APPENDIX C.2

Geotechnical Inspection Report

August 31, 2019

Assol Kubeisinova
Technical Advisor, NWB
P.O. Box 119
Gjoa Haven, NU X0B 1J0

RE: Submission of 2019 Geotechnical Inspection Report No. 1 (July 2019)

Under Part D, Item 18 of Baffinland Iron Mines Corporation's (Baffinland) Type "A" Water Licence 2AM-MRY1325 Amendment No. 1 (Water Licence), Baffinland is required to conduct biannual geotechnical inspections of specified Mary River Project (the 'Project") infrastructure. Part D, Item 18, of the Water Licence states that:

> "The Licensee shall conduct inspections of the earthworks and geological and hydrological regimes of the Project biannually during the summer or as otherwise approved by the Board in writing. The inspection shall be conducted by a Geotechnical Engineer and the inspection report shall be submitted to the Board within sixty (60) days of the inspection, including a cover letter from the Licensee outlining an implementation plan to respond to the Engineer's recommendations."

The first biannual geotechnical field inspection for 2019 was conducted by Laszlo Bodi, M.Sc., P.Eng., Principal Civil/Geotechnical Engineer with Wood Environment and Infrastructure Solutions. The focus of the inspection was on the Water Licence related infrastructure located at the Mary River Mine Site and Milne Port, as well as select water crossings along the Milne Inlet Tote Road. The attached report covers the first inspection that was conducted between June 27th and July 2nd, 2019.

During the July 2019 inspection, the following site facilities were inspected:

Mary River Mine Site

- Polishing/Waste Stabilization Ponds (3)
- Hazardous waste disposal areas - (HWB-1 to HWB-7)
- MS-06 and MS-08 surface water collection ponds and ditches
- Generator Fuel Berm (referred to as 'Genset Pond' in report)
- Fuel Farms (3) – Aerodrome fuel storage, Existing diesel fuel farm, and the New fuel farm
- Solid-waste disposal site (non-hazardous landfill)
- CLSP silt sedimentation control ponds and berms
- Water discharge area

Milne Inlet Port Site

- Hazardous waste disposal areas - (HWB-1 through to HWB-4)
- MP-01A pond
- MP-03 fuel tank farm
- MP-04 and 04A ponds

- Surface water collection ponds and ditches adjacent to the ore stockpile (MP-05 and MP-06)
- Freight dock check dam
- Surface water collection ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380M pad)
- Tote road ditches and culverts (conveying surface water from the quarry area)

Milne Inlet Tote Road

- Bridges (4)
- Culverts (12)

The attached report (refer to Attachment 1) presents the findings of the July 2019 inspection and recommendations for the aforementioned structures. The following subsections of this letter summarize Baffinland's plan for implementing recommendations.

Recommendations for the Mary River Mine Site Infrastructure

Polishing/Waste Stabilization Ponds (3 PWS ponds)

Some minor damage was visible on the liner on the crest of the berms (above the maximum water/freeboard line) at a few locations. Another relatively common issue in water lagoons is the appearance of whales within the ponds, which was identified. Furthermore, large timbers and miscellaneous other elements (e.g., used tires etc.) are utilized as weight to secure the liner in-place at the berm's crest.

Baffinland Action: Baffinland commits to having the minor damage to the liner repaired as part of the regular maintenance program. Baffinland will continue to monitor the PWSPs for the presence of whales in the liner, and as needed will develop a plan to address these when the affected pond is drained. Cleanup of this area will occur to remove excess materials.

Mine Site Hazardous Waste Disposal Areas

HWB-1

It may be advisable to rebuild the perimeter berm around the cell, followed by the installation of a new geomembrane liner with sand cover.

Baffinland Action: The cell is currently not being used and has been left empty. Baffinland shall not use this facility for the storage of hazardous waste or substances until it has been repaired. Alternatively, this facility may be decommissioned.

