please email confirmation of rece	ipt to: Rick.Hawtho	rne@alsglobal	.com	
Shipped By:	Date Shipped	d:		
Received By:	Date Receive	ed: 10/2	119 ,-	60:3
Verified By:	Date Verified	l:		
	Temperature	:		
Sample Integrity Issues:				<u>.</u>



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Workorder No: (a)	017		_
Project Manager: Initials: Dat	e: <u>\o</u>	alca	_
Are airbills / shipping documents present and/or removable?	DROP OFF	YES	NO
Are custody seals on shipping containers intact?	NONE	YES	NO *
Are custody seals on sample containers intact?	NONE	YES	NO *
Is there a COC (chain-of-custody) present?		YES	NO *
Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of cormatrix, requested analyses, etc.)	ntainers,	YES	NO *
Are short-hold samples present?		YES	₹ 90
Are all samples within holding times for the requested analyses?		CYES	NO *
Were all sample containers received intact? (not broken or leaking)		X'ES	NO *
Is there sufficient sample for the requested analyses?		TES	NO *
O. Are all samples in the proper containers for the requested analyses?		YES	NO *
1. Are all aqueous samples preserved correctly, if required? (excluding volatiles)	N/A	YES	NO*
Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)	○N⁄A	YES	NO
3. Were the samples shipped on ice?		YES	NO
4. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #1 #3 #4	(NL)	YE\$	NO
Cooler #:		!	
Temperature (°C): 5.7			
No. of custody seals on cooler:	· ——		
DOT Survey/ Acceptance External uR/hr reading: \ 7			
Background μR/hr reading: 3	·		-
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? (TES) NO / NA (If no, s	ee Form 008)		
Please provide details here for NO responses to gray boxes above - for 2 thru 5 & 7 thru 12, notify	PM & con	tinue w/ log	gin.
All client bottle ID's vs ALS lab ID's of applicable, was the client contacted? YES / NO / NA Contact: Project Manager Signature / Date:	double-ch Date/Tii		:TE

Form 201r28.xls (10/07/2019)



EXPRESS WORLDWIDE

2019 - 18 - 87 DCV8 3.0.1 / *12 - 1403



80524 FORT COLLINS, UNITED STATES OF AMERICA

Origin: YHM

US - DEN - DEN

 \mathbf{C}

Day Time

Date:

Poe/Shpt Weight J24.2 LB 1/1

Content Description Water Sample



WAVRI 1 74 1990 E494



(21)U880524 +48000001



(h inni 4600 0071 0450 0004

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 22-Oct-19

 Project:
 L2357716
 Work Order:
 1910179

 Sample ID:
 L2357716-1
 Lab ID:
 1910179-1

Legal Location: Matrix: WATER

Collection Date: 10/1/2019 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Ema	anation - Method 903.1	SOF	783	Prep	Date: 10/10/2019	PrepBy: TRW
Ra-226	0.0094 (+/- 0.0053)		0.0046	BQ/I	NA	10/21/2019 13:40
Carr: BARIUM	89.1		40-110	%REC	DL = NA	10/21/2019 13:40

AR Page 1 of 3 **8 of 11**

SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 22-Oct-19

 Project:
 L2357716

 Sample ID:
 L2357716-2

 Work Order:
 1910179-2

 Lab ID:
 1910179-2

Legal Location: Matrix: WATER

Collection Date: 10/1/2019 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Radium-226 by Radon Em	anation - Method 903.1	SOF	783	Prep	Date: 10/10/2019	PrepBy: TRW
Ra-226	0.0081 (+/- 0.0051)		0.0059	BQ/I	NA	10/21/2019 13:40
Carr: BARIUM	94		40-110	%REC	DL = NA	10/21/2019 13:40

AR Page 2 of 3 **9 of 11**

SAMPLE SUMMARY REPORT

Date: 22-Oct-19 **Client:** ALS Environmental

Project: L2357716 **Work Order:** 1910179

Lab ID: 1910179-2 Sample ID: **Legal Location:** Matrix: WATER

Collection Date: 10/1/2019 **Percent Moisture:**

Report **Dilution Analyses** Result **Oual** Limit Units **Date Analyzed Factor**

Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC

U or ND - Result is less than the sample specific MDC.

L2357716-2

Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.

Y2 - Chemical Yield outside default limits.

W - DER is greater than Warning Limit of 1.42

* - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.

- Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.

G - Sample density differs by more than 15% of LCS density.

D - DER is greater than Control Limit

M - Requested MDC not met.

M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.

L - LCS Recovery below lower control limit.

H - LCS Recovery above upper control limit.

P - LCS, Matrix Spike Recovery within control limits.

N - Matrix Spike Recovery outside control limits

NC - Not Calculated for duplicate results less than 5 times MDC

B - Analyte concentration greater than MDC.

B3 - Analyte concentration greater than MDC but less than Requested

MDC.

Inorganics:

B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).

U or ND - Indicates that the compound was analyzed for but not detected.

E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.

