APPENDIX E.11

2019 Freshet Monitoring Report

BAFFINLAND IRON MINES CORPORATION
MARY RIVER PROJECT

Freshet 2019 Monitoring Report

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Date	**Rev.**	**Prepared By**	**Reviewed By**	

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1. INTRODUCTION AND OBJECTIVES

This report was prepared by Baffinland Iron Mines Corporation (Baffinland) to present the results of the 2019 freshet water quality monitoring program and to document the corrective actions taken in response to observed sediment releases that occurred during freshet 2019 at the Mary River Project (the Project). Surface water management during freshet continues to remain a challenge at the Project, however, Baffinland is committed to implementing effective control measures that improve the water quality of surface water drainage around Project sites.

Unauthorized releases of sediment were reported to Environment and Climate Change Canada (ECCC), Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC), Qikiqtani Inuit Association (QIA) and the NT-NU Spill Line during freshet 2019. The releases are documented in NT-NU Spill Reports 19-198 and 19-226. Immediate and follow up corrective actions undertaken to address the sediment releases are discussed in detail in Section 5. Copies of the original and follow up Spill Reports are provided in Appendix A.

2. WATER QUALITY MONITORING PROGRAMS

During freshet 2019, Baffinland conducted water quality monitoring programs at the Mary River Mine Site (Mine Site) and along the Milne Inlet Tote Road (Tote Road). The monitoring programs conducted during freshet 2019 are discussed in the subsections below. Results of the Mine Site water monitoring program are provided in Appendix B and discussed in Section 3. Results for the Surveillance Network Program (SNP) are reported in monthly water licence reports, and results of monitoring along the Tote Road are reported in the QIA & NWB Annual Report for Operations.

2.1. Mine Site Freshet Monitoring Program

The Mine Site freshet monitoring program is conducted each year to characterize the water quality of several Mine Site tributaries and drainages during the high flow period of freshet. The monitoring program begins each year upon the start of flows at the monitoring locations, which typically begins around mid-May. The four (4) monitoring locations (CLSP-OUT, CLT-OUT, SDLT-OUT, LDFG-OUT) included in the 2019 program were monitored daily during freshet (typically May 15 to June 30) for total suspended solids (TSS), total dissolved solids (TDS), pH and turbidity. The locations of the 2019 monitoring locations are outlined in Appendix B.1.

2.2. Tote Road Monitoring Program (TRMP)

The Tote Road Monitoring Program (TRMP) was developed to monitor the water quality of surface water flows at select water crossings (culverts, bridges) along the Tote Road, with a focus on monitoring upstream and downstream TSS concentrations and addressing any sedimentation concerns identified during the monitoring events. Water crossings monitored under the TRMP were selected to give a geographically representative sample set of water crossings for each watershed intersected by the Tote Road. In selecting the water crossings, factors such as key depositional habitats located downstream of the Tote Road (e.g. fish habitat), and areas historically prone to sediment events, were considered. The program includes weekly visual inspections and water quality sampling at designated water crossings during freshet, and subsequently continues monthly until the freeze-up of flows.

Only two (2) crossings exhibited elevated (grab sample above 30 mg/L) downstream TSS concentrations on the Tote Road during freshet monitoring in 2019. Upstream TSS concentrations at these crossings were also elevated and of similar concentrations. The elevated concentrations were determined not to be the result of a potential Project related change (defined in the TRMP as a greater than 50 mg/L increase in the downstream TSS concentrations when upstream concentrations are less than 250 mg/L). Regardless, this is a significant reduction in sediment impacted fishery crossings as compared to previous years; in 2018, eight (8) crossings were found to be above grab sample limits during freshet monitoring and, in 2017, twenty-four (24) crossings were identified above grab sample limits.

The TRMP is part of the Roads Management Plan and water quality monitoring will be reported in the 2019 QIA & NWB Annual Report for Operations; therefore water quality results collected under the program are not discussed further within this report.

A complete list of repairs and upgrades completed at Tote Road water crossings during 2019 are presented in Baffinland's Annual Tote Road Monitoring Report for DFO[1].

2.3. Surveillance Network Program (SNP)

Water quality monitoring under the SNP is conducted each year during periods of flow as outlined in Baffinland's Type 'A' Water Licence 2AM-MRY1325 – Amendment 1 (Type A Water Licence). Results collected under the SNP are reported monthly to the Nunavut Water Board (NWB) and CIRNAC, and summarized in the QIA & NWB Annual Report for Operations; therefore, water quality results collected under the SNP are not discussed further within this report.

3. WATER QUALITY MONITORING RESULTS AND DISCUSSION

The following subsections discuss the water quality monitoring results as they relate to each NT-NU Spill Report. Monitoring data for the water quality monitoring locations is provided in Appendix B. Photos of mitigation measures and corrective actions taken in response to each reported sediment release are included in the spill reports in Appendix A. Section 5 provides additional discussion on implemented and planned corrective and mitigation actions, and future monitoring at areas of concern.

Water quality monitoring results are compared to Baffinland's Type A Water Licence Table 11: *Effluent Quality Discharge Limits for Contact Water during Operations Phase and the Early Revenue Phase of the Project*, which is summarized in Table 1. A summary of the exceedances for the Mine Site is included in Table 2. Graphs of TSS concentrations for Sheardown Lake tributaries and Camp Lake tributaries are included as Figure 1 and Figure 2, respectively.

3.1. Spill Report 19-198 - Camp Lake Settling Ponds, Sheardown Lake Tributaries, and Camp Lake Tributary

3.1.1. Camp Lake Settling Ponds

As part of the Mine Site freshet monitoring program, water quality monitoring location CLSP-OUT was sampled throughout freshet 2019. CLSP-OUT is located down gradient of a series of

[1] Baffinland Iron Mines Corporation Mary River Project – Fish Habitat Monitoring – 2019 Annual Report Early Revenue Phase - Tote Road Upgrades. December 31, 2019.

sedimentation ponds and check dams, located near the Camp Lake Water Jetty, which are referred to as the Camp Lake Settling Ponds. Coordinates and figures showing the location of CLSP-OUT are provided in Appendix B.1. Water quality results collected during freshet 2019 for monitoring location CLSP-OUT are provided in Appendix B.2.

In comparing TSS results for CLSP-OUT to the water quality criteria in Table 1, TSS exceedances of the 30 mg/L limit for grab samples were observed first on May 8 and continued until May 17; ranging from 35.1 mg/L to 255 mg/L. TSS exceedances were subsequently observed on May 30 (36.8 mg/L), and again from June 11 to June 13, following a significant rainfall event which occurred from June 10 to June 13, with TSS concentrations of 432 mg/L, 67.2 mg/L, and 31.2 mg/L on June 11, June 12, and June 13, respectively. For safety, samples were not collected on May 12 and May 13 because there was significant construction occurring in the area of CLSP-OUT. With the exception of a sample collected on June 19, CSLP-OUT was not sampled from June 15 to June 23, and again from June 26 to June 30, due to no flow or stagnant conditions. Based on the available data presented in Appendix B.2, CLSP-OUT had an average TSS concentration of 65.2 mg/L during May and of 54.0 mg/L during June 2019.

On May 9, 2019, additional water sampling for acute toxicity, metals, anions, nutrients, and total oil & grease was conducted at CLSP-OUT. As shown in Appendix B.2, the acute toxicity samples collected were analyzed by Aquatox and determined to be acutely non-toxic.

3.1.2. Sheardown Lake Tributaries

As part of the Mine Site freshet monitoring program, water quality monitoring locations LDFG-OUT and SDLT-OUT, located near tributary outfalls into Sheardown Lake, were sampled throughout freshet 2019. Coordinates and figures showing the locations of LDFG-OUT and SDLT-OUT are provided in Appendix B.1. Water quality results collected during freshet 2019 for monitoring locations LDFG-OUT and SDLT-OUT are provided in Appendix B.2.

In comparing TSS results for LDFG-OUT and SDLT-OUT to the water quality criteria in Table 1, one (1) TSS exceedance of the 30 mg/L limit for grab samples was observed at LDFG-OUT on May 12 at a concentration of 50.4 mg/L. However, as shown in Figure 1, TSS concentrations at LDFG-OUT quickly decreased and remained below the 30 mg/L TSS limit for grab samples following May 12. Exceedances of the 30 mg/L TSS limit for grab samples at SDLT-OUT were observed first on May 7, May 8 and May 9 at TSS concentrations of 31.5 mg/L, 74.4 mg/L and 116 mg/L, respectively, and then again on May 12, May 13, and May 28 where the TSS concentrations were 107 mg/L, 42.3 mg/L, and 31.3 mg/L, respectively.

Based on the available data presented in Appendix B.2, LDFG-OUT had an average TSS concentration of 12.0 mg/L during May and of 6.6 mg/L during June 2019. SDLT-OUT had an average TSS concentration of 27.5 mg/L during May and of 4.9 mg/L during June 2019. On May 9, 2019, additional water sampling for acute toxicity, metals, anions, nutrients, and total oil & grease was conducted at SDLT-OUT. As shown in Appendix B.2, the acute toxicity samples collected were analyzed by Aquatox and determined to be acutely non-toxic.

3.1.3. Camp Lake Tributary

As part of the Mine Site freshet monitoring program, monitoring location CLT-OUT, located near the outfall of Camp Lake Tributary 1, was sampled throughout freshet 2019. Coordinates and figures showing the location of monitoring location CLT-OUT are provided in Appendix B.1. Water

quality results collected during freshet 2019 for monitoring location CLT-OUT are provided in Appendix B.2.

In comparing TSS results for CLT-OUT to the water quality criteria in Table 1, TSS exceedances of the 30 mg/L limit for grab samples were observed first on May 7 at 175 mg/L, and then again on May 8 at 30.8 mg/L, and on May 12 at 74 mg/L. However, as shown in Figure 2, TSS concentrations at CLT-OUT quickly decreased and remained below the 30 mg/L TSS limit for grab samples following May 12. Based on the available data presented in Appendix B.2, CLT-OUT had an average TSS concentration of 23.1 mg/L during May and of 2.9 mg/L during June 2019.

On May 9, 2019, additional water sampling for acute toxicity, metals, anions, nutrients, and total oil & grease was conducted at CLT-OUT. As shown in Appendix B.2, the acute toxicity samples collected were analyzed by Aquatox and determined to be acutely non-toxic.

3.2. Spill Report 19-226 – Mary River

Runoff from the Mine Haul Road ditches at KM 108.5 and KM 106.5 was observed to be flowing, which was discharging onto the tundra as designed. Upon investigation, water runoff through the road's ditching and culvert system was found to have resulted in sediment impacted water traveling across the mountain tundra and entering the Mary River tributary and Mary River.

Samples, including samples for acute toxicity, were collected on May 31 on Mary River at E0-20, an approved Aquatic Effects Monitoring Program (AEMP) sample site downstream of the sediment release, to evaluate the impact on the receiving environment. On June 7, E0-20 was re-sampled. Coordinates and figures showing the location of monitoring location E0-20 are provided in Appendix B.1. The water quality results collected at monitoring location E0-20 are provided in Appendix B.2.

The sample collected on May 31 indicated a TSS concentration of 63.6 mg/L; exceeding the 30 mg/L TSS limit for grab samples. The sample was determined to be acutely non-toxic. Measured TSS in the June 7 resample was 7.2 mg/L; below the TSS grab sample limit, which confirmed that sediment mitigation measures were effectively settling suspended solids. Conditions at Mary River were subsequently sampled and assessed as per Baffinland's AEMP.

4. NATURAL SEDIMENTATION EVENTS

Three (3) natural sedimentation events were observed during freshet 2019. Two (2) of the events were observed in the hills north of Milne Port on June 12 in stream drainage systems. The sample locations were identified as MP-NS-19-01 and MP-NS-19-02. At MS-NS-19-01, water flow from higher elevation snowmelt was observed to be transporting sediment from an erosional event along a hill side. Two (2) samples were collected: one (1) near the location where the water flow exited the snowpack, and one (1) at the receiving tributary. TSS concentrations at the snowpack exit and at the tributary were 102 mg/L and 96.8 mg/L, respectively. At MS-NS-19-02, water flow was observed seeping out of the side of a hill with flow sourced by an overlaying snowdrift. Two (2) samples were collected: one near the seepage, and one at the receiving stream. TSS concentrations at the seepage and at the receiving stream were and 71.6 mg/L and 37.6 mg/L, respectively. The third natural sedimentation event was observed at Isortoq River on June 17. The sample location was identified as ISORTOQ-NS-01. Upstream and downstream TSS

concentrations of the observed event at ISORTOQ-NS-01 were 617 mg/L and 370 mg/L, respectively. A figure and photographs are presented in Appendix C.

Baffinland will continue to monitor the water quality of surface water flows upstream of Project infrastructure to characterize the natural sediment loading of water bodies within the Project area during freshet.