HWB-6

The berms have been extensively disturbed by truck and foot traffic, particularly at the northern section of the berm. Cracking and tearing of the liner are also visible at several locations on the upstream face and crest of the berm.

Baffinland Action: Baffinland is aware HWB-6 will require repairs to continue receiving waste materials in the future. A repair of both the berm structure and the liner is scheduled to be completed.

HWB-7
Minor damages to the geotextile (covering the liner) were noted at a few locations on the crest and downstream slope of the berm.

Baffinland Action: Baffinland commits to reinstating geotextile and soil cover in the specified areas in order to prevent potential damage to the liner in the future.

MS-06 – Surface Water Collection Pond Adjacent to the Crusher Pad

The corrugated steel pipe culvert beneath the tote road entrance is almost fully clogged with silt.

Baffinland Action: Baffinland commits to cleaning the culvert identified during the inspection. The collected excess silt will be deposited at an appropriate disposal location onsite.

Generator Fuel Berm (Genset Pond)

The Generator Fuel Berm is a historic secondary containment structure from the operation of fuel bladders and the associated generator at the Mine Site Weatherhaven Complex, and is referred to in the Wood report as 'Genset Pond'. Some sloughing of the upstream slope of the berm is visible at the south-east corner of the pond. It shall be pointed out that the berm at this pond is generally stable and the liner appears to be intact.

Baffinland Action: Baffinland commits to bringing granular fill to this location to re-fill the slope and regrade the area. In addition to the repair work on the slope, the southern, lower section of the berm will be reconstructed to its original geometry.

CLSP Silt-sedimentation Check Dams and Berms

To prevent the siltation around the water intake structure control berms and check dams need to be regularly maintained.

Baffinland Action: Baffinland commits to removing and disposing the collected silt at the check dams on an as-needed basis. Baffinland also commits to re-stabilizing the gully through installation of an erosion resistant layer (coarse gravel / rip-rap).

Water (Effluent) Discharge Area

Minor surface erosion was noted adjacent to the rock fill slope, within the native material.

Baffinland Action: Baffinland commits to recovering the eroded slope with rock fill to prevent any regressive erosion in the future.

Recommendations for Milne Port Infrastructure

Milne Port Hazardous Waste Disposal Areas

HWB-1

Ripped geotextile and exposed liner were noted at a few locations at higher elevations along the berm.

Baffinland Action: Baffinland commits as part of the onsite maintenance program, that the disturbed areas of the berm on the slopes and crest be regraded. In areas where the liner is exposed, Baffinland commits to covering the area with a protective layer of soil (clean sand and gravel).

HWB-2

As a result of some recent earthwork immediately adjacent to the cell, sections of the perimeter berm have been impacted, and the slopes and liner were somewhat damaged in the process. There is a small area in one of the corners with ponding water, where the liner is exposed.

Baffinland Action: The Site Services Department supervisors are aware HWB-2 will require repairs. A repair of both the perimeter berm shall be reconstructed and the liner where exposed, carefully repaired.

HWB-3 and HWB-4

The liner within the ponds are intact; however, they are exposed at a few locations on the crest and downstream slopes of the berms.

Baffinland Action: Baffinland commits to regrading and covering areas where liner is exposed with a protective granular fill (clean sand and gravel).

MP-04 and 04A Landfarm and Contaminated Snow Disposal Cells

Exposed liner was visible on the downstream slope of sections of the berm for MP-04, particularly along the north berm.

Baffinland Action: Baffinland commits to regrading and covering areas where liner is exposed with a protective granular fill (clean sand and gravel).

Tote Road Ditches and Culverts Near the Rock Quarry

The flow of water may soften the original native subgrade beneath the road embankment and eventually could create some instability of the embankment.

Baffinland Action: To increase the stability of the embankment in the affected areas, Baffinland commits to re-grading the upstream area leading to the culverts by placing additional rock fill at the culvert's outlet (toe-berm reinforcement for increased embankment stability).

