APPENDIX E.8

REGULATORY CORRESPONDENCE

APPENDIX E.8.1

CIRNAC INSPECTION REPORTS AND BAFFINLAND RESPONSES

Indigenous and Northern Affairs Canada | Affaires autochtones et du Nord Canada

WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
Baffinland Iron Mines Corporation (BIMC)	Connor Devereaux
Licence No. / Expiry	**Representative's Title**
2AM-MRY1325	Environmental Superintendent
Land / Other Authorizations	
8BC-MRY1416, 2BEMRY1421	N2014X0012, N2014Q0016, N2014C0013
Date of Inspection	**Inspector**
May 16-18 2018	Jonathan Mesher

Activities Inspected

☐ Municipality ☐ Drilling ☒ Mining ☒ Construction ☐ Reclamation ☒ Fuel Storage
☒ Roads/Hauling ☐ Other: BIMC Main Camp ☒ Other: Miline Camp Area

Conditions: **A - Acceptable** **C - Concern** **U - Unacceptable** **NA – Not Applicable** **NI – Not Inspected**

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	A		Water Management Structures	A		Storage	10	a
Flow Measure. Device	A		Culverts / Bridges	C	1,2b	Spills		
Source:	A		Drainage	A		Spill Plan		
Water Use:	A		Erosion / Sediment					
Recirculation (y /n)			Mitigation Measures	A		**Administrative**		
			Reclamation Activities			Records		
			Materials Storage	U	4a, 6c	Reports		
Waste Disposal			Signage	A		Plans		
Waste Water						Notifications		
Solid Waste			**Monitoring**			**Other**		
Hazardous Waste			Sample Collection / Analysis					

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:	Location(s): Camp Lake Jetty – Inspectors identified melt water entering camp lake due to freshet, samples were taken at 14:01 to test for TSS, TPH, and Oil & Grease.
☒ Yes ☐ No	

SECTION 1 ☒ **Comments** ☐ **Non-Compliance with Act or Licence** ☐ **Action Required**

Inspectors Statement

On May 16-18, 2018, a water licence inspection was conducted at the Mary River Project, Qikiqtani Region, Nunavut. Sites inspected included the Mary River Mine Site, the Tote Road and related infrastructure, and the Milne Port area**.**

Weather Conditions on Site

The site remained partly snow covered at the time of the inspection; however, due to unusually warm weather freshet had just begun causing significant snowmelt to enter watercourses.

Summary of Report

At the time of inspection, the Licensee was undertaking activities related to the operation of an open-pit iron ore mine at the Milne Port (Milne Inlet), Mine site (Mary River), Tote Road. Construction activities on site include; construction of the new BIMC 800 man camp at Mary River site, maintenance along the tote road and construction of an emergency waste water management system at the waste rock stock pile.

Prior to inspection BIMC held a freshet presentation with regulating parties pertaining to their plan to address freshet issues on site. All water seeping from the Waste Rock Stockpile (WRS) and into the emergency ditches was frozen and relocated back to the WRS for control.

Inspection

1. **Ore Crushing Area and associated water management structures**
   a. In the previous inspection report it was noted that the containment ditches surrounding ore stockpile pad were not complete, at the time of this inspections the containment ditches around this facility appeared to be complete. *See figure 1*
   b. It was noted that some debris form what appears to be from the ore stockpile in the ditches (*see figure 2*) and an outer berm wall was either eroded or is incomplete (*see figure 3*). This berm wall must be repaired as soon as possible to ensure that contact water does not leach into the environment.

2. **Waste Rock Stockpile and associated water management structures**
   a. Emergency ditch is cleared and appears to be in good condition; all ice from the emergency ditch has been removed and relocated to the waste rock stockpile (*see figure 4*). However a road was built over top of a diversion ditch on the North East side of the WRSP leading to the waste rock sedimentation pond for containment, this blocks the flow of water to the WRSP sedimentation pond.

      I. Ditch on the North East side of the WRSP must be marked and cleared annually ensuring proper water management.

   b. Contrary to the comment (4), in the Action required section of the November 2017 inspection report which stated; "To remove all debris from all diversion ditches prior to freshet 2018, so that surface water flows as intended to the sedimentation ponds". The Licensee has not completed this work, which leads the inspector to believe that an unauthorized deposit of waste may occur.

      II. The access road must be remediated to ensure PAG contact water does not enter the environment and proper diversion of water to the sedimentation pond.

   c. At the time of the inspection the licensee was constructing a water treatment system at the waste rock stockpile sedimentation pond, the construction of this emergency water treatment facility appears to be on schedule and should be ready to deal with the potential Acrid Rock Deainage.
3. **Polishing Waste Stabilization Ponds**
   a. No issues noted; the ponds were still frozen during time of inspection.

4. **Hazardous Waste Berms**
   a. It was noted that two containers with hazardous waste have been left open and 4 drums of hazardous waste left outside of the facility.

      III. Waste material must be moved into containment

5. **Camp Lake Jetty**
   a. The inspector noted potential high levels of TSS originating from melt water entering camp lake. Aggregate dams have been built to screen sediment prior to entering lake. Samples were taken at this location to test for TSS, TPH and Oil & Grease.

6. **Land Fill**
   a. Land fill appears to be properly covered.
   b. Inspector noted that the fence is in poor condition.
   c. The inspector noted that hazardous material was dumped into the land fill. Hazardous waste found in this facility consisted of paint cans, oil filters, and aerosol cans. *See figure 5*.

      IV. It is BIMC's obligation to ensure that all BIMC employees understand that this is a non-hazardous landfill.
      V. Hazardous material must be removed from the land fill and stored an approved lined facility.

7. **Effluent Outfall**
   a. No concerns noted regarding this deposit of waste.

8. **Ore Stockpile Pad and associated water management structures**
   a. Ore bulk sample remains appear to be removed as requested by the inspector in a previous inspection.
   b. Liners of the East and West sedimentation pond appear to be in good condition.
   c. The culvert on the North East side of the stockpile pad has not been cleared and is allowing water to pool inside of the unlined diversion ditches.
   d. East and west Sedimentation Pond appears to be in good condition. *see figure 6 & 7.*

9. **Helicopter Pad Southeast of Ore Stockpile Pad**
   a. Surface of helicopter pad is topped with Ore, the ore topping the helicopter pad is to be removed or the licensee is provide evidence that this material is approved by the Nunavut Water Board as

construction material. *See Figure 8*

10. New Camp Pad (Milne Port)

a. Ditches surrounding new camp pad are unidentifiable due to snow cover

VI. Ensure that all water management structures are cleared to allow these structures to operate as intended. *See figure 9*

VII. North of batch plant contaminated soil placed in drums however the drums are not sealed or in containment. *See figure 10 & 11*

11. Fuel Module at Milne

a. Fuel module does not appear to be properly contained, this facility is lined but, the berms creating the containment area appear to have eroded away or the facility has become full of sediment causing capacity issues. Water from within the facility area appears to be capable of flowing outside of containment area. *See figure 12*
b. The inspector is requesting for a copy of the as built drawings for this facility.
c. A grab sample was taken at this location. Waiting for test results for TPH

12. Contaminated Snow dump

a. No issues or concerns with this facility, appears to be operating as intended.

SECTION 2	☐ Comments	☐ Non-Compliance with Act or Licence	☒ Action Required

PART B GENERAL CONDITIONS

ITEM 11
The Licensee shall post signs in the appropriate areas to inform the public of the location of infrastructure and/or facilities designed to contain, withhold, divert or retain Water and/or Waste. All signs must be in English, Inkutitut and French.

1. Ditch on the North East side of the WRSP must be marked and cleared annually ensuring proper water management

PART E CONDITIONS APPLYING TO WATER USE AND MANAGEMENT

ITEM 19
The Licensee shall undertake appropriate corrective measures to mitigate impacts on Surface drainage resulting from the Licensee's operations.

2. The access road must be remediated to ensure PAG contact water does not enter the environment and proper diversion of water to the sedimentation pond.

PART F CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT

ITEM 5
The Board has approved with the issuance of the licence, the Plan entitled "Baffinland Iron Mines Corporation Mary River Project Hazardous Materials and Hazardous Waste Management Plan", dated April 22, 2013.