5. CORRECTIVE ACTIONS TAKEN AND PLANNED

A number of corrective actions were undertaken to address the sediment releases associated with freshet 2019 Spill Reports 19-198 and 19-226. Consistent with Baffinland's Surface Water and Aquatic Ecosystem Management Plan, corrective and mitigation actions taken during freshet 2019 in response to reported sediment releases included one or more of the following:

- Silt fence and spring berm installation
- Check dam and settling pond repairs, construction and operation
- Gabion basket installation to reinforce check dams
- Armouring of ditches, banks, and road embankments near water bodies
- Clearing of excess snow at culvert inlets and outlets
- Redirection of sediment/turbid waters away from fish habitat by means of ditches, swales, and active pumping

Photos showing the mitigation measures and corrective actions taken in 2019 in response to each reported sediment release are included in the spill reports in Appendix A. The subsections below discuss these mitigation measures and corrective actions, and future monitoring planned for each reported incident.

5.1. Spill Report 19-198 - Camp Lake Settling Ponds, Sheardown Lake Tributaries, and Camp Lake Tributary

As shown in the water quality monitoring results reported in Appendix B.2 and discussed in Section 3, surface water drainage near the Camp Lake Settling Ponds, Sheardown Lake tributaries, and Camp Lake tributary demonstrated elevated TSS concentrations during freshet 2019.

Snow removal prior to freshet 2019 in the area around the Camp Lake Settling Ponds, including the removal of snow around the designed upstream check dams, was performed to reduce surface water runoff and the severity of potential TSS exceedances at the outfall of the Camp Lake Settling Ponds. Similarly, in the days leading to freshet, snow pack around the inlets and outlets of select culvert locations associated with the Sheardown Lake tributaries and Camp Lake tributary, including the SDLT and CLT crossings, was excavated to reduce the volume of snow melt and, subsequently, the amount of overland flow present to mobilize soils and sediments. The excess snow was removed and transported to the approved snow stockpile areas, which are monitored as per Baffinland's Snow Management Plan; potentially contributing to a reduction in the severity and frequency of elevated instream TSS concentrations.

In additional to snow removal, corrective and mitigation actions taken prior to freshet 2019 to reduce erosion and sedimentation included construction of a third settling pond and spillway, and reinforcement of the existing settling ponds. Routine maintenance on the Camp Lake Settling

Ponds and upstream check dams, construction of rip rap and check dams at strategic locations, and armouring upstream of the CLSP drainage valley was also completed.

CV-186 and CV-187, water crossings associated with SDLT, were upgraded during the 2017/2018 winter period as part of the original 2013 Hatch Designs and the Tote Road Earthworks Execution Plan (TREEP). The water crossings were extended, modified, and rip rapped to improve their performance during freshet and mitigate Project impacts to instream TSS concentrations. In addition, upon observing runoff during freshet 2019, check dams and a silt fence was constructed at the outlet of CV-186 and at the inlet of CV-187.

Upon observing the elevated instream TSS conditions at monitoring locations CLSP-OUT, CLT-OUT, and SDLT-OUT, and LDFG-OUT additional sedimentation mitigation measures were promptly implemented. These measures included water diversion and pumping strategies such as re-directing flow to established check dams; the installation of earth works, additional check dams, silt fences and spring berms; and the installation of a second silt curtain at the CLSP outfall. Sediment and erosion control measures were implemented and installed in accordance with the Surface Water and Aquatic Ecosystem Management Plan.

As shown in the photos in Appendix A.1, these mitigation measures were implemented to slow runoff flow rates and to increase the retention time of surface water management infrastructure to allow for the suspended sediments in the runoff to settle out prior to entering natural waterbodies.

To prevent further release of sediment laden water into Camp Lake and Sheardown Lake, Baffinland has developed a two tiered approach. In the short term, Baffinland will continue to implement existing controls detailed in the Surface Water and Aquatic Ecosystem Management Plan prior to and throughout freshet 2020. Baffinland has also initiated the development of a long term water management plan with support from a third party consultant which is targeted to be completed in Q3 2020.

In preparation for freshet in 2020, a detailed Mine Site Freshet Monitoring Program will be developed and freshet preparedness meeting held with various regulators to outline further mitigations.

In 2019 Baffinland implemented a trial of new dust suppression techniques. Dust Stop, produced by Cypher Environmental is an approved product for dust suppression under Nunavut's Environmental Guideline for Dust Suppression on unpaved Roads. Dust Stop is environmentally friendly, and is expected to have a longer lasting durability for both traffic and rainfall impact, as it promotes a hard, competent water repellant surface when properly applied. Baffinland commenced a trial application of the DSMB (Dust Stop Municipal Blend) dust suppression product in 2019. Improved dust suppression was observed throughout the application zones and the product also showed signs of water shedding during rain events supporting improved road sealant and application lifespan. Two initial applications of the product along the entire Tote Road (24 hrs apart), followed by routine application to maintain the coating on the roads every two weeks, is planned for 2020. Additional trials may be expanded to include the Mine Site in 2020.

To further assess the performance of the surface water management upgrades and improvements and to document the water quality of the Camp Lake Settling Ponds, Sheardown Lake tributaries,

and Camp Lake tributary, Baffinland will continue the Mine Site freshet monitoring program in 2020.

5.2. Spill Report 19-226 – Mary River

As shown in the water quality monitoring results reported in Appendix B.2 and discussed in Section 3, surface water drainage to Mary River, downstream of Project infrastructure, demonstrated elevated TSS during freshet 2019.

Snow removal prior to freshet 2019 in the area around the Mine Haul Road culverts and ditches was performed to reduce the volume of snow melt, and subsequently the amount of overland flow present to mobilize sediment in surface water runoff to Mary River. The excess snow was removed and transported to the approved snow stockpile areas, potentially contributing to a reduction in the severity and frequency of elevated instream TSS concentrations.

Upon observing the sediment impacted water entering the Mary River tributary and Mary River, additional sedimentation mitigation measures were promptly implemented including the repair and reinforcement of existing check dams at km 106.5, and the construction of additional check dams using gabion baskets at this location. These actions increased the retention time of the flows through these structures; allowing for better settling of sediments prior to runoff water reaching the receiving environment. A new check dam system was also constructed at the km 108.5 location. Other mitigation actions included the installation of silt fences and springs berms, and performance of ditch maintenance. Sediment and erosion control measures were implemented and installed in accordance with the Surface Water and Aquatic Ecosystem Management Plan to settle sediments before runoff water reached the receiving environment. In addition, surface water was diverted away from problematic areas to minimize the impacted water entering Mary River.

As detailed in the photos in Appendix A.2, these mitigation measures were implemented to slow runoff flow rates and increase the retention time of surface water management infrastructure to allow for the suspended sediments in the runoff to settle out prior to discharge into Mary River.

To prevent further release of sediment laden water along the Mine Haul Road, Baffinland has developed a two tiered approach. In the short term, Baffinland will continue to implement existing controls detailed in the Surface Water and Aquatic Ecosystem Management Plan, and Mine Operations 2020 Freshet and Mine Haul Road Water Management Improvements plan prior to and throughout freshet 2020. Baffinland has also initiated the development of a long term water management plan with support from a third party consultant which is targeted to be completed in Q3 2020.

In preparation for freshet in 2020, a detailed Mine Site Freshet Monitoring Program will be developed and freshet preparedness meeting held with various regulators to outline further mitigations. This information will be included in the long-term water management plan.

In addition, to mitigate possible permafrost degradation from surface material removal, which can contribute to sedimentation and erosion issues, the following measures will be implemented throughout the Project:

- Removal of surface material will be avoided where possible to reduce permafrost degradation and will occur only at approved locations;
- Areas will be graded by filling in low areas rather than cutting into high areas, where feasible;
- Erosion control will be evaluated for areas where removal of surface material is required; and
- Insulating material or erosion control material, such as concrete fabric or riprap, will be utilized to reduce erosion and potential permafrost degradation, as required.

6. CONCLUSION

Baffinland continues to assess the sedimentation control and mitigation measures used at the Project to improve the water quality of surface water drainage and mitigate Project related sediment releases to receiving water bodies. In addition to implementing sedimentation control measures, as outlined in Baffinland's Surface Water and Aquatic Ecosystems Management Plan, Baffinland continued to upgrade the surface water management infrastructure at the Project in 2019 and implement mitigation measures and corrective actions outlined in Baffinland's Sedimentation Mitigation Action Plan.

To further assess the performance of surface water management upgrades and improvements implemented at the Project and to document the water quality of the Camp Lake Settling Ponds, Sheardown Lake tributaries, and Camp Lake tributary, Baffinland will continue the Mine Site freshet monitoring program in 2020, in addition to SNP and TRMP monitoring.

TABLES

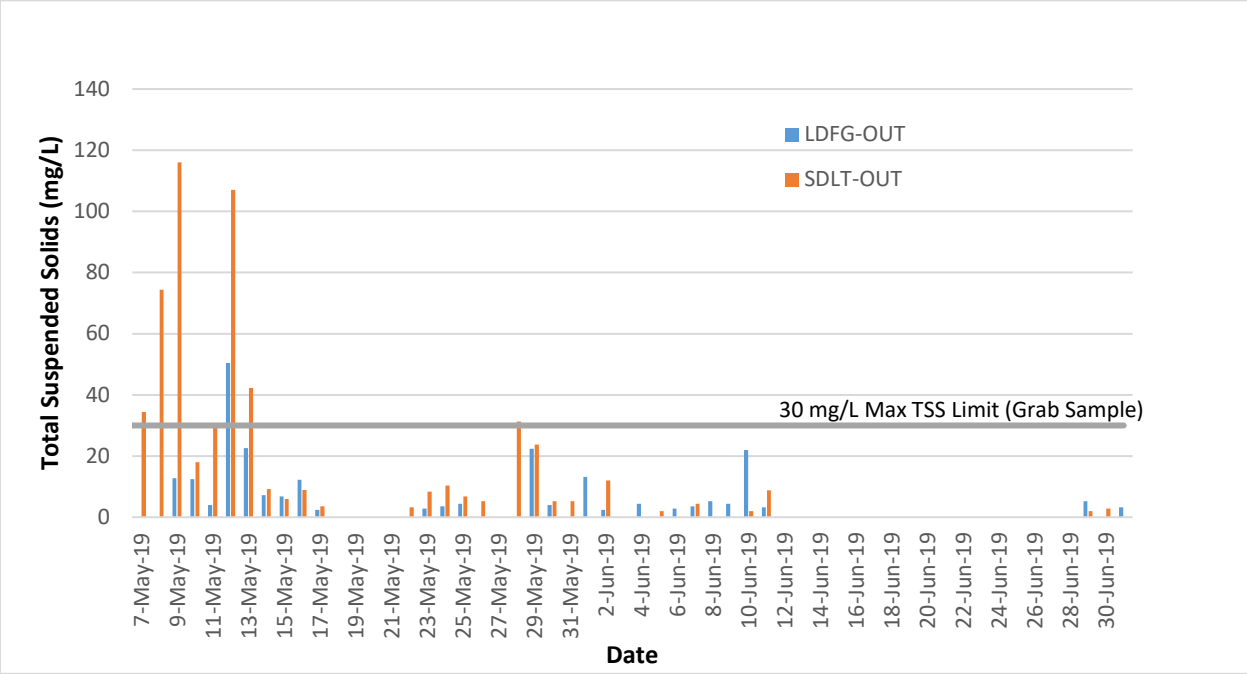
Table 1 - Effluent Quality Discharge Limits for Contact Water during the Operations Phase and the Early Revenue Phase of the Project (Type "A" Water Licence – 2AM-MRY1325 – Table 11)

Parameter	Maximum Average Concentration (mg/L)	Maximum Concentration of any Grab Sample (mg/L)
Total Suspended Solids (TSS)	15	30
Oil and Grease	No Visible Sheen	No Visible Sheen
pH	Between 6.0 and 9.5	Between 6.0 and 9.5