Tote Road between Mary River and Milne Inlet - Bridges and Culverts

Bridge 17

There are two historic abutments, located immediately adjacent to the "new" ones. The metal front and wing walls of both "old" abutments have suffered damages in the past, particularly the south abutment.

Baffinland Action: To maintain the stability of the currently used bridge abutments, Baffinland will keep the two old abutments in place since they provide support to the adjacent new structures. Baffinland will schedule repairs to the damaged sections of the abutments identified during the inspection. Additional rip-rap on the regraded granular fill slopes will also be placed to prevent erosion.

Bridge 63

There are two historic abutments, located immediately adjacent to the "new" ones and damage to the metal front and wing walls of both abutments are visible. In order to maintain the stability of the currently used bridge abutments, the two old abutments should be kept in place since they provide support to the adjacent new structures.

Baffinland Action: To maintain the stability of the currently used bridge abutments, Baffinland will keep the two old abutments in place since they provide support to the adjacent new structures.

Bridge 80

There are two historic abutments, located immediately adjacent to the "new" ones, providing support to the new abutments and road embankment. Therefore, removal of these structures is not recommended.

Baffinland Action: To maintain the stability of the currently used bridge abutments, Baffinland will keep the two old abutments in place since they provide support to the adjacent new structures.

Bridge 97

At this location the old abutments are located somewhat away from the new ones and they appear to be structurally stable. Since no access is provided to them from the road they shall be left in place.

Baffinland Action: Baffinland will not be removing the old abutments identified at Bridge 97 during the inspection.

Culvert – 083

The outlet of this culvert appears to be short. It should be extended by about 1.5 m and the adjacent road embankment shall be upgraded to a more stable slope with the placement of crushed stone.

Baffinland Action: Baffinland commits to placing crushed rock fill adjacent to the culvert at its inlet. This will further prevent erosion of the road embankment by the flowing water in the creek.

Culvert – 107

Both ends of this culvert are short, particularly at the inlet side.

Baffinland Action: Baffinland commits to further inspecting this culvert and will determine if replacement with a longer, larger pipe is required.

Culvert – 114
Both ends of this double-barrel culvert are damaged and too short, particularly at the outlet end.

Baffinland Action: Baffinland commits to further inspecting this culvert to determine if replacement with a longer, larger pipe is required. If replaced, both pipes will be repaired and extended. Once the pipes are repaired and extended, the road embankment may be widened.

We trust that this submittal meets the requirements for geotechnical inspections as outlined in the Water Licence. Should you have any questions, please do not hesitate to contact the undersigned or William Bowden.

Regards,

Connor Devereaux
Environmental Superintendent

Attachments:
Attachment 1: 2019 Geotechnical Inspection Report No. 1 (August 31, 2019)

Cc: Karén Kharatyan (NWB)
Chris Spencer, Jared Ottenhof (QIA)
Bridget Campbell, Godwin Okonkwo, Jonathan Mesher, Justin Hack (CIRNAC)
Tim Sewell, Shawn Stevens, Megan Lorde-Hoyle, Lou Kamermans, Christopher Murray, Sylvain Proulx, Francois Gaudreau, Amanda McKenzie (Baffinland)