M - Duplicate injection precision was not met

N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.

Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.

* - Duplicate analysis (relative percent difference) not within control limits.

S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

U or ND - Indicates that the compound was analyzed for but not detected.

- B Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
- E Analyte concentration exceeds the upper level of the calibration range.
- J Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
- A A tentatively identified compound is a suspected aldol-condensation product.
- X The analyte was diluted below an accurate quantitation level.
- * The spike recovery is equal to or outside the control criteria used.
- + The relative percent difference (RPD) equals or exceeds the control criteria.
- G A pattern resembling gasoline was detected in this sample.
- D A pattern resembling diesel was detected in this sample
- M A pattern resembling motor oil was detected in this sample.
- C A pattern resembling crude oil was detected in this sample.
- 4 A pattern resembling JP-4 was detected in this sample.
- 5 A pattern resembling JP-5 was detected in this sample.
- H Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
- gasoline
- JP-8
- diesel - mineral spirits
- motor oil
- Stoddard solvent
- bunker C

Client: ALS Environmental

Work Order: 1910179 **Project:** L2357716

Date: 10/22/2019 12:5

QC BATCH REPORT

LCS	Sample ID:	RE191010-1				Ur	nits: BQ/I		Analysi	s Date:	10/21/20	5	
Client ID:			Run II	D: RE191010-	1A				Prep Date: 10/1	0/2019	DF:		
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226			1.85 (+/- 0.461)	0.00675	1.72		108	67-120					Р
Carr: BARIL	JM		16800		17940		93.7	40-110					
LCSD	Sample ID:	RE191010-1				Ur	nits: BQ/I		Analysi	s Date:	e: 10/21/2019 14:15		
Client ID: Run IE		D: RE191010-1A					Prep Date: 10/1	0/2019	DF:				
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226			1.71 (+/- 0.427)	0.0152	1.72		99.2	67-120		1.8	5 0.2	2.1	P,M3
Carr: BARIL	JM		17300		17930		96.6	40-110		1680	0		
МВ	Sample ID:	RE191010-1				Ur	nits: BQ/I		Analysi	s Date:	10/21/20	19 14:15	5
Client ID:			Run II	D: RE191010-	1A				Prep Date: 10/1	0/2019	DF:		
Analyte			Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
Ra-226		0.	.00045 (+/- 0.0030)	0.0059									U
Carr: BARIL	JM		17800		17930		99.1	40-110					

QC Page: 1 of 1



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 15 -

	www.aisglobal.com			_					_																	
Report To	Contact and company r	rt		Report Forma						confirm all E&P TATs with your AM - surcharges will apply																
Company:	Baffinland Iron Mines Con		Select Report Format: PDF PDF EXCEL PEDD (DIGITAL)							Re	gular (R	j □ st	andard T	AT if rec	eived b	by 3 pm	n - busine	ess day	/s - no sur	charges apply						
Contact:	Wiliam Bowden and Conn	or Devereaux	Quality Control (QC) Report with Report							4	day [P4]			ζ	1 F	Busin	ness da	y [E1	(]							
Phone:	647-253-0596 EXT 6016				Compare Results to Criteria on Report - provide details below if box checked					3	day [P3]			RGEN	S	ame I	Day, W	eeke	nd or							
	Company address below will	··	al report		Select Distribution: EMAIL MAIL FAX						day [P2]	ш				Statut	 ✓									
Street:	2275 Upper Middle Rd. E.	, Suite #300			Email 1 or Fax	bimcore@alsgloba	al.com			4 day [P4]								11.15								
City/Province:	Oakville, ON				Email 2				For tes	sts that ca	n not be p	rformed ac	cording t	o the ser	vice lev	evel selected, you will be contacted.										
Postal Code:	L6H 0C3			-	Email 3						,			Analy	sis Re	ques	it									
Invoice To	Same as Report To	✓ YES	□ NO			Invoice Di	stribution			Indic	ate Filtere	d (F), Pres	erved (P) or Filte	red and	d Prese	erved (F/	P) bek	ow	`T						
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Company:					Email 1 or Fax ap@baffinland.com						-+	+	+	\vdash	\dashv	\dashv	\dashv	+		╡						
Contact:					Email 2	commercial@baffi	nland.com	·,	1			i								i _						
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ALS Account #		42 /Q42455			AFE/Cost Center:		PO#	- i - i - i - i - i - i - i - i - i - i	1											ntai						
Job #:	MS-08 Reference and Expe	osure			Major/Minor Code:		Routing Code:	*	1											<u>8</u>						
PO / AFE:	4500057496				Requisitioner:	1								1		1	0 0									
LSD:					Location:												1		1	Number of Containers						
ALS Lab Work Order # (lab use only) L2357716					ALS Contact:		Sampler:	BIM-MMER-EFF											Ž							
ALS Sample #	Sample	dentificatio	n and/or Coordin	ates		Date	Time		Σ×	1 1								ı		1						
(lab use only)	(This o	description will	appear on the rep	ort)		(dd-mmm-yy)	(hh:mm)	Sample Type	I ≅						.		ŀ									
	MS-08-DS					1-Oct-19	17:30	Water	E0						$\neg \uparrow$			Ť	\neg	7						
	MS-08-US					1-Oct-19	18:00	Water	ΕO				+	Н	\dashv	-+	+	+	+	7						
								770101				+		Н		\dashv	+	+	+-	- 						
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Drinking Water (DW) Samples ¹ (client use) Special Instructions / S				ons / Sp	ecify Criteria to a	dd on report by clic tronic COC only)	king on the drop	-down list below				SAMPLE CONDITION AS RECEIVED (lab use only) SIF Observations Yes No														
Are samples taken from a Regulated DW System?			-	(4160	tronic coc only)			Froze										∐ No	_							
☐ YES ☑ NO								Ice Pa			æ Cubes	ш	Custo	ody sea	al inta	act Y	es	☐ No	· 🗖							
Are samples for I	human drinking water use?								Cooli	ng Initia		D TEMPE	DATUBE	C 00	.7 T.E.L	su region to	EINAL C	0015	O TEMPE	DATUBED 10						
☐ YES ☑ NO									INITIAL COOLER		ER TEMPERATURES °C		TURES TO		FINAL COOLER TEMP			RIEMPE	RATURES 4C							
	SHIPMENT RELEA	SE (client use)			INITIAL SHIPMEN	T DECEDION	(lab uso call)	Ь.	. т			1816: 5	N HPA		<u> </u>	<u> </u>	11-1-								
Released by: Ke		ease Date: 1-C		Γime:	Received by:Ma		Date: oct.1/201	<u> </u>	Time	<u>.</u>	Receive		INAL S	MIPM					use only	Time:						
				19:00				-	7:30p		. 1000186	₩ 07.	-	A)		7	-OC	1	19	1111/100						
REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION						WHI	TE - LABORATO	RY COPY YEL	Low -	CLIEN	COPY									OCTOBER 2015 FRONT						