Table 2 - Summary of Exceedances for Mine Site during Freshet 2018/2019

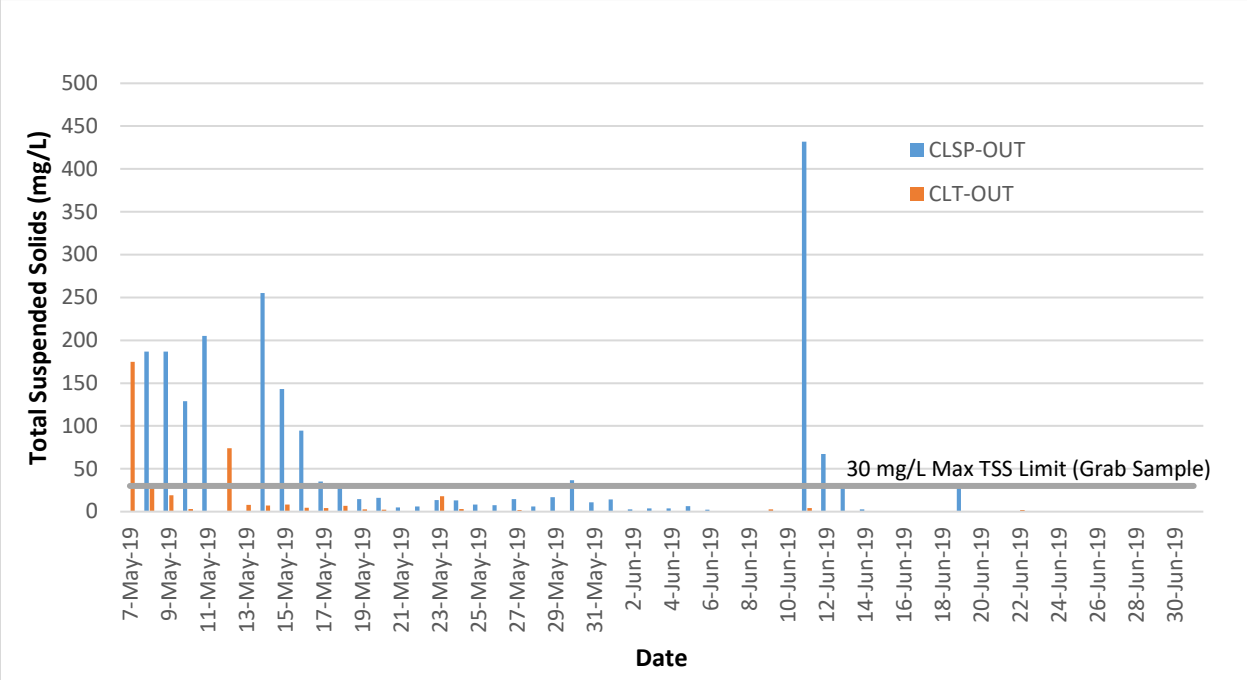
Mine Site	2018 Value	2019 Value
Number of TSS exceedances observed at drainage outlets	23	22
Maximum TSS concentration observed at drainage outlets	823 mg/L	432 mg/L

FIGURES



Note: Concentrations below Limit of Reporting (LOR) are not shown on graph.

Figure 1 - Total Suspended Solids (TSS) Concentrations for Sheardown Lake Tributaries



Note: Concentrations below Limit of Reporting (LOR) are not shown on graph.

Figure 2 - Total Suspended Solids (TSS) Concentrations for Camp Lake Tributaries

APPENDICES

APPENDIX A – NT-NU SPILL REPORTS

APPENDIX A.1 – Spill Report 19-198 – Camp Lake Settling Ponds, Sheardown Lake Tributaries, and Camp Lake Tributary

June 06, 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 #19-198
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

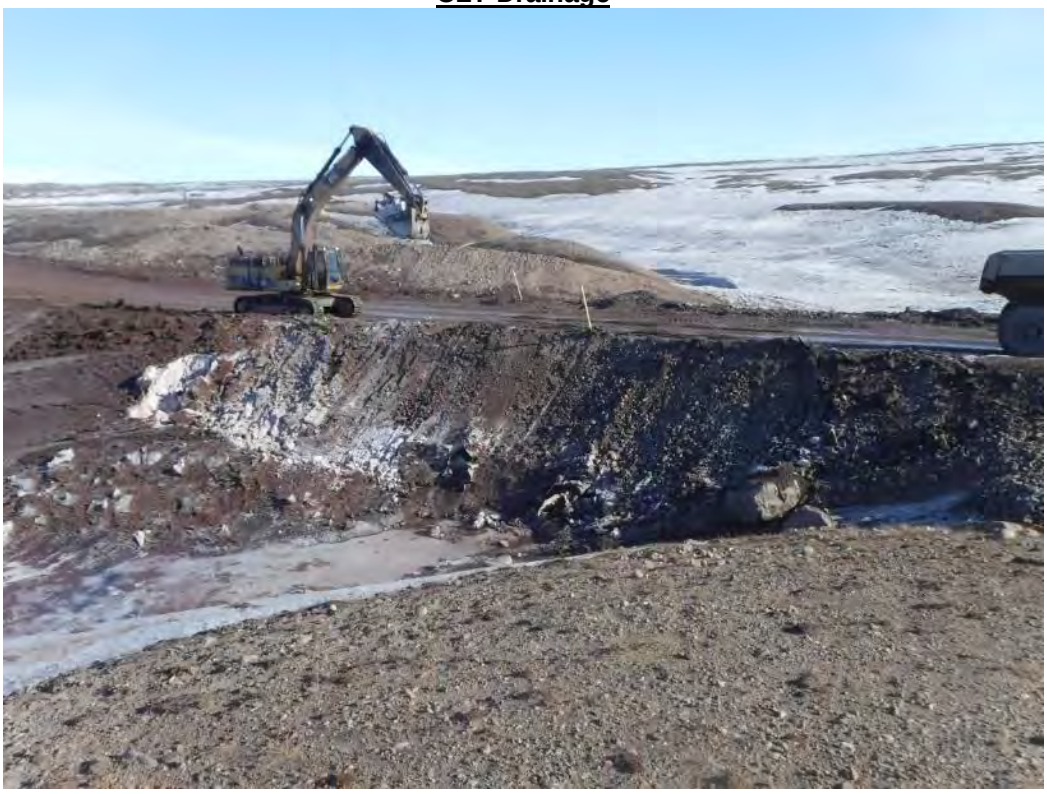


Photo 1. Snow clearing at the outlet of BG-01 on May 6, 2019

Photo 2. CLT Outfall on May 7, 2019

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

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

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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

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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

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SDLT Drainage

Photo 1. SDLT Outfall on May 7, 2019

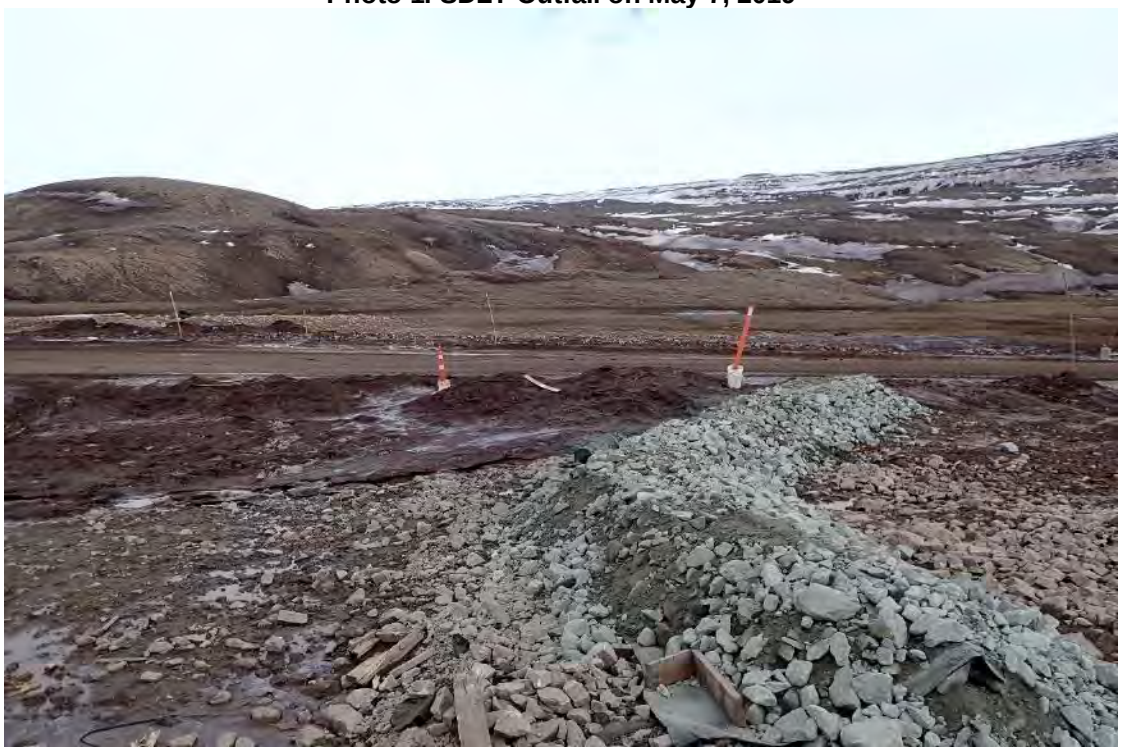

Photo 2. Check dam construction at the outlet of CV-186 on May 8, 2019

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Main: 416.364.8820 | Fax: 416.364.0193 | www.baffinland.com

Photo 3. SDLT Outfall on May 9, 2019

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

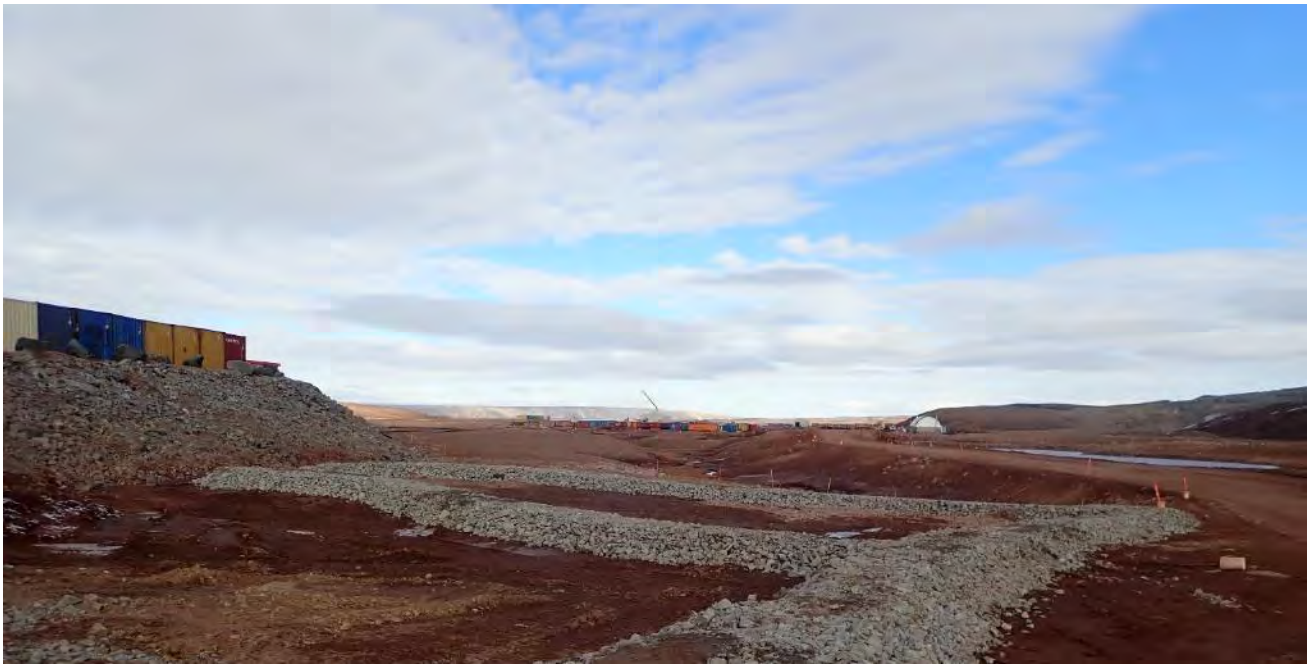

Photo 5. Check dam construction at the outlet of CV-186 on May 22, 2019

Photo 6. SDLT Outfall on June 6, 2019

Figure 1. Map of CLT and CLSP spill locations

Figure 2. Map of SDLT spill location

Northwest Territories | Nunavut | Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

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

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR: 05-09-2019	REPORT TIME: 21:00	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # TO THE ORIGINAL SPILL REPORT	REPORT NUMBER: 19 – 198
B	OCCURRENCE DATE: MONTH – DAY – YEAR: 05-07-2019	OCCURRENCE TIME: 14:00		
C	LAND USE PERMIT NUMBER (IF APPLICABLE): IOL - Commercial Lease No.: Q13C301	WATER LICENCE NUMBER (IF APPLICABLE): 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION: Mary River Project Mine Site, Baffin Island, NU	REGION: ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE: DEGREES / MINUTES / SECONDS	LONGITUDE: DEGREES / MINUTES / SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME: Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION: 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED: N/A	CONTRACTOR ADDRESS OR OFFICE LOCATION: N/A		
H	PRODUCT SPILLED: Sediment-laden water	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES: Unquantified	U.N. NUMBER: N/A	
	SECOND PRODUCT SPILLED (IF APPLICABLE): N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES: N/A	U.N. NUMBER: N/A	
I	SPILL SOURCE: Melting snow, overland flow	SPILL CAUSE: Rapid melt	AREA OF CONTAMINATION IN SQUARE METRES: N/A	
J	FACTORS AFFECTING SPILL OR RECOVERY: Snow covered area, high flow	DESCRIBE ANY ASSISTANCE REQUIRED: N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT: N/A	

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS:

On May 07, 2019, warming temperatures resulting in snowmelt runoff containing sediment-laden water observed to be flowing at multiple locations at the Mary River Mine Site (SDLT, CLSP and CLT). The source of the sedimentation was snow melt from the surrounding mine site infrastructure. The event resulted in sediment-laden water flowing onto and under the ice of Camp Lake and Sheardown Lake. In accordance with the Surface Water Management Plan, sedimentation mitigation measures were implemented including; check dams, silt fences and spring berms in an attempt to settle sediments prior to discharge. With freshet conditions present, daily monitoring of the water quality is ongoing; initial water quality sample results were submitted to ALS lab for analysis. 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 as required by subsection 38(4) of the Fisheries Act.