Attachment 1

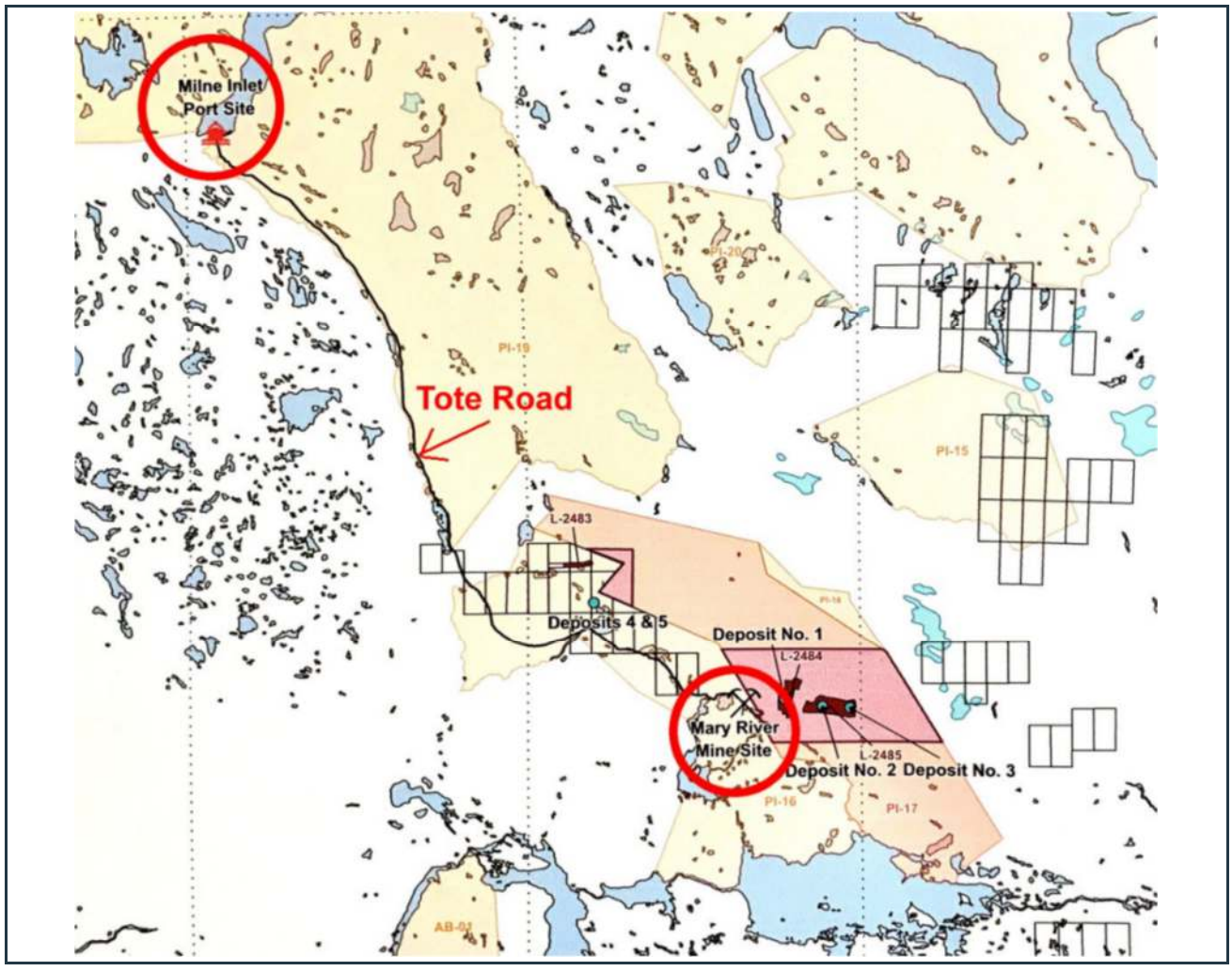
2019 Geotechnical Inspection Report No. 1

Baffinland Iron Mines Corporation

Project #: TC190307

Annual Geotechnical Inspections – 2019 Report 1.