3. Waste material must be moved into containment

PART F CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT

ITEM 4
The Licensee shall provide a revised Waste Management Plan, as required under Part B, Item 15(f), that takes into consideration for this and future revisions under this Licence, the following:

a. A Quality Assurance and Quality Control Plan for open burning procedures under

this Licence;

b. Provide a section and information on the proposed land disposal of dredging waste for the purposes of construction at Milne Port Site and Steensby Port Site, with information on location, amount of materials, method of disposal and any Mitigation measures required for the protection of water.

4. It is BIMC's obligation to ensure that all BIMC employees understand that this is a non-hazardous landfill.

PART F CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT

ITEM5
The Board has approved with the issuance of the licence, the Plan entitled "Baffinland Iron Mines Corporation Mary River Project Hazardous Materials and Hazardous Waste Management Plan", dated April 22, 2013.

5. Hazardous material must be removed from the land fill and deposited into the approved lined facility.

PART D CONDITIONS APPLYING TO CONSTRUCTION AND OPERATIONS

ITEM 24
The Licensee shall construct and operate all infrastructure and Facilities designed to contain, withhold, divert or retain Water and/or Waste in accordance with all applicable legislations and industry standards.

6. Ensure that all water management structures are cleared to allow these structures to operate as intended. *See figure 9*

PART F CONDITIONS APPLYING TO WASTE DISPOSAL AND MANAGEMENT

ITEM 5
The Board has approved with the issuance of the licence, the Plan entitled "Baffinland Iron Mines Corporation Mary River Project Hazardous Materials and Hazardous Waste Management Plan", dated April 22, 2013.

7. North of batch plant contaminated soil placed in drums however the drums are not sealed or in containment. *See figure 10 & 11*

Inspector's Name	
Jonathan Mesher	
Signature	
Date	
6/18/2018	

Figure 1: Ditch surrounding Ore Stockpile

Figure 2: Debris from what appears to be from the Ore Stockpile in the ditch near the "E-house"

Figure 3: erosion or incompletion of ditch wall seen in the center of the photograph location near the "Ehouse"

Figure 4: ice relocated to the Waste Rock Stockpile

Figure 5: Hazardous Material found in the Landfill aerosol can, paint cans, used oil filter

Figure 6: East Sedimentation pond

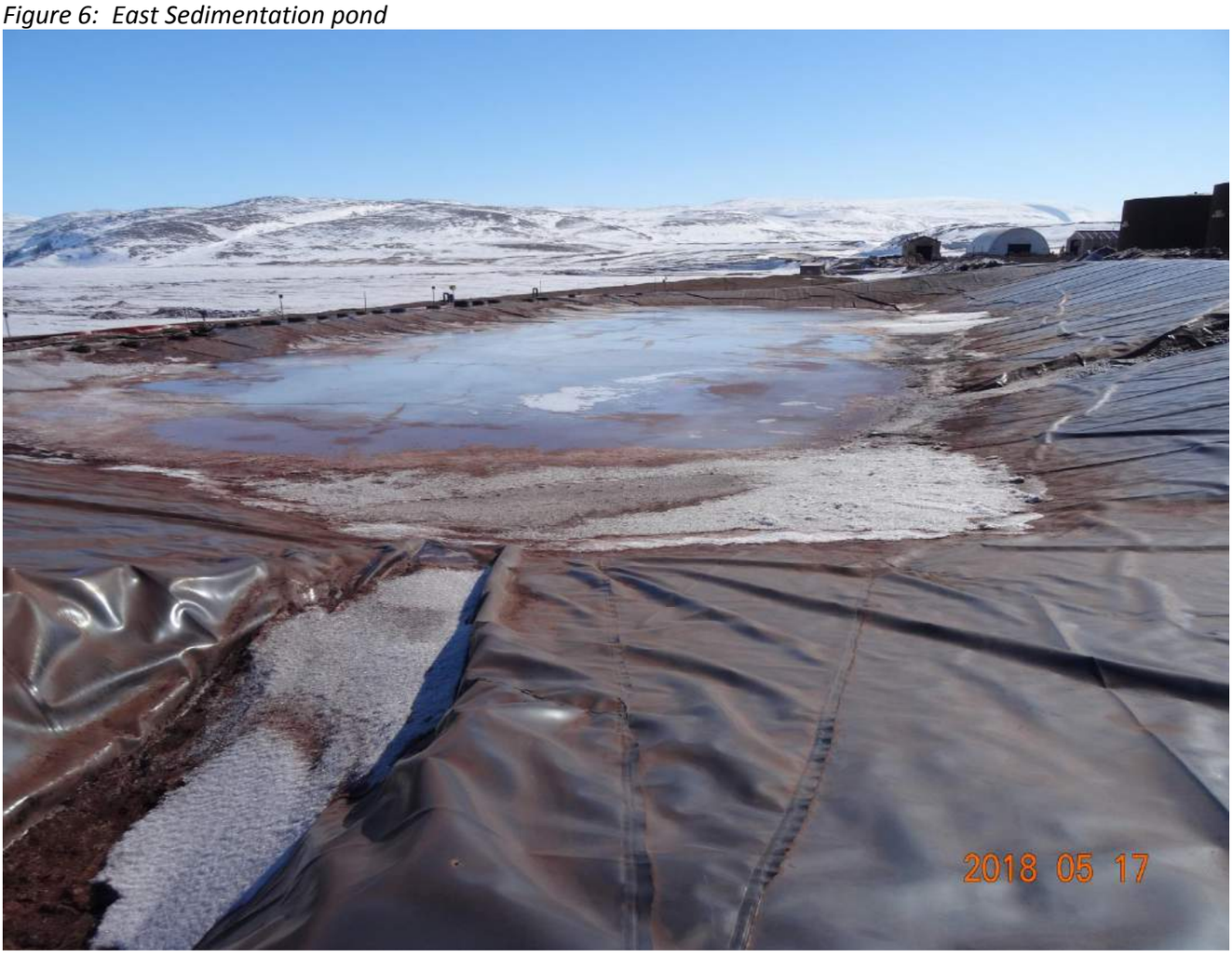

Figure 7: West Sedimentation pond

Figure 8: helicopter pad topped with Ore

Figure 9: Ditch surrounding new camp pad Milne port

Figure 10: contaminated soil near batch plant

Figure 11: contaminated soil in unsealed containers near batch plant

Figure 12: contact water exiting fuel station module

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WATER LICENCE INSPECTION FORM

☒ Original
☐ Follow-Up Report

Licensee	Licensee Representative
Baffinland Iron Mines Corporation (BIMC)	William Bowden
Licence No. / Expiry	**Representative's Title**
2AM-MRY1325	Environmental Superintendent
Land / Other Authorizations	
8BC-MRY1416, 2BE-MRY1421	N2014X0012, N2014Q0016, N2014C0013
Date of Inspection	**Inspector**
June 22 – 24, 2018	Jonathan Mesher

Activities Inspected

☐ Municipality ☐ Drilling ☒ Mining ☒ Construction ☐ Reclamation ☒ Fuel Storage
☒ Roads/Hauling ☐ Other: BIMC Main Camp ☒ Other: Miline Camp Area

Conditions: **A - Acceptable** **C - Concern** **U - Unacceptable** **NA – Not Applicable** **NI – Not Inspected**

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	A		Water Management Structures	C		Storage	C	
Flow Measure. Device	A		Culverts / Bridges	A		Spills	A	
Source:	A		Drainage	A		Spill Plan	A	
Water Use:	A		Erosion / Sediment	A				
Recirculation (y /n)			Mitigation Measures	A		**Administrative**		
			Reclamation Activities	A		Records	A	
			Materials Storage	C		Reports	Ni	
Waste Disposal			Signage	A		Plans	Ni	
Waste Water	A					Notifications	C	
Solid Waste	C		**Monitoring**			**Other**		
Hazardous Waste	C		Sample Collection / Analysis					

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:
☐ Yes ☒ No

SECTION 1 ☒ **Comments** ☐ **Non-Compliance with Act or Licence** ☐ **Action Required**

Inspectors Statement

On June22-24, 2018, a water licence inspection was conducted at the Mary River Project, Qikiqtani Region, Nunavut. Sites inspected included the Mary River Mine Site, the Tote Road and related infrastructure, and the Milne Port area.

Summary of Report

At the time of inspection, the Licensee was undertaking activities related to the operation of an open-pit iron ore mine at the Milne Port (Milne Inlet), Mine site (Mary River), Tote Road. Construction activities on site include; construction of the new BIMC 800 man camp at Mary River site, maintenance along the tote road and construction of an emergency waste water management system at the waste rock stock pile.