L	REPORTED TO SPILL LINE BY: Connor Devereaux	POSITION: Env Superintendent	EMPLOYER: Baffinland	LOCATION CALLING FROM: 647.253.0596	TELEPHONE: Ext. 6016
M	ANY ALTERNATE CONTACT: Tim Sewell	POSITION: Director of HSES	EMPLOYER: Baffinland	ALTERNATE CONTACT LOCATION: 647.253.0596	ALTERNATE TELEPHONE: Ext. 6054

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY:	POSITION: STATION OPERATOR	EMPLOYER:	LOCATION CALLED: YELLOWKNIFE, NT	REPORT LINE NUMBER: (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC — SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN — FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

PAGE 1 OF 1

Figure 3. Baffinland NT NU spill report

Baffinland

Table 1. CLT Outfall Water Quality Results

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2269130-5	L2270047-2	L2270800-1
	Sample Date & Time			2019-05-07 15:00	2019-05-08 10:15	2019-05-09 13:45
	Units	LOR	Limits			
pH	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	0.1	-	165	58.5	42.7
Acute Toxicity	-	-	Non-lethal	-	-	Non-lethal

Table 2. CLSP Outfall Water Quality Results

Analyte	Sample ID			CLSP-OUT	CSLP-OUT
	ALS Laboratory Sample ID			L2270047-1	L2270800-2
	Sample Date & Time			2019-05-08 9:25	2019-05-09 12:50
	Units	LOR	Limits		
pH	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	-	148	122
Turbidity	NTU	0.1	-	324	279
Acute Toxicity	-	-	Non-lethal	-	Non-lethal

Baffinland

Table 3. SDLT Outfall Water Quality Results

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT
	ALS Laboratory Sample ID			L2269130-1	L2270047-4	L2270800-5
	Sample Date & Time			2019-05-07 11:20	2019-05-08 11:55	2019-05-09 15:35
	Units	LOR	Limits			
pH	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

APPENDIX A.2 – Spill Report 19-226 – Mary River

June 29, 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 #19-226
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.

Baffinland

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:

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

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

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

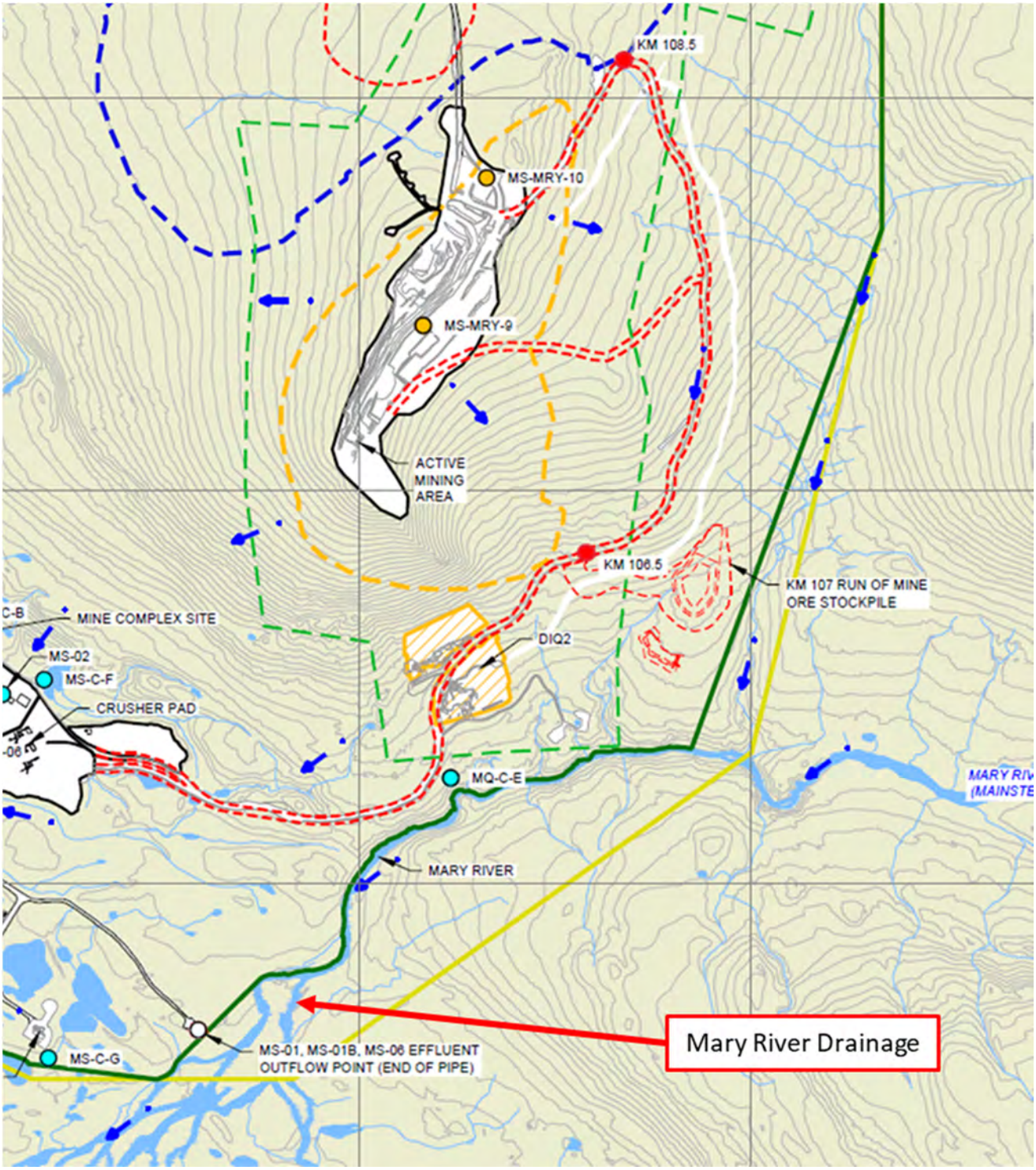

Figure 1. Map of E0-20 sample location, KM 108.5 and KM 106.5 impacted sediment locations, and site drainage

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

Baffinland

Northwest Territories | Nunavut | Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

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

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR: 05-31-2019	REPORT TIME: 20:00	☒ ORIGINAL SPILL REPORT, OR ☐ UPDATE # _____ TO THE ORIGINAL SPILL REPORT	REPORT NUMBER: 19 - 226
B	OCCURRENCE DATE: MONTH – DAY – YEAR: 05-30-2019	OCCURRENCE TIME: Unknown		
C	LAND USE PERMIT NUMBER (IF APPLICABLE): IOL - Commercial Lease: Q13C301	WATER LICENCE NUMBER (IF APPLICABLE): 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION: Mary River Milne Inlet Site, Baffin Island, NU	REGION: ☐ NWT ☒ NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE: DEGREES 71 MINUTES 18 SECONDS 39	LONGITUDE: DEGREES 79 MINUTES 11 SECONDS 56		
F	RESPONSIBLE PARTY OR VESSEL NAME: Baffinland Iron Mines Corp.	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION: 2275 Middle Road East, Suite 300, Oakville, ON L6H 0C3		
G	ANY CONTRACTOR INVOLVED: N/A	CONTRACTOR ADDRESS OR OFFICE LOCATION: N/A		
H	PRODUCT SPILLED: Sediment	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES: unquantifiable	U.N. NUMBER: N/A	
	SECOND PRODUCT SPILLED (IF APPLICABLE): N/A	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES: N/A	U.N. NUMBER: N/A	
I	SPILL SOURCE: Spring freshet/snow melt	SPILL CAUSE: Rapid snow melt	AREA OF CONTAMINATION IN SQUARE METRES: N/A	
J	FACTORS AFFECTING SPILL OR RECOVERY: Steep embankment, poor access	DESCRIBE ANY ASSISTANCE REQUIRED: N/A	HAZARDS TO PERSONS, PROPERTY OR EQUIPMENT: N/A	

K — ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS

On May 29th 2019, runoff from the Mine Haul Road ditches 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 has resulted in sediment impacted water traveling across the mountain tundra, entering Mary River Tributary and Mary River. In accordance with the Surface Water Management Plan, sedimentation mitigation measures are being implemented including; check dams, silt fences and ditch maintenance in an attempt to settle sediments before discharge to the receiving environment. Surface water is also being diverted away from problematic areas to minimize the impacted water entering Mary River. A follow up report will be provided with further information on mitigation measures. This incident 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 as required by subsection 38(4) of the Fisheries Act.

L	REPORTED TO SPILL LINE BY: William Bowden	POSITION: Env. Superintendent	EMPLOYER: Baffinland	LOCATION CALLING FROM: 416-364-8820	TELEPHONE: ext. 6016
M	ANY ALTERNATE CONTACT: Shawn Stevens	POSITION: Manager of HSES	EMPLOYER: Baffinland	ALTERNATE CONTACT LOCATION: 416-364-8820	ALTERNATE TELEPHONE: ext. 6006

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION: STATION OPERATOR	EMPLOYER	LOCATION CALLED: YELLOWKNIFE, NT	REPORT LINE NUMBER: (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ ILA ☐ INAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

PAGE 1 OF _____

Figure 3. Baffinland NT NU spill report

Baffinland

Table 1. E0-20 Water Quality Results

Analyte	Sample ID			E0-20	E0-20
	ALS Laboratory Sample ID			L2283557-1	L2287922-1
	Sample Date & Time			2019-05-31 12:40	2019-06-07 8:35
	Units	LOR	Limits		
pH	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	-

APPENDIX B – SURFACE WATER QUALITY AND ACUTE TOXICITY RESULTS FOR AFFECTED AREAS

APPENDIX B.1 – Sample IDs and Locations

Sample IDs and Locations

Sample Location	Description	Coordinates (Lat/Long)
CLSP-OUT	Camp Lake Sedimentation Ponds outlet	N 71° 19' 42.2" W 79° 22' 55.4"
CLT-OUT	Camp Lake Tributary 1 (100 m upstream of Camp Lake outfall)	N 71° 19' 46.8" W 79° 23' 08.6"
SDLT-OUT	Sheardown Lake Tributary 1 (100 m upstream of Sheardown Lake outfall)	N 71° 18' 57.6" W 79° 18' 46.8"
LDFG-OUT	Sheardown Lake Landfill gate tributary (40 m Upstream of Sheardown Lake outfall)	N 71° 18' 41.0" W 79° 17' 40.6"
E0-20	AEMP sample site on Mary River downstream of all potential mine effects	N 71° 17' 45.0" W 79° 16' 34.5"

LEGEND

- Sampling Location
- Infrastructure
- Project Development Area

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Freshet Sampling Locations

Projection: NAD 1983 UTM ZONE 17N.
Source: © Her Majesty the Queen in rights of Canada Department of Natural Resources (2009). All rights reserved.

0 185 370 740
Meters

N

Baffinland

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FIGURE 1

SAVED: C:\Users\katie.mcguire\Documents\4 - Maps\Reporting\Freshet Monitoring\BIM_Freshet_MineSite.mxd; Jan 24, 2020 9:55 AM

APPENDIX B.2 – Water Quality and Results

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CSLP-OUT	CLSP-OUT	CLSP-OUT03
	ALS Laboratory Sample ID			L2270047-1	L2270800-2	L2271591-1	L2271591-2
	Sample Date & Time			2019-05-08 9:25	2019-05-09 12:50	2019-05-10 8:25	2019-05-10 8:25
	QA/QC Sample Type			N/A	N/A	N/A	Travel Blank
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.96	7.87	7.99	5.81
Total Suspended Solids	mg/L	2	30	**187**	**187**	**129**	<2.0
Total Dissolved Solids	mg/L	20	-	148	122	123	<20
Turbidity	NTU	0.1	-	324	279	240	<0.10

Notes:

Grey and bold highlight indicate results that exceeded the applicable water quality criteria.