Spill Report Number: 19-460



December 10, 2019

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 #19-460
Mary River Project - Water Licence No. 2AM-MRY1325

Summary:

On 11 November 2019, a site services worker noticed sewage coming out of the bottom of the laundry lift station at the Mine Site Complex (MSC). On investigation, it was determined that the flotation switch which turns on the lift station pump had failed to trigger, causing the holding tank to overflow. On discovery of the release, flow to the lift station was immediately shut-off and the lift station was pumped down by vacuum truck to prevent further release. Approximately 0.25 m³ of sewage was released to the adjacent camp pad ground surface. This location is greater than >100 m from the nearest watercourse.

Immediate and Follow-Up Action:

The sewage release was immediately arrested and the lift station holding tank pumped down to prevent further release. The flotation switch was subsequently repaired. Contaminated snow was collected and deposited in an engineered lined containment facility.

Recommendations:

Continue routine operator inspections of lift stations.

Current Status:

The flotation switch has been repaired and the lift station is operating as designed.

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:

Connor Devereaux

Environmental Superintendent

Reviewed by:

Surface Works Superintendent

Kasw BAHERE

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

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





Photo 1. Sewage release on camp pad adjacent to MSC laundry lift station



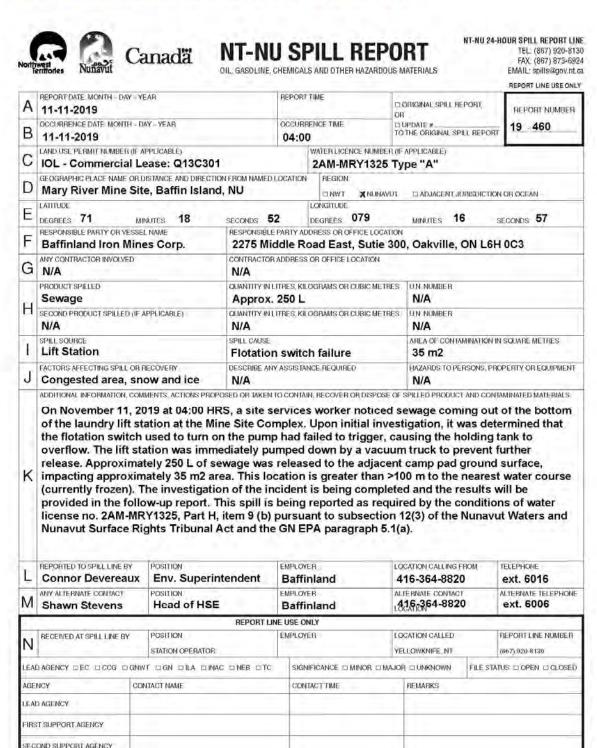
Photo 2. Contaminated snow removed from camp pad adjacent to MSC laundry lift station

Baffinland



Figure 1. Map of spill location





PAGE 1 OF 1

Figure 2. Baffinland NT NU spill report

THIRD SUPPORT AGENCY