Mary River Iron Mine Complex – Nunavut



August 31, 2019
TC190307

Mr. William Bowden - Environmental Superintendent, Mary River Iron Mine, and
Mr. Connor Devereaux - Environmental Superintendent, Mary River Iron Mine
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario
L6H 0C3

Re: Annual Site Inspections and Reporting - Mary River Iron Mine Complex, Nunavut

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), has been retained by Baffinland Iron Mines Corporation to carry out Annual Geotechnical Engineering Services at the Mary River Iron Mine Complex in Nunavut. Based on information and guidance provided in connection with the site's infrastructure, the undersigned has completed the first of the planned two inspections and summarized the findings in the following report. In addition to field observations, the following historic reports had also been reviewed:

- Annual Geotechnical Site Inspections (2016) – SNC Lavalin
- Annual Geotechnical Site Inspections (2017) – ARCADIS Design and Consultancy
- Annual Geotechnical Site Inspections (2018) – SNC Lavalin
- Annual Geotechnical Site Inspections (2018 August and October) – B.H. Martin Consultancy
- Tote road bridges – Abutment Review (2018 December) – B.H. Martin Consultancy

We trust that the content of this report meets your expectations. Should you have any questions regarding the details presented in the following document, please do not hesitate to contact our office.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Laszlo Bodi, M.Sc.; P.Eng. – Principal Civil/Geotechnical Engineer
Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

Table of Contents

Page

1.0 Introduction

Wood Environment & Infrastructure Solutions (Wood), has completed the first geotechnical field inspection of 2019 at the Mary River Project (The Project), which is a condition of the Type A Water License No: 2AM-MRY1325 – Amendment No.1 (Water License)".

According to the Water License, the field inspections shall include the review of various engineering facilities that contain waste materials (hazardous and non-hazardous), and store or retain / convey water (ponds and ditches) at the Mary River mine and Milne Inlet Port sites. The field review assessed the stability of the berms and slopes, and report on potential seepage problems from the ponds, if any.

In addition to the condition survey of the above noted infrastructure components, critical watercourse crossings (bridges and selected culverts) were also reviewed along the Tote Road, connecting the Mary River and Milne Inlet Port sites. As specified by the Nunavut Water Board, the conditions of the above listed infrastructure components need to be visually inspected and documented by photographs.

The inspected structures included the followings:

A. Mary River Mine Site

a) Polishing/Waste Stabilization Ponds (3)
b) Hazardous waste disposal areas - (HWB-1 to HWB-7)
c) MS-06 and MS-08 surface water collection ponds and ditches
d) Genset pond (i.e., located adjacent to the generators)
e) Fuel Farms (3) – Aerodrome fuel storage, Existing diesel fuel farm, and the New fuel farm
f) Solid-waste disposal site (non-hazardous landfill)
g) CLSP silt sedimentation control ponds and berms
h) Water discharge area

B. Milne Inlet Port Site

a) Hazardous waste disposal areas - (HWB-1 through to HWB-4)
b) MP-01A pond
c) MP-03 fuel tank farm
d) MP-04 and 04A ponds
e) Surface water collection ponds and ditches adjacent to the ore stockpile (MP-05 and MP-06)
f) Freight dock check dam
g) Surface water collection ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380M pad)
h) Tote road ditches and culverts (conveying surface water from the quarry area)

C. Tote Road from the Mary River mine site to the Milne Inlet Port

a) Bridges (4)
b) Culverts (12)

The above listed infrastructure components were visually inspected between June 27 and July 2, 2019, by the author of this report, Laszlo Bodi P.Eng. of Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited. During the inspection program their current conditions were documented, and the findings are summarized in the following report.

The locations of most of the inspected structures, ponds and ditches are shown in the following Figures:

a) Mary River Mine site - Northern, Central and Southern Zones: Figures 1, 2 and 3
b) Milne Port site - Central zone: Figure 4
c) Representative section of the tote/haul road: Figure 5

Photographs of the inspected structures are shown in the following documents (attached to the report):

a) Appendix A: Mary River Mine site – Figures 6 to 41
b) Appendix B : Milne Port site - Figures 42 to 71
c) Appendix C : Bridges and culverts along the tote road: Figures 71 to 105

Figure 1: Site layout – Mary River Mine Site - Northern Zone

Figure 2: Site layout – Mary River Mine Site - Central Zone

Figure 3: Site layout – Mary River Mine Site - Southern Zone

Figure 4: Site layout – Milne Inlet Port Site – Central Zone

Figure 5: Section of the tote/haul road between the Mary River Mine site and Milne Inlet Port

Details of condition survey of the individual structures are summarized in the following sections of the report, while the photographs are shown in Appendix A, B and C, as integral parts of the document.