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT
	ALS Laboratory Sample ID			L2271706-1	L2272940-13	L2274173-1	L2275780-13
	Sample Date & Time			5-11-2019 8:05	2019-05-14 7:55	2019-05-15 8:35	2019-05-16 8:25
	QA/QC Sample Type			N/A	N/A	N/A	N/A
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.94	7.96	7.91	7.87
Total Suspended Solids	mg/L	2	30	**205**	**255**	**143**	**94.6**
Total Dissolved Solids	mg/L	20	-	157	166	126	122
Turbidity	NTU	0.1	-	342	351	194	111

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT
	ALS Laboratory Sample ID			L2275702-2	L2275813-2	L2275876-4	L2275885-3
	Sample Date & Time			2019-05-17 8:15	2019-05-18 9:00	2019-05-19 10:45	2019-05-20 8:00
	QA/QC Sample Type			N/A	N/A	N/A	N/A
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.54	7.72	7.65	7.74
Total Suspended Solids	mg/L	2	30	**35.1**	28.7	14.8	16
Total Dissolved Solids	mg/L	20	-	118	77	121	126
Turbidity	NTU	0.1	-	88.5	78.1	36	26.8

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT
	ALS Laboratory Sample ID			L2277605-4	L2277626-5	L2278339-4	L2279205-1
	Sample Date & Time			2019-05-21 9:25	5-22-2019 10:15	2019-05-23 9:45	2019-05-24 7:30
	QA/QC Sample Type			N/A	N/A	N/A	N/A
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.5	7.66	7.43	7.69
Total Suspended Solids	mg/L	2	30	4.8	6	13.6	13.2
Total Dissolved Solids	mg/L	20	-	159	155	115	128
Turbidity	NTU	0.1	-	14.1	14.2	24.9	31.1

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT03	CLSP-OUT
	ALS Laboratory Sample ID			L2279316-2	L2279321-1	L2279321-2	L2280911-2
	Sample Date & Time			2019-05-25 11:25	2019-05-26 9:10	2019-05-26 9:10	2019-05-27 8:45
	QA/QC Sample Type			N/A	N/A	Travel Blank	N/A
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.75	7.55	5.91	7.69
Total Suspended Solids	mg/L	2	30	8.4	7.6	<2.0	14.5
Total Dissolved Solids	mg/L	20	-	125	123	<20	138
Turbidity	NTU	0.1	-	18.3	19.1	<0.10	18

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT
	ALS Laboratory Sample ID			L2280939-1	L2281831-1	L2283682-1	L2283683-1
	Sample Date & Time			2019-05-28 8:10	2019-05-29 8:25	2019-05-30 8:10	2019-05-31 7:40
	QA/QC Sample Type			N/A	N/A	N/A	N/A
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.91	7.69	7.64	7.53
Total Suspended Solids	mg/L	2	30	6	16.7	**36.8**	10.8
Total Dissolved Solids	mg/L	20	-	135	155	138	149
Turbidity	NTU	0.1	-	18.6	76.4	77.4	17.4

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT03
	ALS Laboratory Sample ID			L2283684-1	L2284382-1	L2284392-1	L2284392-2
	Sample Date & Time			2019-06-01 8:05	2019-06-02 16:20	2019-06-03 11:10	2019-06-03 11:10
	QA/QC Sample Type			N/A	N/A	N/A	Field Blank
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.47	7.09	7.31	5.83
Total Suspended Solids	mg/L	2	30	14.4	2.8	3.6	<2.0
Total Dissolved Solids	mg/L	20	-	156	156	175	<20
Turbidity	NTU	0.1	-	24.9	4.96	4.34	0.11

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT
	ALS Laboratory Sample ID			L2286160-1	L2286177-1	L2287070-1	L2287930-1
	Sample Date & Time			2019-06-04 7:35	2019-06-05 9:05	2019-06-06 8:15	2019-06-07 11:05
	QA/QC Sample Type			N/A	N/A	N/A	N/A
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	7.11	6.88	6.91	6.88
Total Suspended Solids	mg/L	2	30	3.6	6.4	2.4	<2.0
Total Dissolved Solids	mg/L	20	-	149	117	147	125
Turbidity	NTU	0.1	-	2.1	4.31	2.04	8.02

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT	CLSP-OUT	CLSP-OUT
	ALS Laboratory Sample ID			L2288037-1	L2289618-1	L2292244-3	L2292251-1
	Sample Date & Time			2019-06-08 10:50	2019-06-11 13:00	2019-06-12 15:25	2019-06-13 13:20
	QA/QC Sample Type			N/A	N/A	N/A	N/A
	Units	LOR	Limits				
pH	pH units	0.1	6.0 - 9.5	6.91	7.95	7.95	7.79
Total Suspended Solids	mg/L	2	30	<2.0	**432**	**67.2**	**31.2**
Total Dissolved Solids	mg/L	20	-	132	218	255	198
Turbidity	NTU	0.1	-	0.61	705	154	60.7

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT	CLSP-OUT
	ALS Laboratory Sample ID			L2292328-1	L2295157-3
	Sample Date & Time			2019-06-14 14:25	2019-06-19 11:40
	QA/QC Sample Type			N/A	N/A
	Units	LOR	Limits		
pH	pH units	0.1	6.0 - 9.5	7.27	7.83
Total Suspended Solids	mg/L	2	30	2.8	28
Total Dissolved Solids	mg/L	20	-	146	162
Turbidity	NTU	0.1	-	7.71	65.5

Baffinland

SURFACE WATER QUALITY RESULTS - CLSP-OUT

Analyte	Sample ID			CLSP-OUT
	ALS Laboratory Sample ID			L2270800-2
	Sample Date & Time			2019-05-09 12:50
	QA/QC Sample Type			N/A
	Units	LOR	Limits	
Hardness (as CaCO3)	mg/L	10	-	47.9
pH	pH units	0.1	6-9.5	7.87
Total Suspended Solids	mg/L	2	30	**187**
Total Dissolved Solids	mg/L	13	-	122
Turbidity	NTU	0.1	-	279
Alkalinity, Total (as CaCO3)	mg/L	10	-	45
Ammonia, Total (as N)	mg/L	0.02	-	0.535
Chloride (Cl)	mg/L	0.5	-	6.62
Fluoride (F)	mg/L	0.02	-	0.064
Nitrate (as N)	mg/L	0.02	-	1.28
Total Kjeldahl Nitrogen	mg/L	0.15	-	<1.5
Phosphorus, Total	mg/L	0.003	-	0.225
Sulfate (SO4)	mg/L	0.3	-	5.19
Dissolved Organic Carbon	mg/L	1	-	2.78
Total Organic Carbon	mg/L	1	-	13.4
Aluminum (Al)-Total	mg/L	0.01	-	15.2
Arsenic (As)-Total	mg/L	0.0001	-	0.00155
Cadmium (Cd)-Total	mg/L	0.00001	-	0.000198
Calcium (Ca)-Total	mg/L	0.5	-	12.4
Copper (Cu)-Total	mg/L	0.001	-	0.0252
Iron (Fe)-Total	mg/L	0.05	-	18.3
Lead (Pb)-Total	mg/L	0.0001	-	0.0243
Magnesium (Mg)-Total	mg/L	0.05	-	19.4
Manganese (Mn)-Total	mg/L	0.0005	-	0.339
Mercury (Hg)-Total	mg/L	0.00001	-	<0.000010
Molybdenum (Mo)-Total	mg/L	0.00005	-	0.00408
Nickel (Ni)-Total	mg/L	0.0005	-	0.0394
Potassium (K)-Total	mg/L	0.05	-	10
Selenium (Se)-Total	mg/L	0.00005	-	0.00012
Sodium (Na)-Total	mg/L	0.5	-	5.91
Thallium (Tl)-Total	mg/L	0.00001	-	0.00025
Uranium (U)-Total	mg/L	0.00001	-	0.0163
Zinc (Zn)-Total	mg/L	0.003	-	0.0596
Aluminum (Al)-Dissolved	mg/L	0.005	-	0.0316
Arsenic (As)-Dissolved	mg/L	0.0001	-	<0.00010
Cadmium (Cd)-Dissolved	mg/L	0.00001	-	0.000016
Calcium (Ca)-Dissolved	mg/L	0.05	-	10.2
Copper (Cu)-Dissolved	mg/L	0.0002	-	0.00086
Iron (Fe)-Dissolved	mg/L	0.01	-	0.018
Lead (Pb)-Dissolved	mg/L	0.00005	-	0.000073
Magnesium (Mg)-Dissolved	mg/L	0.05	-	5.46
Manganese (Mn)-Dissolved	mg/L	0.0005	-	0.0227
Mercury (Hg)-Dissolved	mg/L	0.00001	-	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00005	-	0.00588
Nickel (Ni)-Dissolved	mg/L	0.0005	-	0.00077
Potassium (K)-Dissolved	mg/L	0.05	-	5.21
Selenium (Se)-Dissolved	mg/L	0.00005	-	0.000099
Sodium (Na)-Dissolved	mg/L	0.5	-	5.9
Thallium (Tl)-Dissolved	mg/L	0.00001	-	<0.000010
Uranium (U)-Dissolved	mg/L	0.00001	-	0.00839
Zinc (Zn)-Dissolved	mg/L	0.001	-	<0.0010
Oil and Grease, Total	mg/L	2	-	6.1
Acute Toxicity	-	-	-	Non-lethal

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT01	LDFG-OUT	LDFG-OUT	LDFG-OUT
	ALS Laboratory Sample ID			L2270800-9	L2271591-11	L2271706-10	L2271706-11	L2271764-1	L2272152-10	L2272940-10
	Sample Date & Time			2019-05-09 13:55	2019-05-10 14:00	2019-05-11 11:00	2019-05-11 11:00	2019-05-12 11:15	2019-05-13 12:00	2019-05-14 10:35
	QA/QC Sample Type			N/A	N/A	N/A	Field Duplicate	N/A	N/A	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	7.45	7.42	7.52	7.48	7.47	7.60	7.67
Total Suspended Solids	mg/L	2	30	12.8	12.4	4.0	6.0	**50.4**	22.6	7.2
Total Dissolved Solids	mg/L	20	-	46	47	44	148	50	29	62
Turbidity	NTU	0.1	-	79.6	50.2	34.9	34.1	153	81.8	31.3

Notes:

Grey and bold highlight indicate results that exceeded the applicable water quality criteria.

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT03	LDFG-OUT	LDFG-OUT	LDFG-OUT01	LDFG-OUT	LDFG-OUT03	LDFG-OUT
	ALS Laboratory Sample ID			L2272940-11	L2274173-11	L2275780-9	L2275780-10	L2275702-10	L2275702-11	L2275813-7
	Sample Date & Time			2019-05-14 10:35	2019-05-15 11:10	2019-05-16 11:15	2019-05-16 11:15	2019-05-17 11:10	2019-05-17 11:10	2019-05-18 10:40
	QA/QC Sample Type			Travel Blank	N/A	N/A	Field Duplicate	N/A	Travel Blank	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	5.81	7.72	7.78	7.77	7.8	5.66	7.88
Total Suspended Solids	mg/L	2	30	<2.0	6.8	12.2	3.4	2.4	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	<20	48	79	75	97	35	23
Turbidity	NTU	0.1	-	0.72	25.5	23.9	24.1	19.1	<0.10	11.5

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT01	LDFG-OUT	LDFG-OUT01	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT
	ALS Laboratory Sample ID			L2275813-8	L2275876-10	L2275876-11	L2275885-11	L2277605-3	L2277626-4	L2278339-1
	Sample Date & Time			2019-05-18 10:40	2019-05-19 13:35	2019-05-19 13:35	2019-05-20 11:15	2019-05-21 8:50	2019-05-22 9:10	2019-05-23 8:25
	QA/QC Sample Type			Field Duplicate	N/A	Field Duplicate	N/A	N/A	N/A	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	7.87	7.89	7.9	7.87	7.83	7.86	7.85
Total Suspended Solids	mg/L	2	30	2	<2.0	<2.0	<2.0	<2.0	<2.0	2.8
Total Dissolved Solids	mg/L	20	-	25	101	98	90	129	122	80
Turbidity	NTU	0.1	-	11.7	7.42	7.51	7.65	5.09	12.1	22.9

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT	LDFG-OUT01	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT
	ALS Laboratory Sample ID			L2279205-5	L2279316-4	L2279316-5	L2279321-5	L2280911-3	L2280939-4	L2281831-4
	Sample Date & Time			2019-05-24 8:50	2019-05-25 13:55	2019-05-25 13:55	2019-05-26 11:45	2019-05-27 9:55	2019-05-28 9:00	2019-05-29 9:25
	QA/QC Sample Type			N/A	N/A	Field Duplicate	N/A	N/A	N/A	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	7.89	7.9	7.87	7.9	7.97	8.01	7.93
Total Suspended Solids	mg/L	2	30	3.6	4.4	2	<2.0	<2.0	<2.0	22.4
Total Dissolved Solids	mg/L	20	-	105	97	73	82	106	99	94
Turbidity	NTU	0.1	-	14.4	15.5	15.5	13.5	7.02	10.4	33.9