Inspection

1. **Ore Crushing Area and associated water management structures**
   a. The height of the outer berm wall of the ditches that surrounds the crusher pad appears to be inconsistent in height and in inconsistent with the approved design drawings. See figure 1.

   b. The ditches surrounding this facility appear to have low points.
      I. This observation leads the inspector to believe that the water management structures surrounding the ore crusher pad are not built to the approved design drawings. See figure 1.

   c. As mentioned in previous Inspection reports, the slope of the pad appears to be inconsistent with the approved design drawings.
      I. Due to the inability of the licensee to keep the gradient of the pad consistent with the approved design, the Inspector is requesting that; the licensee develop a plan to keep this facility operating as intended or design the crusher pad in such a way that no contact water will leave with facility regardless of its slope.

d. In the drawings developed by Golder Associates Corporation and BIMC it shows that there should be eight metres (8m) of space between the stockpile and the ditches for single lane traffic. See figure 1. When the inspector questioned the Baffinland employees of required 8m/ single lane road between the stockpile and the ditches, the Baffinland employees were unaware of this requirement.
    I. Baffinland is required to ensure that all water and waste management structures are operating as approved by the Nunavut Water Board.
    II. The inspector is requesting that Baffinland review the construction drawings developed by Golder Associates and provided by Baffinland to ensure that this facility is built in accordance with the specifications originally provided to CIRNAC and the.

e. It appears that Iron Ore is being used as construction material near the Crusher Pad. BIMC is to remove this Iron Ore or provide the required study/technical evidence that this ore has been approved for the use of Iron Ore as construction material.

f. The inspector is requesting that BIMC re-evaluate the "Limit of Stock Stockpile" as indicated on the construction drawings, it appears that Baffinland is stockpiling Iron Ore outside the highlighted area. This discrepancy may cause issues while calculating the required volume of the Ore stockpile sedimentation pond.

2. Waste Rock Stockpile and associated water management structures

a. At the time of the inspection the licensee was treating water from the leaking sedimentation pond for low levels of PH and TSS.

b. Prior to the inspection the Licensee had reported a spill (spill report # 18-244) that occurred at the waste rock stockpile West drainage ditch of the, this location was identified as an area of concern in the past two Water Licence Inspection reports November 2017 and May 2018. The licensee has made two modifications to this water management structure; one being the construction of the road over the ditch to access the emergency ditch constructed to collect seeping waste, the second being the increase of capacity of the ditch. See figure 3 for the spill location.

    I. The licensee is to submit a modification request for the two modifications made to this water management structure and ensure that no modifications are made to water management structures unless authorized by the Nunavut Water Board (NWB).

c. See figures 4 and 5 for photos of the Waste Rock Stockpile.

3. Polishing Waste Stabilization Ponds

a. No concerns were noted about the operation of this facility.

4. Hazardous Waste Berms

a. The Hazardous Waste Berm HWB #7 has rips in the liner. See Figure # 6 .
    I. The licensee is to remove all hazardous waste from this facility until the liner is repaired or provide the inspector and the NWB with a report outlining short term measures put in place to ensure that no waste is capable of leaving this facility.

5. Jet A/ Aircraft fuel storage

a. The berm liner of this facility has a rip.
b. The licensee is to fix this liner and provide the inspector and the NWB with photos of the repair in order to continue to use this as secondary containment.

6. Camp Lake Jetty

a. In the previous report high levels of TSS were noted at this location. The licensee has increased the capacity of the check dams, deployed silt fences and pop up berms. At the time of this inspection no concerns were noted.

7. Land Fill

a. Land fill appears to be properly capped.
b. Inspector noted that the fence is in poor condition.
c. The inspector noted potentially hazardous material in the land fill. The waste found in this facility consisted of; drip trays, aerosol canisters, absorbent pads, oil jugs and gas containers.

I. This is the second time this summer that the inspector has noted potentially hazardous material in the non-hazardous landfill. Baffinland continues to blame other departments for this failure to comply with the licence, in the eyes of the NWB and CIRNA Baffinland is a single cooperation and blaming other departments is no excuse.

II. The inspector is requesting that Baffinland develop a plan to prevent this non-compliance issue from reoccurring. If the licensee fails to comply with the licence CINRAC may proceed with further enforcement action in the future. See figure 7-9 for photos of the waste mentioned.

8. Effluent Outfall

a. No concerns noted regarding this deposit of waste.

9. Ore Stockpile Pad and associated water management structures

a. As mentioned in previous Inspection reports, the slope of the pad appears to be inconsistent with the approved design drawings.
   I. Due to the inability of the licensee to keep the gradient of the pad consistent with the approved design, the Inspector is requesting that the licensee develop a plan to keep this facility operating as intended or design the ore stockpile pad in such a way that no contact water will leave with facility regardless of its slope.

b. The Licensee is currently dumping snow at the south end of this facility. This snow is laden with Ore and the water generated from this snow dump does not appear to be flowing to the sedimentation ponds.
   II. The inspector is requesting that BIMC relocate the snow stockpile to ensure that this contact water/snow flows into the sedimentation ponds and not to the surrounding environment. See figure 10 for ore stockpile snow dump.

c. In the previous inspection the inspector noted, “Ore bulk sample remains appear to be removed as requested by the inspector in a previous inspection.” During this inspection more snow has melted exposing more Ore, it appears the licensee has removed some ore and covered the rest with crushed rock. See Figure 11.
   III. The licensee is to remove all Ore from this location or provide the required study/technical evidence that it has been approved for the use as construction material

d. East and west Sedimentation Pond appears to be in good condition

10. Fuel Module at Milne port

a. During the last inspection the inspector noted surface water leaving this facility and requested the as built drawings for this facility, nothing has been provided to the inspector.
b. The Licensee is to return this facility to its approved design. See figure 12 for the fuel module.

11. Contaminated Snow dump

a. No issues or concerns with this facility, seems to be operating as intended.
b.

12. Land Farm

a. This facility appears to be over capacity and the licensee does not appear to be treating the soil.
b. Please provide the inspector and the NWB with Baffinland’s plan to remediate this contaminated soil.

13. Exploration drilling at approximately 71°18'53.26"N, 79° 6'57.20"W

a. At the time of the inspection the licensee was drilling on deposit No. 2.

b. The Licensee was improperly handling the drill waste. PART F, Item 4 of the licence 2BE-MRY1421, states that; “The Licensee shall dispose of all drill waste, including water, chips, muds and salts ($CaCl_2$) in any quantity or concentration, from land-based drilling, in a properly constructed Sump or an appropriate natural depression located at a distance of at least thirty one (31) metres from the ordinary High Water Mark of any adjacent Water body, where direct flow into a Water body is not possible and no additional impacts are created.”

c. The drill waste was not being deposited in a properly constructed sump or natural depression. The licensee is to discontinue their current practice of depositing drill waste, to ensure the licensee is adhering to the licence and not improperly depositing waste the inspector is requesting that the licensee provide photos of all sumps form the 2018 Exploration drilling program. See photo 13 for the improper deposit of waste.

SECTION 2	☐ Comments	☐ Non-Compliance with Act or Licence	☒ Action Required

1. Due to the inability of the licensee to keep the gradient of the ore crushing pad consistent with the approved design, the Inspector is requesting that; the licensee develop a plan to keep this facility operating as intended or design the crusher pad in such a way that no contact water will leave with facility regardless of its slope.

2. The inspector is requesting that Baffinland review the construction drawings developed by Golder Associates and provided by Baffinland to ensure that Ore crusher pad and water management structures are built in accordance with the specifications originally provided to CIRNAC and the NWB.

3. It appears that Iron Ore is being used as construction material near the Crusher Pad. BIMC is to remove this Iron Ore or provide the required study/technical evidence that it has been approved for the use as construction material. See figure 3.

4. The inspector is requesting that BIMC re-evaluate the “Limit of Stock Stockpile” of the ore crushing pad indicated on the construction drawings, it appears that Baffinland is stockpiling Iron Ore outside the highlighted area. This discrepancy may cause issues while calculating the required volume of the Ore stockpile sedimentation pond.

5. The licensee is to submit a modification request for the two modifications made to the waste rock stockpile ditches and ensure that no modifications are made to water management structures unless authorized by the Nunavut Water Board (NWB).