2.0 Mary River Mine Site

2.1 Polishing/Waste Stabilization Ponds (3 PWS ponds)

There are three polishing/waste stabilization ponds, located adjacent to the central part of the runway, as shown in Figure 1. Pond #1 is a single structure, while Ponds #2 and #3 had been constructed as a twin-cell structure, as shown in Figure 6. According to previous inspection reports, these ponds were associated with the exploration phase of the mine, and currently serve as emergency holding ponds in case problems would arise, which would prevent the discharge of treated effluent directly to the receiving environment.

The berms around the ponds generally comprise granular soils (sand and gravel), supporting High Density Polyethylene (HDPE) geomembrane liners. The liners are secured in anchor trenches on the crest of the berms, and no damage is visible on the membranes on the upstream face of the slopes. However, there are some minor damages visible on the liners on the crest of the berms (above the maximum water/freeboard line) at a few locations, as shown in Figure 7 (see red circles). These minor damages should be repaired as part of the regular maintenance program.

As show in Figure 6, the berms around the three ponds appear to be stable, having shallow downstream slopes. They were built by using non-frost-susceptible well compacted granular materials (dense state of compactness based on visual inspection and manual probing). Based on surficial site observations, it appears that the subgrade around the berms comprise thaw-stable granular soils with trace to some fines. With this observation, the berms are assumed to have stable foundations, which is further supported by the fact that there are no indications of differential settlements, sinkholes, sloughing, etc. at the perimeter berms. However, at a few locations truck-tire related damages (e.g., depression on the crest's surface and related densification) were observed (see yellow circles in Figures 7 and 8) at the top of the berms. These are assumed to be caused by discharging activities. It is advisable to backfill these depressions with compacted sand and gravel until these areas match the crest elevations elsewhere. Prior to fill placement all visible minor damages to the liners shall be repaired.

A relatively common issue in water lagoons is the appearance of "whales" within the ponds. Whales are sections of the liners which have risen above the surface of the water, particularly in shallow ponds where the weight of water above the liner is minimal. Such a "whale" was visible during the inspection at PWS pond #3, as shown in Figure 9. The presence of whales ("liner bubbles") is usually attributed to suspected to potential gas generation beneath the liners due to decomposition of organics in topsoil layer that may have been left in place beneath the liner away from berm foundation during construction, resulting in the formation of whales. Such whales had been recorded in the past in some of the ponds at the subject mine site. However, no damage to the liners or seepage from the ponds has been reported, including the current survey/inspection. Should the affected pond be drained in the near future, it is recommended that the gas from beneath the liner be released by poking holes and repairing the liner in the next step.

As pointed out above, the berms appear to be structurally stable, and no visible wet downstream slopes and toe seepage was noted. However, as shown in Figure 10, the surface appearance was not found to be orderly at the front of the water discharge pipes at the middle of the south-western perimeter berm at its juncture with the central berm between Ponds #2 and #3. Namely, heavily wrinkled surficial liner was observed to cover the crest at this location and at the junction. It is suspected that this may have been water discharge point for further conveyance of the discharged water into the two adjacent ponds.

Large timbers and miscellaneous other elements (e.g., used tires etc.) are utilized as weight to secure the surficial liner in-place at the berm's crest at this location. The downside of this measure is potential ice development in areas of trapped water within the wrinkles, and this could have a potential to displace the above elements across the liner and consequently, result in liner damage (e.g., cracking). Under this scenario, there is a potential of berm fill saturation. As a cautionary measure, it is recommended to clean-up this area and remove all hard materials other than used tires from above the liner. Existing tires, and perhaps addition of more used tires to at least counterweight the removed weight, will protect from / reduce risk of wind uplift effects. Furthermore, timbers should also be removed from inside the ponds. Alternatively, it would be advantageous to remove the wrinkled surface liner and replace it with spigots, to convey water into the ponds directly from the discharge pipe.