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT
	ALS Laboratory Sample ID			L2283682-5	L2283683-5	L2283684-5	L2284382-5	L2284392-5	L2286160-5	L2286177-5
	Sample Date & Time			2019-05-30 9:25	2019-05-31 8:45	2019-06-01 9:30	2019-06-02 17:35	2019-06-03 12:15	2019-06-04 9:40	2019-06-05 10:00
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	7.98	8.03	8.02	7.97	8.06	8.04	8.03
Total Suspended Solids	mg/L	2	30	4	<2.0	13.2	2.4	<2.0	4.4	<2.0
Total Dissolved Solids	mg/L	20	-	98	111	122	125	129	122	90
Turbidity	NTU	0.1	-	29.2	14.4	19.2	26.4	22.7	11.5	10.9

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT02	LDFG-OUT	LDFG-OUT	LDFG-OUT03
	ALS Laboratory Sample ID			L2287070-4	L2287070-5	L2287930-5	L2288037-4	L2288037-5
	Sample Date & Time			2019-06-06 9:50	2019-06-06 9:50	2019-06-07 12:20	2019-06-08 12:05	2019-06-08 12:05
	QA/QC Sample Type			N/A	Field Blank	N/A	N/A	Travel Blank
	Units	LOR	Limits					
pH	pH units	0.1	6.0 - 9.5	8.05	6.07	8.02	7.99	5.82
Total Suspended Solids	mg/L	2	30	2.8	<2.0	3.6	5.2	<2.0
Total Dissolved Solids	mg/L	20	-	115	<20	109	111	<20
Turbidity	NTU	0.1	-	16.1	<0.10	23.1	18.4	<0.10

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT03	LDFG-OUT	LDFG-OUT	LDFG-OUT03	LDFG-OUT	LDFG-OUT
	ALS Laboratory Sample ID			L2288070-3	L2288070-4	L2288647-4	L2289618-4	L2289618-5	L2292244-1	L2292251-4
	Sample Date & Time			2019-06-09 15:25	2019-06-09 15:25	2019-06-10 13:15	2019-06-11 14:15	2019-06-11 14:15	2019-06-12 14:05	2019-06-13 14:40
	QA/QC Sample Type			N/A	Travel Blank	N/A	N/A	Travel Blank	N/A	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	8	5.79	8.14	8.05	5.65	8.12	8.09
Total Suspended Solids	mg/L	2	30	4.4	<2.0	22	3.2	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	124	<20	135	113	<20	122	143
Turbidity	NTU	0.1	-	27.3	<0.10	72.2	12.6	<0.10	5.02	6.59

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT03	LDFG-OUT
	ALS Laboratory Sample ID			L2292328-5	L2292457-5	L2292487-4	L2293076-4	L2294141-4	L2294141-1	L2295157-1
	Sample Date & Time			2019-06-14 15:20	2019-06-15 17:55	2019-06-16 13:50	2019-06-17 9:35	2019-06-18 9:20	2019-06-18 9:20	2019-06-19 9:45
	QA/QC Sample Type			N/A	NA	N/A	N/A	N/A	Travel Blank	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	8.1	8.14	8.16	8.26	8.2	6.08	8.16
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	120	147	116	133	123	<20	123
Turbidity	NTU	0.1	-	6.17	4.09	3.1	7.18	5.11	<0.10	4.74

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT01	LDFG-OUT	LDFG-OUT
	ALS Laboratory Sample ID			L2296067-4	L2296970-4	L2296971-4	L2297000-3	L2297000-4	L2299639-1	L2299640-1
	Sample Date & Time			2019-06-20 8:40	2019-06-21 15:10	2019-06-22 14:25	2019-06-23 17:25	2019-06-23 17:25	2019-06-25 8:25	2019-06-26 8:05
	QA/QC Sample Type			N/A	N/A	N/A	N/A	Field Duplicate	N/A	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	8.21	8.15	8.13	8.16	8.16	8.07	8.08
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	115	128	128	129	135	61	99
Turbidity	NTU	0.1	-	2.02	4.37	6.7	3.66	3.88	1.54	2.41

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SURFACE WATER QUALITY RESULTS - LDFG-OUT

Analyte	Sample ID			LDFG-OUT	LDFG-OUT01	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT	LDFG-OUT01
	ALS Laboratory Sample ID			L2300624-1	L2300624-3	L2301469-4	L2301606-4	L2301608-4	L2305124-2	L2305124-3
	Sample Date & Time			2019-06-27 9:00	2019-06-27 9:00	2019-06-28 5:45	2019-06-29 6:40	2019-06-30 15:45	2019-07-01 15:40	7/1/2019 15:40
	QA/QC Sample Type			N/A	Field Duplicate	N/A	N/A	N/A	N/A	Field Duplicate
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	8.04	8.06	8.17	8.22	8.28	8.16	8.15
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	5.2	<2.0	3.2	<2.0
Total Dissolved Solids	mg/L	20	-	89	72	112	129	124	134	137
Turbidity	NTU	0.1	-	1.96	1.78	3.65	1.38	2.74	1.76	1.84

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT01	SDLT-OUT	SDLT-OUT01	SDLT-OUT
	ALS Laboratory Sample ID			L2269130-1	L2269130-2	L2270047-4	L2270047-5	L2270800-5
	Sample Date & Time			2019-05-07 11:20	2019-05-07 11:20	2019-05-08 11:55	2019-05-08 11:55	2019-05-09 15:35
	QA/QC Sample Type			N/A	Field Duplicate	N/A	Field Duplicate	N/A
	Units	LOR	Limits					
pH	pH units	0.1	6.0 - 9.5	7.5	7.63	7.6	7.58	7.56
Total Suspended Solids	mg/L	2	30	28.8	**34.4**	**74.4**	**73.6**	**116**
Total Dissolved Solids	mg/L	20	-	62	68	61	72	74
Turbidity	NTU	0.1	-	78.1	83.6	122	121	142

Notes:

Grey and bold highlight indicate results that exceeded the applicable water quality criteria.

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT01	SDLT-OUT
	ALS Laboratory Sample ID			L2271591-7	L2271706-6	L2271764-4	L2271764-5	L2272152-5
	Sample Date & Time			2019-05-10 10:55	2019-05-11 9:50	2019-05-12 12:30	2019-05-12 12:30	2019-05-13 10:10
	QA/QC Sample Type			N/A	N/A	N/A	Field Duplicate	N/A
	Units	LOR	Limits					
pH	pH units	0.1	6.0 - 9.5	7.68	7.63	7.71	7.71	7.56
Total Suspended Solids	mg/L	2	30	18	29.6	**107**	**106**	**42.3**
Total Dissolved Solids	mg/L	20	-	77	78	50	50	62
Turbidity	NTU	0.1	-	55.2	50.8	216	213	134

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT03	SDLT-OUT	SDLT-OUT	SDLT-OUT03	SDLT-OUT	SDLT-OUT
	ALS Laboratory Sample ID			L2272152-6	L2272940-6	L2274173-6	L2274173-7	L2275780-5	L2275702-5
	Sample Date & Time			2019-05-13 10:10	2019-05-14 9:25	2019-05-15 10:10	2019-05-15 10:10	2019-05-16 9:40	2019-05-17 9:15
	QA/QC Sample Type			Travel Blank	N/A	N/A	Travel Blank	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	5.79	7.63	7.68	5.79	7.69	7.72
Total Suspended Solids	mg/L	2	30	<2.0	9.2	6	<2.0	8.9	3.6
Total Dissolved Solids	mg/L	20	-	<20	73	40	<20	67	61
Turbidity	NTU	0.1	-	<0.10	37.1	24.2	<0.10	18.1	17.7

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT01	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT01	SDLT-OUT
	ALS Laboratory Sample ID			L2275702-6	L2275813-6	L2275876-1	L2275885-6	L2275885-7	L2277605-2
	Sample Date & Time			2019-05-17 9:15	2019-05-18 10:20	2019-05-19 8:00	2019-05-20 9:10	2019-05-20 9:10	2019-05-21 8:25
	QA/QC Sample Type			Field Duplicate	N/A	N/A	N/A	Field Duplicate	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.72	7.79	7.75	7.71	7.8	7.78
Total Suspended Solids	mg/L	2	30	2.8	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	63	<20	57	68	65	109
Turbidity	NTU	0.1	-	17.9	13.4	11.2	10.3	10.5	8.93

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT03	SDLT-OUT	SDLT-OUT	SDLT-OUT02	SDLT-OUT	SDLT-OUT
	ALS Laboratory Sample ID			L2277605-5	L2277626-3	L2278339-2	L2278339-3	L2279205-4	L2279316-3
	Sample Date & Time			2019-05-21 8:25	5/22/2019 8:40	2019-05-23 8:55	2019-05-23 8:55	2019-05-24 8:25	2019-05-25 12:30
	QA/QC Sample Type			Travel Blank	N/A	N/A	Field Blank	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	6.01	7.86	7.87	**5.72**	7.87	7.86
Total Suspended Solids	mg/L	2	30	<2.0	3.2	8.4	<2.0	10.4	6.8
Total Dissolved Solids	mg/L	20	-	48	137	77	<20	86	80
Turbidity	NTU	0.1	-	<0.10	7.77	17.1	0.65	16.4	11

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT01	SDLT-OUT	SDLT-OUT	SDLT-OUT01
	ALS Laboratory Sample ID			L2279321-4	L2280911-4	L2280911-5	L2280939-5	L2281831-5	L2281831-3
	Sample Date & Time			2019-05-26 9:45	2019-05-27 10:50	2019-05-27 10:50	2019-05-28	2019-05-29 9:05	2019-05-29 9:05
	QA/QC Sample Type			N/A	N/A	Field Duplicate	N/A	N/A	Field Duplicate
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.85	7.9	7.89	7.93	7.94	7.92
Total Suspended Solids	mg/L	2	30	5.2	<2.0	<2.0	**31.3**	23.7	3.2
Total Dissolved Solids	mg/L	20	-	56	76	74	106	86	93
Turbidity	NTU	0.1	-	12.9	7.14	6.39	70.2	47.4	48.2

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT03	SDLT-OUT	SDLT-OUT01
	ALS Laboratory Sample ID			L2283682-4	L2283683-4	L2283684-3	L2283684-4	L2284382-3	L2284382-4
	Sample Date & Time			2019-05-30 9:05	2019-05-31 8:30	2019-06-01 9:00	2019-06-01 9:00	2019-06-02 17:10	2019-06-02 17:10
	QA/QC Sample Type			N/A	N/A	N/A	Travel Blank	N/A	Duplicate
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.92	7.76	7.96	5.7	7.97	7.96
Total Suspended Solids	mg/L	2	30	5.2	5.2	<2.0	<2.0	12	11.6
Total Dissolved Solids	mg/L	20	-	77	66	78	<20	86	87
Turbidity	NTU	0.1	-	12.1	13.4	9.89	<0.10	28	25.6

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT
	ALS Laboratory Sample ID			L2284392-4	L2286160-4	L2286177-4	L2287070-3	L2287930-3	L2288037-3
	Sample Date & Time			2019-06-03 12:00	2019-06-04 8:05	2019-06-05 9:35	2019-06-06 9:20	2019-06-07 11:55	2019-06-08 11:40
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.97	7.88	7.9	7.96	8.03	7.95
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	2	<2.0	4.4	<2.0
Total Dissolved Solids	mg/L	20	-	71	68	70	86	69	68
Turbidity	NTU	0.1	-	7.19	4.26	4.12	4.36	9.46	5.12

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT
	ALS Laboratory Sample ID			L2288070-2	L2288647-3	L2289618-3	L2292244-2	L2292251-3	L2292328-3
	Sample Date & Time			2019-06-09 15:00	2019-06-10 12:45	2019-06-11 13:45	2019-06-12 14:40	2019-06-13 14:15	2019-06-14 15:45
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.98	7.99	7.9	7.91	7.86	8
Total Suspended Solids	mg/L	2	30	<2.0	2	8.8	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	103	80	89	109	117	107
Turbidity	NTU	0.1	-	6.28	8.63	13.6	8.09	6.85	5.76

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT01	SDLT-OUT	SDLT-OUT	SDLT-OUT	SDLT-OUT01	SDLT-OUT
	ALS Laboratory Sample ID			L2292328-4	L2292457-4	L2292487-3	L2293076-2	L2293076-3	L2294141-3
	Sample Date & Time			2019-06-14 15:45	2019-06-15 17:40	2019-06-16 13:25	2019-06-17 9:05	2019-06-17 9:05	2019-06-18 10:05
	QA/QC Sample Type			Field Duplicate	N/A	N/A	N/A	Field Duplicate	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	8	8.03	8.05	8.04	8.14	8.02
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	107	119	89	142	137	108
Turbidity	NTU	0.1	-	5.45	4.75	3.83	2.78	4.37	2.69