6. The licensee is to remove all hazardous waste from the ripped hazardous waste berm until the liner is repaired or provide the inspector and the NWB with a report outlining short term measures put in place to ensure that no waste is capable of leaving this this facility. See figure 6 for a photo of the rip.

7. The licensee is to fix this liner of the Jet fuel storage berm and provide the inspector and the NWB with photos of the repair in order to continue to use this as secondary containment

8. The inspector is requesting that Baffinland develop a plan to prevent the deposit of potentially hazardous waste in the non-hazardous landfill from reoccurring, if the licensee fails to comply with the licence CINRA may proceed with further enforcement action in the future. See figure 7-9 for photos of the waste mentioned.

9. Due to the inability of the licensee to keep the gradient of the ore stockpile pad consistent with the approved design, the Inspector is requesting that the licensee develop a plan to keep this facility operating as intended or design the ore stockpile pad in such a way that no contact water will leave with facility regardless of its slope.

10. The inspector is requesting that BIMC relocate the snow stockpile to ensure that this contact water/snow flows into the sedimentation ponds and not to the surrounding environment. See figure 10 for ore stockpile snow dump.

11. The licensee is to remove all Ore from bulk sample location or provide proof that is has been approved for construction material.

12. Please provide the inspector and the NWB with Baffinland’s plan to remediate this contaminated soil.

13. The licensee is to discontinue their current practice of depositing drill waste, to ensure the licensee is adhering to the licence and not improperly depositing waste the inspector is requesting that the licensee provide photos of all sumps form the 2018 Exploration drilling program. See photo 13 for the improper deposit of waste. See Figure 13 for the licensee’s lack of a sump.

Inspector's Name	
Jonathan Mesher	
Signature	
Date	
August 13,2018	

Figure 1: Inconsistent ditch height, land of 8m between ditch and stockpile, ditch inconsistent with approved drawings.

Figure 2: Ore being used as construction material.

Figure 3: area of the spill from the Waste Rock Stockpile and modification of ditch.

Figure 4: East side of Waste Rock Stockpile.

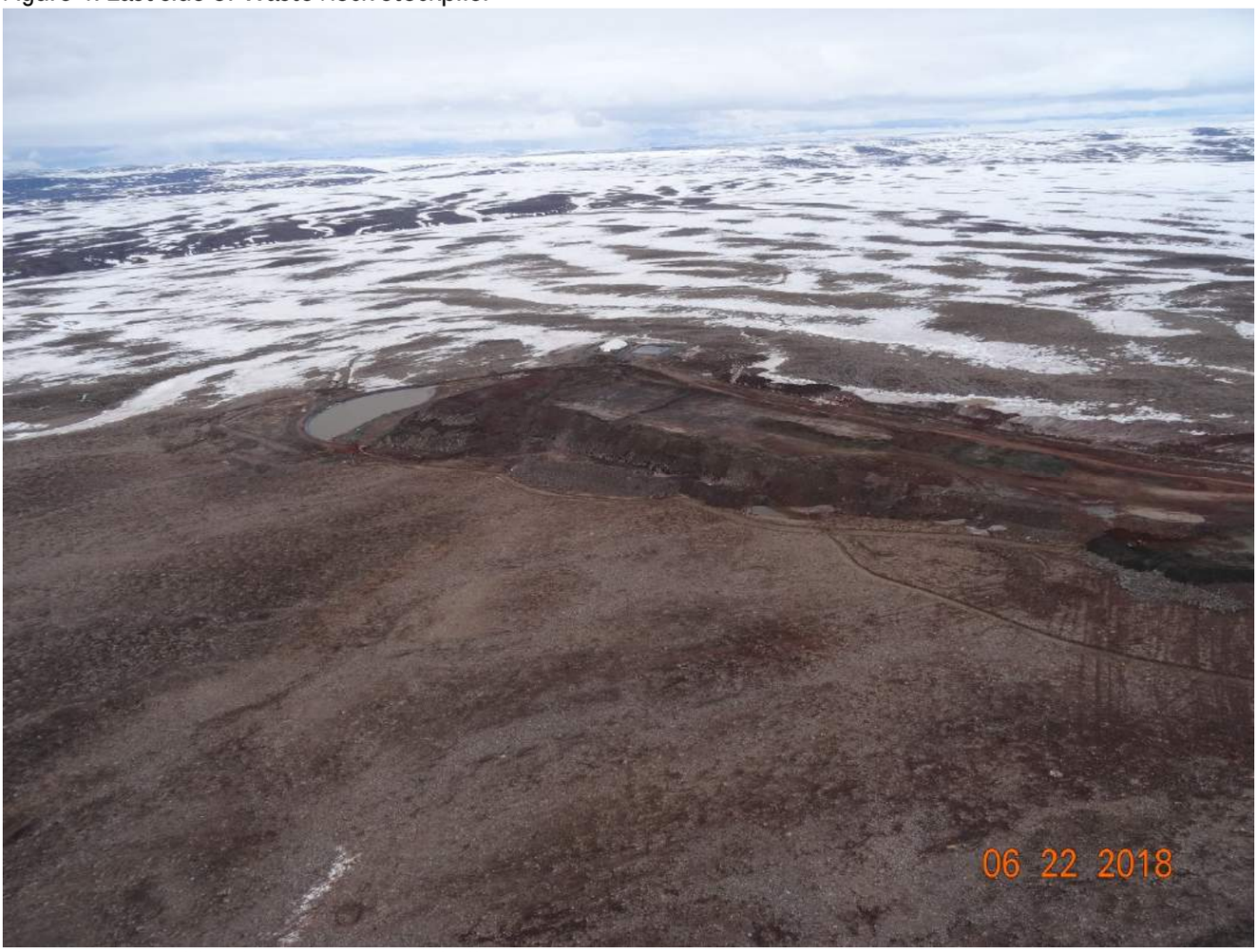


Figure 5: West side of Waste Rock Stockpile.

Figure 6: Hazardous waste secondary containment liner rip.

Figure 7: landfill waste

Figure 8: Landfill waste

Figure 9: Landfill waste

Figure 10: snow dump melt entering the environment.

Figure 11: left over ore from the bulk sample to be remediated.

Figure 12: fuel module in Milne port.

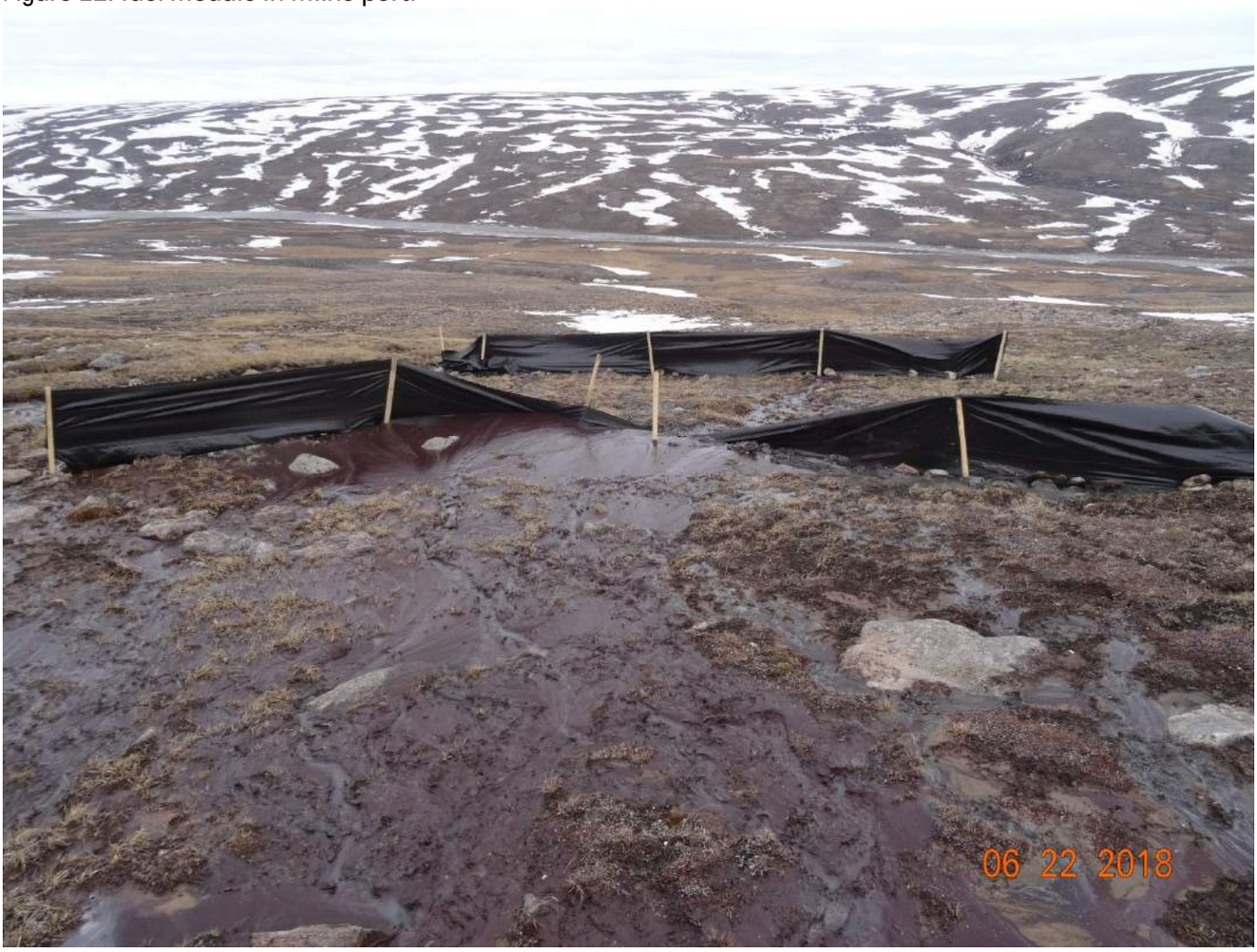


Figure 13: Lack of a sump as required in the licence.

October 26, 2018

Jonathon Mesher
Water Resources Officer, INAC
Nunavut District, Nunavut Region
P.O. Box 100
Iqaluit, NU X0A 0H0

RE: Water Licence 2AM-MRY1325 August 2018 Inspection Report

A Water Licence Inspection was conducted on August 22-23, 2018, at the Baffinland Iron Mines Corporation (Baffinland) Mary River Project by the Crown-Indigenous Relations Northern Affairs Canada (CIRNAC) Water Resource Officers and Geotechnical Inspectors. During the inspection, some concerns were identified and these concerns are outlined in the attached Inspection Report that was received September 26th, 2018.

The attached Table 1 provides a summary of the Inspector's key observations and concerns along with Baffinland's responses.

Should you require further information, please feel free to contact the undersigned or William Bowden at (647) 253-0596 Ext. 6016

Prepared by:

Connor Devereaux
Environmental Superintendent

Reviewed by:

Christopher Murray
Environmental & Regulatory Compliance Manager

Attachments:
Attachment 1: 2AM-MRY1325 August 2018 Inspection Report
Attachment 2: Table 1: Summary of Baffinland's responses

Cc: Karén Kharatyan (NWB)
Fai Ndofor, Sean Joseph (QIA)
Justin Hack, Jeremy Fraser (CIRNAC)
Tim Sewell, Grant Goddard, Megan Lorde-Hoyle, William Bowden, Sylvain Proulx, Francois Gaudreau, Gerald Rogers (Baffinland)

Attachment 1:
2AM-MRY1325 August 2018 Inspection Report

WATER LICENCE INSPECTION FORM

☐ Original
☐ Follow-Up Report

Licensee	Licensee Representative
BAFFINLAND IRON MINES CORPORATION	William Bowden
Licence No. / Expiry	**Representative's Title**
2AM-MRY1325	Environmental Superintendent
Land / Other Authorizations	**Land / Other Authorizations**
8BC-MRY1416, 2BE-MRY1421	N2014X0012, N2014Q0016, N2014C0013
Date of Inspection	**Inspector**
August 22-23, 2018	Jonathan Mesher

Activities Inspected

☐ Camp ☐ Drilling ☒ Mining ☐ Construction ☐ Reclamation ☐ Fuel Storage
☐ Roads/Hauling ☐ Other: ☐ Other:

Conditions: **A - Acceptable** **C - Concern** **U - Unacceptable** **NA – Not Applicable** **NI – Not Inspected**

Water Use	Condition	Comment	Site Conditions	Condition	Comment	Haz/Mat Management	Condition	Comment
Intake/Screen	A		Water Management Structures	C	4	Storage	C	3
Flow Measure. Device	A		Culverts / Bridges	A		Spills	A	
Source:	A		Drainage	C	2	Spill Plan	A	
Water Use:	A		Erosion / Sediment	C	2,10			
Recirculation (y /n)	N		Mitigation Measures	A		**Administrative**		
Containment Ditches	U	1,2,6, 8	Reclamation Activities	A		Records	A	
			Materials Storage	A		Reports	Ni	
Waste Disposal			Signage	A		Plans	Ni	
Waste Water	U	1,2				Notifications	A	
Solid Waste	A	5	**Monitoring**			**Other**		
Hazardous Waste	C		Sample Collection / Analysis	NI				

**The number in the comments field will correspond with specific comments provided below.*

Samples taken by Inspector:	
☐ Yes ☒ No	

SECTION 1 ☒ **Comments** (s.__) ☐ **Non-Compliance with Act or Licence** (s.__) ☐ **Action Required** (s.__)

Background

At the time of inspection, the Licensee was undertaking activities related to the operation of an open-pit iron ore mine at the Milne Port (Milne Inlet), Mine Site (Mary River), and Tote Road. Construction activities on site include the construction of the new 800 man camp at Mary River site, maintenance along the tote road, increasing the capacity of the Ore Crusher Pad Sedimentation Pond and construction of a pad across from the Mine Site Complex (MSC).

The Inspector noted the following concerns listed below and is requesting that the licensee provide a response to the concerns within 30 days of receiving this Inspection Report.

1. **Ore Crushing Area and Associated Water Management Structures**
   a. At the time of the inspection the licensee was in the process of increasing the capacity of the crusher pad sedimentation pond, there we no concerns noted. See Photo 1.

   b. As mentioned in previous Inspection Reports from June 22-24 2018, Section 1b, the pooling water inside the crusher pad leads the inspector to believe that the slope of the pad is inconsistent with the approved design drawings. See Photo 2.

   c. During the inspection it was noted that, a pile of iron ore is outside of containment. Please remove the ore from outside containment, see Photo 3. A red circle labeled "#2" identifies the misplaced iron ore's location.

   d. As required in the design drawings and as mentioned in the previous Inspection Report, there is no 8m buffer for single lane traffic between the stockpile and surrounding ditches. This issue is limiting access to the ditches and causing ore to fall off the stockpile directly into these water management structures.

e. Some areas of the ditches surrounding the facility do not appear to meet the minimum design criteria for internal surface drainage as described in the document labeled, "Civil Design Criteria by Hatch, 2013." This document states that; "The design criteria proposed in this document shall be treated as minimum requirements for the intended infrastructure design."
   I. "All drainage ditches should be of trapezoidal cross sections, where possible." This does not appear to be applied at the location identified in photo #3. A red circle labeled "#1" identifies this location.
   II. "Minimum set back distance of structures from top of drainage ditch slopes shall be 3 m." This is not applied; some locations have the stockpile leading into the ditching.
   III. "All interior site grading and roads shall be designed to provide continuous overland flow without erosion to a drainage ditch system." Due to pooling inside the ditch system this does not appear to be applied.

2. Waste Rock Stockpile and Associated Water Management Structures

a. At the time of the inspection the licensee had the majority of the waste rock stockpile sedimentation pond drained to inspect the liner for the cause of the seepage; a consultant had surveyed approximately 80% of the liner and has not identified the cause of the seepage.

b. There was minor pooling at the top of the sedimentation pond berm walls and some signs of erosion. See Photo's 4 and 5 for documentation of the pooling and erosion.

c. Some areas of the ditches surrounding the facility do not appear to meet the minimum design criteria for internal surface drainage as described in the document labeled, "Civil design criteria by Hatch, 2013." This document states that, "The design criteria proposed in this document shall be treated as minimum requirements for the intended infrastructure design. "Relevant sections to note:
   I. "All drainage ditches should be of trapezoidal cross sections, where possible." This does not appear to be fully applied to the ditches surrounding this facility.
   II. "All interior site grading and roads shall be designed to provide continuous overland flow without erosion to a drainage ditch system." Due to pooling inside the ditch system and significant sedimentation accumulation in the pond, this does not appear to be applied.
   III. "Ditches shall be designed to convey a 1 in 25 year flood event." The inspector is uncertain if all areas of the ditches are designed due to ditch width and height inconsistences. See Photo #7.
   IV. "Drainage berms diverting overland flow from the waste rock drainage area to the sedimentation ponds shall be a minimum of 1.0 m high with 1.5H:1V side slopes and 0.5 m top width." Some areas do not appear to have diversion berms to divert overland flow of non-contact water. See Photo #7

d. PART E, Item 11, of the water licence 2AM-MRY1325 states that, "The Licensee shall carry out weekly inspections of all structures designed to contain, withhold, divert or retain Waters or Wastes during periods of flow and maintain records of the inspections and findings, for review upon the request by the Board or an Inspector." Please provide the records of the inspections and findings for 2018 by October 15, 2018.