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT01	SDLT-OUT	SDLT-OUT	SDLT-OUT01
	ALS Laboratory Sample ID			L2295157-2	L2296067-2	L2296067-3	L2296970-3	L2296971-2	L2296971-3
	Sample Date & Time			2019-06-19 10:55	2019-06-20 8:20	2019-06-20 8:20	2019-06-21 14:45	2019-06-22 13:50	2019-06-22 13:50
	QA/QC Sample Type			N/A	N/A	Field Duplicate	N/A	N/A	Field Duplicate
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	8.08	8.04	8.06	8.06	7.98	7.96
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	140	162	140	136	136	142
Turbidity	NTU	0.1	-	3.87	2.89	2.95	1.9	1.3	1.45

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT01	SDLT-OUT	SDLT-OUT01	SDLT-OUT
	ALS Laboratory Sample ID			L2297000-2	L2299639-2	L2299639-3	L2299640-2	L2299640-3	L2300624-2
	Sample Date & Time			2019-06-23 16:00	2019-06-25 8:55	2019-06-25 8:55	2019-06-26 8:35	2019-06-26 8:35	2019-06-26 21:25
	QA/QC Sample Type			N/A	N/A	Field Duplicate	N/A	Field Duplicate	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	8.03	8.01	8	8.02	8.03	8.1
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	151	156	106	115	124	56
Turbidity	NTU	0.1	-	1.99	1.62	1.61	1.86	1.93	1.6

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT	SDLT-OUT	SDLT-OUT01	SDLT-OUT	SDLT-OUT
	ALS Laboratory Sample ID			L2301469-3	L2301606-2	L2301606-3	L2301608-3	L2305124-4
	Sample Date & Time			2019-06-28 17:25	2019-06-29 18:20	2019-06-29 18:20	2019-06-30 13:05	2019-07-01 16:00
	QA/QC Sample Type			N/A	N/A	Field Duplicate	N/A	N/A
	Units	LOR	Limits					
pH	pH units	0.1	6.0 - 9.5	8.19	8.23	8.24	8.24	8.22
Total Suspended Solids	mg/L	2	30	<2.0	2	<2.0	2.8	<2.0
Total Dissolved Solids	mg/L	20	-	133	140	120	133	127
Turbidity	NTU	0.1	-	1.82	1.45	1.27	1.23	1.22

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SURFACE WATER QUALITY RESULTS - SDLT-OUT

Analyte	Sample ID			SDLT-OUT
	ALS Laboratory Sample ID			L2270800-5
	Sample Date & Time			5/9/2019 15:35
	QA/QC Sample Type			N/A
	Units	LOR	Limits	
Hardness (as CaCO3)	mg/L	10	-	42.5
pH	pH units	0.1	6-9.5	7.56
Total Suspended Solids	mg/L	2	30	**116**
Total Dissolved Solids	mg/L	13	-	74
Turbidity	NTU	0.1	-	142
Alkalinity, Total (as CaCO3)	mg/L	10	-	36
Ammonia, Total (as N)	mg/L	0.02	-	0.039
Chloride (Cl)	mg/L	0.5	-	2.81
Fluoride (F)	mg/L	0.02	-	0.038
Nitrate (as N)	mg/L	0.02	-	0.22
Total Kjeldahl Nitrogen	mg/L	0.15	-	<1.5
Phosphorus, Total	mg/L	0.003	-	0.071
Sulfate (SO4)	mg/L	0.3	-	13.5
Dissolved Organic Carbon	mg/L	1	-	3.56
Total Organic Carbon	mg/L	1	-	12.2
Aluminum (Al)-Total	mg/L	0.01	-	2.85
Arsenic (As)-Total	mg/L	0.0001	-	0.00041
Cadmium (Cd)-Total	mg/L	0.00001	-	0.000064
Calcium (Ca)-Total	mg/L	0.5	-	8.1
Copper (Cu)-Total	mg/L	0.001	-	0.0065
Iron (Fe)-Total	mg/L	0.05	-	4.12
Lead (Pb)-Total	mg/L	0.0001	-	0.00298
Magnesium (Mg)-Total	mg/L	0.05	-	6.69
Manganese (Mn)-Total	mg/L	0.0005	-	0.0884
Mercury (Hg)-Total	mg/L	0.00001	-	<0.000010
Molybdenum (Mo)-Total	mg/L	0.00005	-	0.00152
Nickel (Ni)-Total	mg/L	0.0005	-	0.0058
Potassium (K)-Total	mg/L	0.05	-	3.05
Selenium (Se)-Total	mg/L	0.00005	-	0.000086
Sodium (Na)-Total	mg/L	0.5	-	0.862
Thallium (Tl)-Total	mg/L	0.00001	-	0.000059
Uranium (U)-Total	mg/L	0.00001	-	0.00171
Zinc (Zn)-Total	mg/L	0.003	-	0.0143
Aluminum (Al)-Dissolved	mg/L	0.005	-	0.0356
Arsenic (As)-Dissolved	mg/L	0.0001	-	<0.00010
Cadmium (Cd)-Dissolved	mg/L	0.00001	-	0.000023
Calcium (Ca)-Dissolved	mg/L	0.05	-	7.96
Copper (Cu)-Dissolved	mg/L	0.0002	-	0.00217
Iron (Fe)-Dissolved	mg/L	0.01	-	0.046
Lead (Pb)-Dissolved	mg/L	0.00005	-	0.000069
Magnesium (Mg)-Dissolved	mg/L	0.05	-	5.5
Manganese (Mn)-Dissolved	mg/L	0.0005	-	0.0175
Mercury (Hg)-Dissolved	mg/L	0.00001	-	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00005	-	0.00182
Nickel (Ni)-Dissolved	mg/L	0.0005	-	0.00111
Potassium (K)-Dissolved	mg/L	0.05	-	2.11
Selenium (Se)-Dissolved	mg/L	0.00005	-	0.000081
Sodium (Na)-Dissolved	mg/L	0.5	-	0.86
Thallium (Tl)-Dissolved	mg/L	0.00001	-	<0.000010
Uranium (U)-Dissolved	mg/L	0.00001	-	0.000846
Zinc (Zn)-Dissolved	mg/L	0.001	-	0.0024
Oil and Grease, Total	mg/L	2	-	<2.0
Acute Toxicity	-	-	-	Non-lethal

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT01	CLT-OUT	CLT-OUT01	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2269130-5	L2269130-6	L2270047-2	L2270047-3	L2270800-1	L2271591-3
	Sample Date & Time			2019-05-07 15:00	2019-05-07 15:00	2019-05-08 10:15	2019-05-08 10:15	2019-05-09 13:45	2019-05-10 8:40
	QA/QC Sample Type			N/A	Field Duplicate	N/A	Field Duplicate	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.81	7.85	7.83	7.85	7.68	7.76
Total Suspended Solids	mg/L	2	30	**175**	**177**	**30.8**	**30**	19.2	3.2
Total Dissolved Solids	mg/L	20	-	121	122	98	94	65	65
Turbidity	NTU	0.1	-	165	162	58.5	60.3	42.7	20.4

Notes:

Grey and bold highlight indicate results that exceeded the applicable water quality criteria.

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT01	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT01	CLT-OUT
	ALS Laboratory Sample ID			L2271591-4	L2271706-2	L2271764-9	L2272152-1	L2272152-2	L2272940-2
	Sample Date & Time			2019-05-10 8:40	2019-05-11 8:20	2019-05-12 13:50	2019-05-13 8:55	2019-05-13 8:55	2019-05-14 8:20
	QA/QC Sample Type			Field Duplicate	N/A	N/A	N/A	Field Duplicate	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.77	7.60	7.65	7.43	7.48	7.68
Total Suspended Solids	mg/L	2	30	3.6	<2.0	**74.0**	8.0	8.4	7.2
Total Dissolved Solids	mg/L	20	-	63	57	<20	32	21	59
Turbidity	NTU	0.1	-	20.5	14.1	55.9	16.7	16.3	18

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT01	CLT-OUT	CLT-OUT02	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2274173-2	L2274173-3	L2275780-1	L2275780-2	L2275702-1	L2275813-1
	Sample Date & Time			2019-05-15 9:00	2019-05-15 9:00	2019-05-16 8:10	2019-05-16 8:10	2019-05-17 8:00	2019-05-18 8:40
	QA/QC Sample Type			N/A	Field Duplicate	N/A	Field Blank	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.69	7.69	7.69	5.72	7.7	7.73
Total Suspended Solids	mg/L	2	30	8.4	6.4	4.4	<2.0	4	6.8
Total Dissolved Solids	mg/L	20	-	28	28	47	<20	59	<20
Turbidity	NTU	0.1	-	14.3	14.6	11.3	0.14	11.7	10.1

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT03	CLT-OUT	CLT-OUT02	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2275876-2	L2275876-3	L2275885-1	L2275885-2	L2277605-1	L2277626-1
	Sample Date & Time			2019-05-19 10:20	2019-05-19 10:20	2019-05-20 7:45	2019-05-20 7:45	2019-05-21 7:50	2019-05-22 7:50
	QA/QC Sample Type			N/A	Travel Blank	N/A	Field Blank	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.74	5.79	7.72	5.73	7.76	7.86
Total Suspended Solids	mg/L	2	30	2.8	<2.0	2.4	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	64	22	59	21	102	103
Turbidity	NTU	0.1	-	10.1	0.11	8.15	0.15	5.43	6.49

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT01	CLT-OUT	CLT-OUT	CLT-OUT01	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2277626-2	L2278339-5	L2279205-2	L2279205-3	L2279316-1	L2279321-3
	Sample Date & Time			2019-05-22 7:50	2019-05-23 9:30	2019-05-24 7:55	2019-05-24 7:55	2019-05-25 11:45	2019-05-26 8:55
	QA/QC Sample Type			Field duplicate	N/A	N/A	Field Duplicate	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.9	7.62	7.76	7.74	7.71	7.72
Total Suspended Solids	mg/L	2	30	3.6	18	3.2	3.2	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	122	43	49	60	51	56
Turbidity	NTU	0.1	-	6.4	11.4	6.63	6.49	5.21	3.57

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT01	CLT-OUT	CLT-OUT	CLT-OUT01	CLT-OUT
	ALS Laboratory Sample ID			L2280911-1	L2280939-2	L2280939-3	L2281831-2	L2283682-2	L2283682-3	L2283683-2
	Sample Date & Time			2019-05-27 8:30	2019-05-28 8:20	2019-05-28 8:20	2019-05-29 8:40	2019-05-30 8:30	2019-05-30	2019-05-31 8:00
	QA/QC Sample Type			N/A	N/A	Field Duplicate	N/A	N/A	Field Duplicate	N/A
	Units	LOR	Limits							
pH	pH units	0.1	6.0 - 9.5	7.83	7.89	7.81	7.6	7.7	7.67	7.73
Total Suspended Solids	mg/L	2	30	2	<2.0	3.2	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	72	69	70	67	52	53	68
Turbidity	NTU	0.1	-	4.64	8.04	7.84	7	4.97	4.78	3.14

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT01	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT01
	ALS Laboratory Sample ID			L2283683-3	L2283684-2	L2284382-2	L2284392-3	L2286160-2	L2286160-3
	Sample Date & Time			2019-05-31 8:00	2019-06-01 8:00	2019-06-02 16:35	2019-06-03 11:30	2019-06-04 8:00	2019-06-04 8:00
	QA/QC Sample Type			Field Duplicate	N/A	N/A	N/A	N/A	Duplicate
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.74	7.78	7.82	7.78	7.88	7.84
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	59	60	57	62	60	56
Turbidity	NTU	0.1	-	3.04	2.52	8.07	2.35	3.03	2.96

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT01	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2286177-2	L2286177-3	L2287070-2	L2287930-2	L2288037-2	L2288070-1
	Sample Date & Time			2019-06-05 8:50	2019-06-05 8:50	2019-06-06 8:45	2019-06-07 11:20	2019-06-08 11:05	2019-06-09 14:25
	QA/QC Sample Type			N/A	Field Duplicate	N/A	N/A	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.87	7.89	7.92	7.86	7.83	7.84
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	2.8
Total Dissolved Solids	mg/L	20	-	61	50	65	40	140	60
Turbidity	NTU	0.1	-	2.84	2.91	2.45	3.02	1.79	3.73

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT01	CLT-OUT
	ALS Laboratory Sample ID			L2288647-1	L2288647-2	L2289618-2	L2292244-4	L2292244-5	L2292251-2
	Sample Date & Time			2019-06-10 12:10	2019-06-10 12:10	2019-06-11 13:20	2019-06-12 15:45	2019-06-12 15:45	2019-06-13 13:40
	QA/QC Sample Type			N/A	Field Duplicate	N/A	N/A	Field Duplicate	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.9	7.89	7.88	7.84	7.82	7.89
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	4	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	60	55	63	76	80	86
Turbidity	NTU	0.1	-	3.38	3.36	8.16	4	4.31	5.22