3. Hazardous Waste Berms (HWB)

a. In the past inspection reports, the inspector noted a rip in the liner of Hazardous Waste Berm #7, the licensee has since repaired the liner.

b. During the inspection all hazardous waste berms were retaining large amounts of potentially contaminated water with the exception of HWB #5; this observation leads the inspector to believe that the liner of this HWB has been jeopardized. Please conduct an internal investigation to determine the condition of this HWB, until this HWB is determined to be operating as intended please discontinue the use of the structure. See Photo #9 for a photo of the concerning HWB.

4. Polishing Waste Stabilization Ponds (PWSP)

a. During the time of the inspection there were two areas of the PWSP's at the mine site where the liners were not properly keyed-in. To prevent future damage, it's recommended that the licensee weigh down the areas on the liner that are subject to wind uplift. See Photos 10 and 11 for the areas of concern.

5. Non-Hazardous Landfill

a. In previous inspection reports there were concerns noted regarding the deposit of unauthorized waste to this facility.

b. During this inspection it was noted that the licensee now locks this facility limiting access and tracks what employees access the dump in hope to limit the unauthorized deposit of waste.

6. **Ore Stockpile Pad and Related Water Management Structures at Milne Inlet**
    a. During the inspection it was noted that the swales highlighted in photo #12 have not been installed/ implemented.

    b. There was ore outside containment on the South-West corner of the facility; the licensee is to recover this Ore from outside containment.

    c. The ditch on the East side of the conveyer belt appears to be sloping away from the sedimentation pond.

    d. Remnants of the original bulk sample are still left outside of containment to the east of the west sedimentation pond; Baffinland is to remove the remainder of the bulk sample.

7. **Bulk Fuel Storage in Milne Inlet**
    a. During the inspection it was noted that the licensee had completed the installation of a three million litre fuel tank and had completed the construction of a pad to hold a fifteen million litre tank. No concerns were noted about this construction.

8. **Proposed Camp Pad in Milne Inlet**
    a. The recently constructed diversion ditches around this facility do not appear to be constructed properly. There is aggregate built up in the center blocking the water from flowing out of the ditch. The licensee is to return this water management structure to its approved design.

9. **Western Global Fuel Module at Milne Inlet**
    a. Due to the accumulation of dirt inside this facility it was recently modified by the licensee in an attempt to stop water from flowing from the facility into the environment. After reviewing the issued for construction drawings, it is evident that this facility is no longer operating as intended in regards to water/waste retention. The licensee is to return this facility to its approved design.

10. **Areas of Erosion and Flooding**
    a. At the time of the inspection there were two areas where surface water has flooded roads; one area is on the road leading to the effluent outfall to Mary River (see Photo #14 for the area of concern), The second area is between the run way and the Polishing Waste Stabilization Ponds(see Photo #15 for the area of concern). In Part E, Item 19 of the license 2AM-MRY1325 it states that, "The Licensee shall undertake appropriate corrective measures to mitigate impacts on surface drainage resulting from the Licensee's operations." And PART D CONDITIONS APPLYING TO CONSTRUCTION AND OPERATIONS, Item 5, of the license 2AM-MRY1325 states "The Licensee shall implement sediment and erosion control measures, as required, prior to and during the Construction and Operations Phases of the Mary River Project to prevent and/or minimize sediment loading into Water."

    b. There does not appear to be any water management in place to prevent the licensee from driving through this surface water or to prevent unnecessary sedimentation and erosion. It is required that the licensee follow the procedures set out in, PART G CONDITIONS APPLYING TO MODIFICATIONS, of the license 2AM-MRY1325 and install the appropriate water management structures.

☐ Comments	☒ Non-Compliance with Act or Licence	☒ Action Required

Failure to comply with this Licence will be a violation of the Act, subjecting the Licensee to the enforcement measures and the penalties provided for in the Act.

The inspector is requesting that the licensee provide a response to the following Non-compliance and Actions required within 30 days of receiving this Inspection Report.

1. The licensee is to ensure that the crusher pad and associated diversion ditches are built to the design drawings prior to the freshet of 2019.

2. The licensee is to imminently construct the containment ditches surrounding the Waste Rock stockpile as describe in the document "Civil, Design criteria" and install the required ditches to divert non-contact surface water away from this facility.

3. The licensee is to ensure that the Hazardous Waste Berm #5 is still capable or retaining water/waste.

4. Once the Ore stockpile pad is clear of Ore, the licensee is to clear the swales highlighted in photo #12 and keep them clear of Iron Ore so that the pad operates as intended.

5. The licensee is to ensure that the slope of the ditches surrounding the Ore Stockpile Pad corresponds with the approved design.

6. The licensee is to return the Western Global Fuel module at Milne Inlet to its original approved design.

7. The licensee is to correspond with the NWB and follow the required processes to install the required water management structures to prevent water from flooding the roads identified in Photo's 14 and 15.

SECTION 3	☐ **Comments**	☐ **Non-Compliance with Act or Licence**	☐ **Action Required**
Click here to enter text.			

Licensee or Representative	**Inspector's Name**
	Jonathan Mesher
Signature	**Signature**
Date	**Date**
	September 25, 2018

Office Use Only:	Follow-up report to be issued by Inspector	☐ Yes	☐ No

CC: Licensing Department, NWB
Justin Hack, Manager of Field Operations, INAC

PHOTO LOG

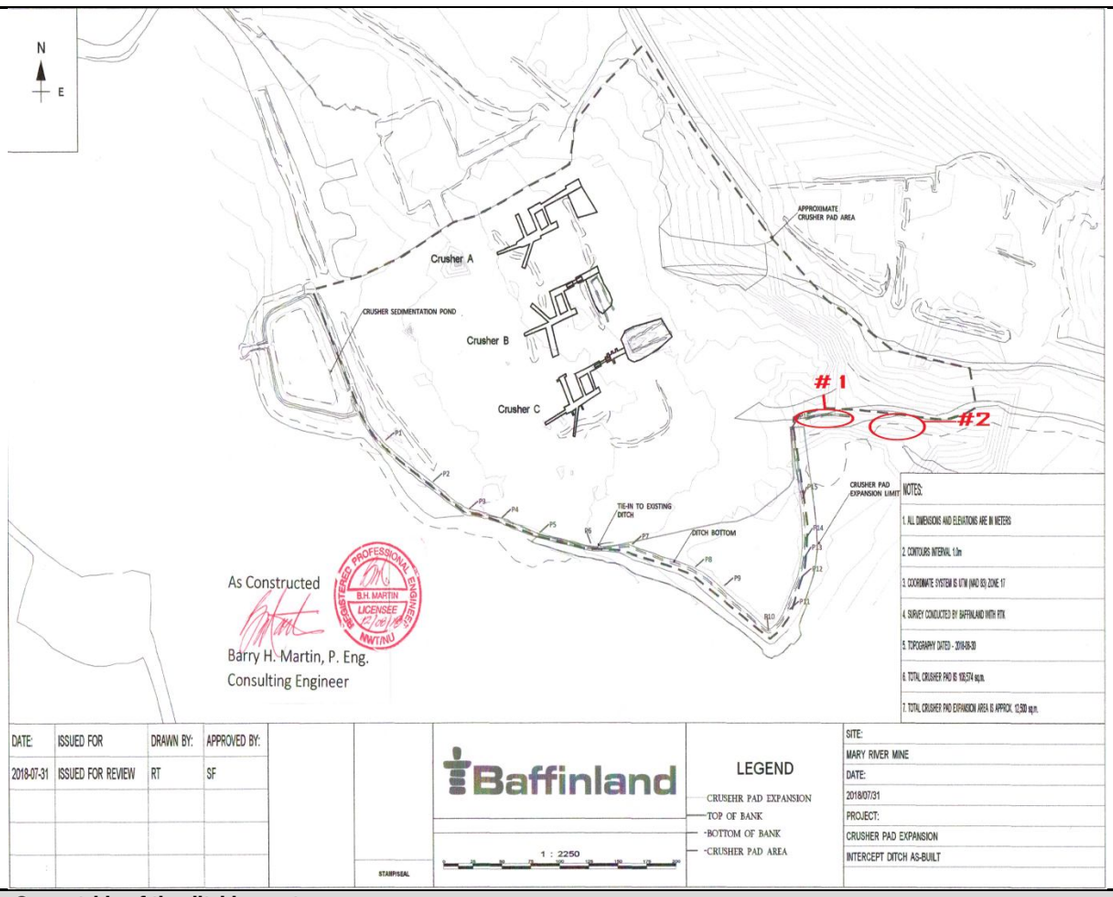
Date	**Camera**	**Inspector**	**Authorization**
August 22, 2018	Sony Cyber-shot	J.Mesher	2AM-MRY1325
Photo Log		**Location Baffinland**	
Photo 1			

Description: Crusher sedimentation pond increase

Photo Log #	Location Baffinland
Photo 2	

Description: Pooling facility

Photo Log #	Location Baffinland	
Photo 3	N	W



Description: Ore outside of the ditching system.

Photo Log #	**Location: Baffinland**	
Photo 4	N	W

Description: Pooling on Waste rock stockpile sedimentation pond berm

Photo Log #	Location Baffinland
Photo 5	

Description: erosion on the waste rock stockpile sedimentation pond berm wall.

Photo Log #	Location Baffinland
Photo 6	

Description: Debris in the WRSP ditches

Photo Log #	Location Baffinland
Photo 7	

Description: Debris in the WRSP ditches, not a trapezoidal shape, appears to be under capacity and no diversion berms to divert non-contact water.

Photo Log #	Location Baffinland

Photo 8

Description; inconsistencies in the ditches, lack of diversion berm and pooling inside ditches.

Photo Log #	Location Baffinland

Photo 9

Description; I Concerning Hazardous Waste Berm

Photo Log #	Location Baffinland

Photo 10

Description; PWSP liner not weighed down.

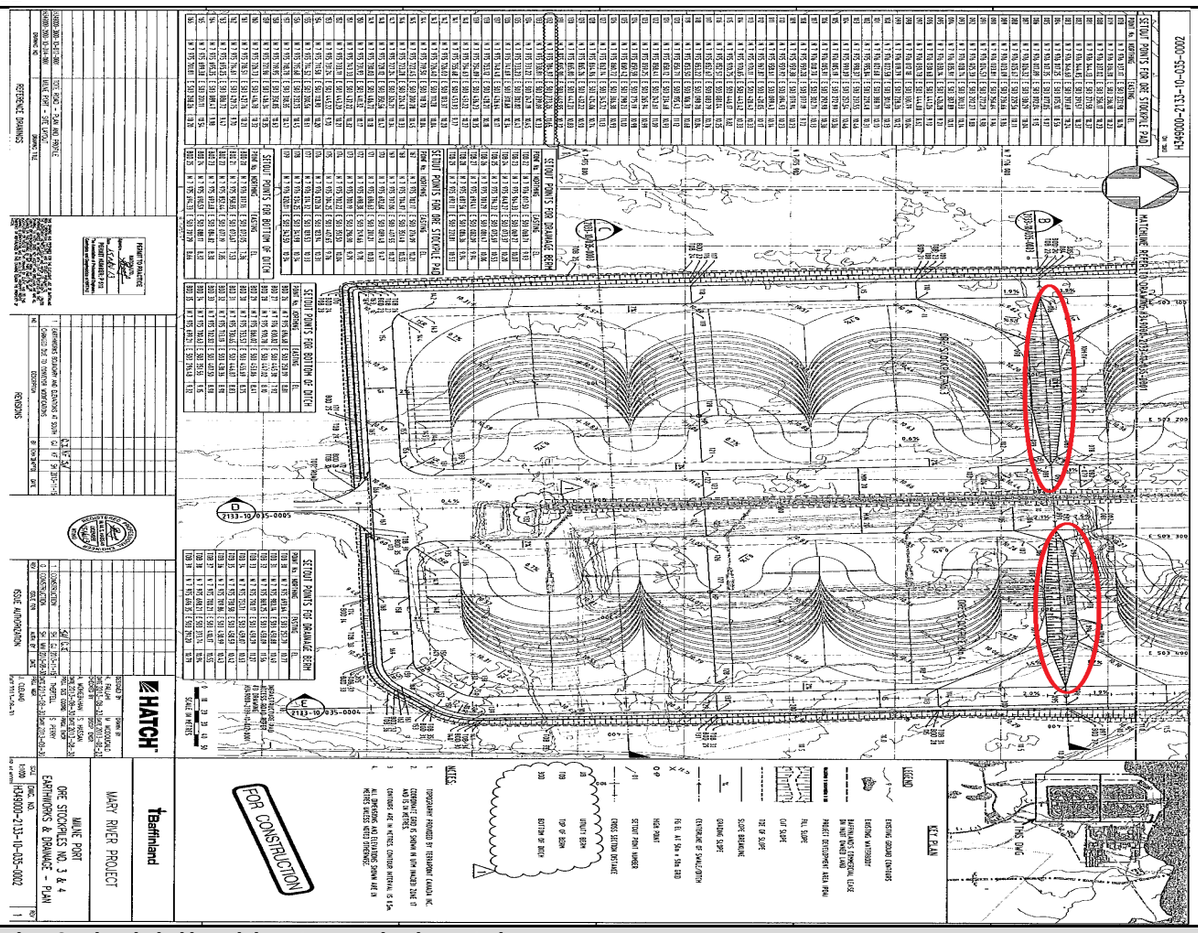
Photo Log #	Location Baffinland

Photo 11

Description; PWSP liner not weighed down.

Photo Log #	Location: Baffinland

Photo 12



Description; Swales circled in red do not appear implemented.

Photo Log #	Location Baffinland

Photo 13

Description; Ditch not constructed to design.

Photo Log #	Location Baffinland
Photo 14	

Description; Flooding of the Mary River outfall access road

Photo Log #	Location Baffinland
Photo 15	

Description; flooding of the road between the polishing waste stabilization ponds and the runway

Attachment 2:
Table 1: Summary of Baffinland's responses

Table 1 - Response to INAC Water Licence Inspection - August, 2018

ITEM No.[1]	Action Required with Observation or Item of Concern	Baffinland Responses
Section 1		
1.c.	**During the inspection it was noted that, a pile of iron ore is outside of containment. Photo 3; A red circle labeled "#2" identifies the misplaced iron ore's location.**	Baffinland will remove this ore outside of the South-East ditching during October, 2018.
2.b.	**There was minor pooling at the top of the sedimentation pond berm walls and some signs of erosion. Photos 4 and 5.**	Baffinland will place a fresh layer of material to level the top of the pond berm to reduce the potential for ponding and restore the minor erosion damage on the berm walls.
2.d.	**PART E, Item 11, of the water licence 2AM-MRY1325 states that, "The Licensee shall carry out weekly inspections of all structures designed to contain, withhold, divert or retain Waters or Wastes during periods of flow and maintain records of the inspections and findings, for review upon the request by the Board or an Inspector." Please provide the records of the inspections and findings for 2018 by October 15, 2018.**	Baffinland has compiled records of inspections of water management structures which were submitted to the CIRNAC Water Licence Inspector on October 15th. Water management structures are inspected on weekly basis during periods of flow (i.e. open water season) in accordance with Part E, Item 11 of the Type 'A' Water Licence 2AM-MRY1325. Baffinland continues to improve the inspection schedule and process during the open water season to ensure compliance with the weekly inspection requirement. Baffinland will perform a review of all water management facility inspection sheets to ensure they meet Water Licence requirements to improve documentation specifics for the 2019 open water season. The first 2018 geotechnical inspection report, required by the Type 'A' Water Licence, for water and waste retention structures was submitted to regulators on October 2, 2018. The report was produced by a professional engineer following an onsite inspection of the Project during the 2018 open water season.
Photo 6	**Woody debris in the ditches leading into the pond. Photo 6.**	The waste rock settling pond ditches will be inspected to identify any debris or material impeding the flow of water, and this debris/ material disposed of appropriately.
4.a.	**During the time of the inspection there were two areas of the PWSP's at the mine site where the liners were not properly keyed-in. See Photos 10 and 11.**	Baffinland intends to cover these areas of liner with sand bags and/ or tires in 2019 following snow melt.
6.b.	**There was ore outside containment on the South-West corner of the Milne Port Ore Stockpile Pad.** *The licensee is to recover this Ore from outside containment.*	This ore will be recovered and stored in an approved location.
6.d.	**Remnants of the original bulk sample are still left outside of containment to the east of the west sedimentation pond.** *Baffinland is to remove the remainder of the bulk sample.*	Baffinland is assessing the bulk sample pile area and will continue to remove historical iron ore encountered at that location outside of the ditching perimeter.
8.a.	**The recently constructed diversion ditches around the Milne Port Proposed Camp Pad facility do not appear to be constructed properly. There is aggregate built up in the center blocking the water from flowing out of the ditch.** *The licensee is to return this water management structure to its approved design.*	Baffinland is reviewing the design criteria of this diversion ditch. The ditch will be repaired to remove the aggregate build up and ensure flow is not impeded to the outflow.