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT02	CLT-OUT	CLT-OUT01	CLT-OUT
	ALS Laboratory Sample ID			L2292328-2	L2292457-2	L2292457-3	L2292487-1	L2292487-2	L2293076-1
	Sample Date & Time			2019-06-14 14:40	2019-06-15 13:20	2019-06-15 13:20	2019-06-16 9:55	2019-06-16 9:55	2019-06-17 8:35
	QA/QC Sample Type			N/A	N/A	Field Blank	N/A	Field Duplicate	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.96	8.01	5.89	8.01	8.03	8
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	76	68	29	62	62	76
Turbidity	NTU	0.1	-	4.68	2.99	0.14	2.35	2.22	1.74

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT01	CLT-OUT	CLT-OUT	CLT-OUT01
	ALS Laboratory Sample ID			L2294141-2	L2295157-4	L2295157-5	L2296067-1	L2296970-1	L2296970-2
	Sample Date & Time			2019-06-18 8:55	2019-06-19 11:55	2019-06-19 11:55	2019-06-20 7:50	2019-06-21 8:40	2019-06-21 8:40
	QA/QC Sample Type			N/A	N/A	Field Duplicate	N/A	N/A	Field Duplicate
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.98	8.06	8.07	8.01	8.04	8.03
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	61	55	55	87	85	86
Turbidity	NTU	0.1	-	1.72	3.44	3.52	3.2	1.89	1.53

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT	CLT-OUT
	ALS Laboratory Sample ID			L2296971-1	L2297000-1	L2299639-4	L2299640-4	L2300624-4	L2301469-1
	Sample Date & Time			2019-06-22 8:05	2019-06-23 14:15	2019-06-25 9:40	2019-06-26 9:05	2019-06-27 22:00	2019-06-28 17:00
	QA/QC Sample Type			N/A	N/A	N/A	N/A	N/A	N/A
	Units	LOR	Limits						
pH	pH units	0.1	6.0 - 9.5	7.96	8.07	8.03	8.07	8.09	8.18
Total Suspended Solids	mg/L	2	30	2	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	94	88	67	62	<20	84
Turbidity	NTU	0.1	-	1.88	1.77	1.96	2.14	1.32	0.87

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT01	CLT-OUT	CLT-OUT	CLT-OUT01	CLT-OUT
	ALS Laboratory Sample ID			L2301469-2	L2301606-1	L2301608-1	L2301608-2	L2305124-1
	Sample Date & Time			2019-06-28 17:00	2019-06-29 11:30	2019-06-30 8:50	2019-06-30 8:50	2019-07-01 8:20
	QA/QC Sample Type			Field Duplicate	N/A	N/A	Field Duplicate	N/A
	Units	LOR	Limits					
pH	pH units	0.1	6.0 - 9.5	8.22	8.13	8.21	8.24	8.09
Total Suspended Solids	mg/L	2	30	<2.0	<2.0	<2.0	<2.0	<2.0
Total Dissolved Solids	mg/L	20	-	75	97	88	89	99
Turbidity	NTU	0.1	-	0.84	0.83	0.75	0.78	0.92

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			CLT-OUT
	ALS Laboratory Sample ID			L2270800-1
	Sample Date & Time			2019-05-09 13:45
	QA/QC Sample Type			N/A
	Units	LOR	Limits	
Hardness	mg/L	10	-	41.2
pH	pH units	0.1	6.0 - 9.5	7.68
Total Suspended Solids	mg/L	2	30	19.2
Total Dissolved Solids	mg/L	13	-	65
Turbidity	NTU	0.1	-	42.7
Alkalinity, Total (as CaCO3)	mg/L	10	-	50
Ammonia, Total (as N)	mg/L	0.02	-	0.019
Chloride (Cl)	mg/L	0.5	-	4.18
Fluoride (F)	mg/L	0.02	-	<0.020
Nitrate (as N)	mg/L	0.02	-	0.424
Total Kjeldahl Nitrogen	mg/L	0.15	-	0.39
Phosphorus, Total	mg/L	0.003	-	0.0357
Sulfate (SO4)	mg/L	0.3	-	4.32
Dissolved Organic Carbon	mg/L	1	-	3.91
Total Organic Carbon	mg/L	1	-	9.6
Aluminum (Al)-Total	mg/L	0.01	-	0.981
Arsenic (As)-Total	mg/L	0.0001	-	0.00017
Cadmium (Cd)-Total	mg/L	0.00001	-	0.000012
Calcium (Ca)-Total	mg/L	0.5	-	8.14
Copper (Cu)-Total	mg/L	0.001	-	0.002
Iron (Fe)-Total	mg/L	0.05	-	1.29
Lead (Pb)-Total	mg/L	0.0001	-	0.000967
Magnesium (Mg)-Total	mg/L	0.05	-	5.53
Manganese (Mn)-Total	mg/L	0.0005	-	0.0368
Mercury (Hg)-Total	mg/L	0.00001	-	<0.000010
Molybdenum (Mo)-Total	mg/L	0.00005	-	0.000581
Nickel (Ni)-Total	mg/L	0.0005	-	0.0023
Potassium (K)-Total	mg/L	0.05	-	1.7
Selenium (Se)-Total	mg/L	0.00005	-	0.000055
Sodium (Na)-Total	mg/L	0.5	-	2.02
Thallium (Tl)-Total	mg/L	0.00001	-	0.000022
Uranium (U)-Total	mg/L	0.00001	-	0.00273
Zinc (Zn)-Total	mg/L	0.003	-	0.0042
Aluminum (Al)-Dissolved	mg/L	0.005	-	0.0238
Arsenic (As)-Dissolved	mg/L	0.0001	-	<0.00010
Cadmium (Cd)-Dissolved	mg/L	0.00001	-	<0.000010
Calcium (Ca)-Dissolved	mg/L	0.05	-	7.96
Copper (Cu)-Dissolved	mg/L	0.0002	-	0.00078
Iron (Fe)-Dissolved	mg/L	0.01	-	0.045
Lead (Pb)-Dissolved	mg/L	0.00005	-	<0.000050
Magnesium (Mg)-Dissolved	mg/L	0.05	-	5.18
Manganese (Mn)-Dissolved	mg/L	0.0005	-	0.0171
Mercury (Hg)-Dissolved	mg/L	0.00001	-	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.00005	-	0.000592
Nickel (Ni)-Dissolved	mg/L	0.0005	-	0.00059
Potassium (K)-Dissolved	mg/L	0.05	-	1.37
Selenium (Se)-Dissolved	mg/L	0.00005	-	0.00006
Sodium (Na)-Dissolved	mg/L	0.5	-	2.19
Thallium (Tl)-Dissolved	mg/L	0.00001	-	<0.000010
Uranium (U)-Dissolved	mg/L	0.00001	-	0.00233
Zinc (Zn)-Dissolved	mg/L	0.001	-	<0.0010
Oil and Grease, Total	mg/L	2	-	<2.0
Acute Toxicity	-	-	-	Non-lethal

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SURFACE WATER QUALITY RESULTS - E0-20

Analyte	Sample ID			E0-20	E0-20
	ALS Laboratory Sample ID			L2283557-1/L2283733-1	L2287922-1
	Sample Date & Time			2019-05-31 12:40	2019-06-07 8:35
	QA/QC Sample Type			N/A	N/A
	Units	LOR	Limits		
Hardness (as CaCO3)	mg/L	0.50	-	25.2	26.8
pH	pH units	0.10	6-9.5	7.54	7.69
Total Suspended Solids	mg/L	2.0	30	**63.6**	7.2
Total Dissolved Solids	mg/L	20/10	-	49	24
Turbidity	NTU	0.10	-	64.1	7.69
Alkalinity, Total (as CaCO3)	mg/L	10	-	26	27
Ammonia, Total (as N)	mg/L	0.010	-	<0.010	<0.010
Chloride (Cl)	mg/L	0.50	-	1.50	1.73
Fluoride (F)	mg/L	0.020	-	<0.020	<0.020
Nitrate (as N)	mg/L	0.020	-	0.027	0.134
Total Kjeldahl Nitrogen	mg/L	0.15	-	0.23	0.16
Phosphorus, Total	mg/L	0.0030	-	0.0600	0.0117
Sulfate (SO4)	mg/L	0.30	-	3.60	2.72
Dissolved Organic Carbon	mg/L	0.50	-	2.68	3.17
Total Organic Carbon	mg/L	2.5/0.50	-	3.9	3.46
Aluminum (Al)-Total	mg/L	0.0050	-	3.22	0.279
Arsenic (As)-Total	mg/L	0.00010	-	0.00034	<0.00010
Cadmium (Cd)-Total	mg/L	0.0000050	-	0.0000171	<0.0000050
Calcium (Ca)-Total	mg/L	0.50	-	4.74	5.40
Copper (Cu)-Total	mg/L	0.0010	-	0.0048	0.0011
Iron (Fe)-Total	mg/L	0.050	-	4.61	0.376
Lead (Pb)-Total	mg/L	0.000050	-	0.00210	0.000239
Magnesium (Mg)-Total	mg/L	0.050	-	4.70	3.34
Manganese (Mn)-Total	mg/L	0.00050	-	0.0820	0.00847
Mercury (Hg)-Total	mg/L	0.000010	-	<0.000010	<0.000010
Molybdenum (Mo)-Total	mg/L	0.000050	-	0.000272	0.000232
Nickel (Ni)-Total	mg/L	0.00050	-	0.00655	0.00102
Potassium (K)-Total	mg/L	0.050	-	1.91	0.707
Selenium (Se)-Total	mg/L	0.000050	-	0.000051	<0.000050
Sodium (Na)-Total	mg/L	0.050	-	0.536	0.853
Thallium (Tl)-Total	mg/L	0.000010	-	0.000059	0.00001
Uranium (U)-Total	mg/L	0.000010	-	0.000819	0.000355
Zinc (Zn)-Total	mg/L	0.0030	-	0.0090	<0.0030
Aluminum (Al)-Dissolved	mg/L	0.0050	-	0.0419	0.0137
Arsenic (As)-Dissolved	mg/L	0.00010	-	<0.00010	<0.00010
Cadmium (Cd)-Dissolved	mg/L	0.000010	-	<0.000010	<0.000010
Calcium (Ca)-Dissolved	mg/L	0.050	-	4.82	5.31
Copper (Cu)-Dissolved	mg/L	0.00020	-	0.00059	0.00075
Iron (Fe)-Dissolved	mg/L	0.010	-	0.048	0.015
Lead (Pb)-Dissolved	mg/L	0.000050	-	<0.000050	<0.000050
Magnesium (Mg)-Dissolved	mg/L	0.050	-	3.18	3.29
Manganese (Mn)-Dissolved	mg/L	0.00050	-	0.00532	0.00260
Mercury (Hg)-Dissolved	mg/L	0.000010	-	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.000050	-	0.000166	0.000208
Nickel (Ni)-Dissolved	mg/L	0.00050	-	0.00056	0.00056
Potassium (K)-Dissolved	mg/L	0.050	-	0.603	0.603
Selenium (Se)-Dissolved	mg/L	0.000050	-	<0.000050	<0.000050
Sodium (Na)-Dissolved	mg/L	0.50	-	<0.50	0.92
Thallium (Tl)-Dissolved	mg/L	0.000010	-	<0.000010	<0.000010
Uranium (U)-Dissolved	mg/L	0.000010	-	0.000228	0.000289
Zinc (Zn)-Dissolved	mg/L	0.0010	-	<0.0010	<0.0010
Acute Toxicity	-	-	-	Non-lethal	-

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SURFACE WATER QUALITY RESULTS - CLT-OUT

Analyte	Sample ID			E0-20	E0-20
	ALS Laboratory Sample ID			L2283557-1/L2283733-1	L2287922-1
	Sample Date & Time			2019-05-31 12:40	2019-06-07 8:35
	QA/QC Sample Type			N/A	N/A
	Units	LOR	Limits		
pH	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	-

Notes:

Grey and bold highlight indicate results that exceeded the applicable water quality criteria.

APPENDIX C – NATURAL SEDIMENTATION EVENTS

LEGEND

- Natural Sediment Event Location
- Project Facility Location
- Milne Inlet Tote Road
- Project Development Area

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Natural Sediment Event Locations

Projection: NAD 1983 UTM ZONE 17N.
Source: © Her Majesty the Queen in rights of Canada Department of Natural Resources (2009).

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FIGURE 1

MP-NS-19-01

June 13, 2019: Downstream View of MP-NS-19-01

June 13, 2019: Upstream Source Observed to be from Erosion on Hillside

June 13, 2019: Sample Collection Location

MP-NS-19-02

June 13, 2019: Downstream View of MP-NS-19-02. Sediment Source Observed to be Snowmelt Flowing Over an area of Unconsolidated Glacial Till

June 13, 2019: Sample Collection Location

ISORTOQ-NS-01

June 17: Downstream View of ISORTOQ-NS-01

June 17: Closer Downstream View of ISORTOQ-NS-01