Table 1 - Response to INAC Water Licence Inspection - August, 2018

ITEM No.[1]	Action Required with Observation or Item of Concern	Baffinland Responses
Section 2		
1	**The licensee is to ensure that the crusher pad and associated diversion ditches are built to the design drawings prior to the freshet of 2019.** *As mentioned in previous Inspection Reports from June 22-24 2018, Section 1b, the pooling water inside the crusher pad leads the inspector to believe that the slope of the pad is inconsistent with the approved design drawings. Photo 2.* *Some areas of the ditches surrounding the facility do not appear to meet the minimum design criteria for internal surface drainage as described in the document labeled, "Civil Design Criteria by Hatch, 2013." Further information is in the inspection report. Photo #3 with red circle labelled #1.*	Baffinland is committed to directing runoff on the crusher pad to the collection ditch to ensure contact water reports to the pond. Baffinland will continue to repair and maintain the slope of the pad to confirm runoff into ditches. It is challenging to keep minor pooling on the crusher pad from occurring due to ongoing operations and vehicle traffic however the facility is enclosed by ditching and the minor pooling does not enter the receiving environment as it is captured by the ditching and Pond. In 2018 Baffinland initiated a Crusher Pad floor scraping plan regrading approximately 50 000 tonnes of product to reduce potential minor pooling on the pad. Baffinland performed remedial work on the crusher pad ditches throughout 2018 to improve grading and submitted an as built in September 2018 to the NWB. Baffinland is committed to repairing the ditches to the design criteria where feasible. Minor irregularities in the overall grading of the crusher pad ditching does not effect the ditches ability to direct water to the designed sedimentation pond and overflows from the ditching have occured during the life of the facility. Baffinland recognizes the original 2013 Hatch design stating a 3m setback of material from the ditching perimeter and understands that this was incorporated to reduce potential material sloughing into crusher pad ditching structures. Material accessible by heavy equipment has been setback 3m, however, it is challenging, due to its extent and available pad space, to restore the current fines stockpile on the east side of the crusher pad to the 3m setback. Baffinland is developing a progressive strategy to address this issue and will work towards this in the 2019 season. As a supplementary measure to ensure fines do not slough into the ditching structures, strategically spaced out oversize rock barriers have been placed and an increased frequency inspection schedule of the ditches will be implemented by Operations.
2	**The licensee is to imminently construct the containment ditches surrounding the Waste Rock stockpile as describe in the document "Civil, Design criteria" and install the required ditches to divert non-contact surface water away from this facility.** *Some areas of the ditches surrounding the facility do not appear to meet the minimum design criteria for internal surface drainage as described in the document labeled, "Civil design criteria by Hatch, 2013." They are not a trapezoidal shape, appear to be under capacity, with no diversion berms for diverting non-contact water.* *Relevant sections to note are further detailed in the inspection report; Photo 7.*	A new IFC for the Waste Rock Stockpile was issued by Golder as part of the waste rock pond expansion project (Modification No. 8) and it is Baffinland's plan to readjust the existing ditches to fit this new design during the 2019 summer season. The intention of the ditch redesign will be to address berm height, ditch depth and grading concerns and irregularities noted. As built documentaion will be provided 90 days following completion per the Type 'A' Water Licence.
3	**The licensee is to ensure that the Hazardous Waste Berm #5 is still capable or retaining water/waste.** *During the inspection all hazardous waste berms were retaining large amounts of potentially contaminated water with the exception of HWB #5; this observation leads the inspector to believe that the liner of this HWB has been jeopardized. See Photo #9 for a photo of the concerning HWB. Please conduct an internal investigation to determine the condition of this HWB, until this HWB is determined to be operating as intended please discontinue the use of the structure.*	An internal investigation into this hazardous waste berm is currently in progress. It is noted that absence of water within the HWB is not unusual as water is regularly pumped and treated throughout the year. No issues with this berm have been identified in geotechnical investigations completed to date. As a preemptive measure, Baffinland will temporarily suspend the use of HWB #5 until the internal investigation is complete.

Table 1 - Response to INAC Water Licence Inspection - August, 2018

ITEM No.[1]	Action Required with Observation or Item of Concern	Baffinland Responses
4	**Once the Ore stockpile pad is clear of Ore, the licensee is to clear the swales highlighted in photo #12 and keep them clear of Iron Ore so that the pad operates as intended.**	Baffinland's new stacking strategy and implementation in 2018 results in the Milne Port Ore swales no longer being pertinent to the pad design. The ore pad is continually graded and reclaimed to promote drainage to ditches. It is challenging to keep minor pooling on the ore pad from occurring due to ongoing operations and vehicle traffic however the facility is enclosed by ditching and the minor pooling does not enter the receiving environment as it is captured by the ditching and Pond. In 2018 Baffinland initiated an Ore Pad floor regrading and reclaim plan to slope and reduce potential minor pooling on the pad. The Ore pad is being modified and expanded in 2019 and will incorporate the updated redesign in the Design and As Built drawings.
5	**The licensee is to ensure that the slope of the ditches surrounding the Ore Stockpile Pad corresponds with the approved design.** *The ditch on the East side of the conveyer belt appears to be sloping away from the sedimentation pond.*	The ditches surrounding the Ore Pad will be graded to ensure water can flow unimpeded towards the sedimentation ponds prior to freshet. The North section of the East ditch that was identified as the particular concern will be inspected to determine the minor grade correction has been implemented by end of year.
6	**The licensee is to return the Western Global Fuel module at Milne Inlet to its original approved design.** *Due to the accumulation of dirt inside this facility it was recently modified by the licensee in an attempt to stop water from flowing from the facility into the environment. After reviewing the issued for construction drawings, it is evident that this facility is no longer operating as intended in regards to water/waste retention.*	Baffinland is reviewing the design criteria and determining required repairs to bring this facility back into it's intended and approved operation. Baffinland will either remove the built up material from the module pad or propose a mitigative strategy including a flat floor grade and end berms to reduce potential pooling and impacted water. As built drawings will be submitted following completion of any potential repairs required.
7	**The licensee is to correspond with the NWB and follow the required processes to install the required water management structures to prevent water from flooding the roads identified in Photo's 14 and 15.** *At the time of the inspection there were two areas where surface water has flooded roads; one area is on the road leading to the effluent outfall to Mary River (Photo #14), The second area is between the run way and the Polishing Waste Stabilization Ponds(Photo #15).* *There does not appear to be any water management in place to prevent the licensee from driving through this surface water or to prevent unnecessary sedimentation and erosion.*	Baffinland has reviewed and recognizes CIRNACs concern. The two areas are minor service access roads that were constructed in the exploration phase of the Project and receive minimal traffic. These service access roads potentially do not have sufficient above tundra grade material to install a functioning culvert. Baffinland will review the potential culvert installation and determine if it is feasible. Alternative mitigative measures including strategically located service road side berms and pumps will be implemented to stop potential minor rain event flooding if culvert installation is not feasible.

Notes:

[1] Item No. as referenced in INAC Water Licence Inspection Report August, 2018