2.2 Hazardous Waste Disposal Areas

There are seven hazardous waste disposal areas at the Mary River mine site (HWB-1 to HWB-7). HWB-6 is located at the north side of the runway near the incinerator, as shown in Figure 1. The other six areas are located opposite of HWB-6, at the south side of the runway. All HWB areas are lined and comprise shallow perimeter berms. There is no visible instability at the berms (sloughing, excessive settlement or tension cracks), other than some soil displacement by foot and truck traffic on the surface of the slopes and crests at some locations, as shown in the relevant images in Appendix A. It is recommended that foot and truck traffic on the slopes and crest of the berms should be limited, with controlled/ramped access point (preferably one) provided for trucks and skid-steers to dispose/remove materials in the cells.

a) HWB-1

This cell is currently empty, as shown in Figure 11. Based on personal communication with William Bowden at the time of the site visit, concerns have been raised recently to suspected liner damage within this cell, and consequently no material is stored in the cell. The fact that no ponding water was visible within the cell during the inspection, may confirm this assumption. It may be advisable to rebuild the perimeter berm around the cell, followed by the installation of a new geomembrane liner with sand cover. Once the cell would be reconstructed, all materials from HWB-6 could be transferred into an upgraded HWB-1 cell, and the HWB-6 cell could be decommissioned. The reason for this suggestion will be explained within the section of HWB-6, in page 10.

b) HWB-2

As shown in Figure 12, the perimeter berm appears to be stable. The presence of water visible within the pond demonstrates that the liner is intact. No visible seepage from the pond was noted around the berm, and the pond operates as intended.

c) HWB-3 and HWB-4

These cells are located side-by side and were called in previous reports as "Fuel Containment" cells. As shown in Figures 13 and 14, there are predominantly contaminated waste (HWB-3) and fuel barrels (HWB-4) stored in these two cells.

The photographs of the cells attest stable berm condition, and good liner performance (e.g., ponded water in Figure 14). However, it is also shown on the images that foot traffic had caused disturbance on the slopes of the berms and that should be avoided. Furthermore, access points into the cells should be limited and foot traffic on the berms, particularly on their slopes, should be minimized. Furthermore, damaged wood pallets (shown in Figure 14) with nails sticking out of them, should be stored in a designated area, in order to minimize the possibility of liner damage by the nails.

d) HWB-5

As shown in Figure 15, there are a few totes of lubricants currently stored in this cell. The berms around the cell appear to be stable and there is no visible liner damage. As recommended above, foot and truck traffic on the slopes and the crest of the berm should be prohibited with controlled / ramped access points (preferably one) provided for the skid-steers to dispose designated materials in the cell.

e) HWB-6

As mentioned earlier, the HWB-6 cell is in poor condition, as shown in Figures 16 and 17. The berms had been extensively disturbed by truck and foot traffic, particularly at the northern section of the berm. Cracking and tearing of the liner are also visible at several locations on the upstream face and crest of the berm. As shown in Figure 17 disturbance by truck traffic is evident. As suggested earlier, it would be advantageous to upgrade HWB-1 so that stored material from HWB-6 could be accommodated there. An added benefit in this alternative is that all HWB cells would be in each other's proximity on the west side of the runway. However, should there be a need for HWB-6 to continue receiving waste materials in the future, a repair of both the berm structure and the liner will be required.

f) HWB-7

Based on information from historic reports, the HWB-7 cell was a bulk fuel storage facility in the past. Currently it is used to store fuel barrels, lubricant totes and a large fuel tank, as shown in Figures 18 and 19. The perimeter berm around three sides of the cell appears to be stable and the visible water within the cell supports adequate liner performance. There is a ramp along the fourth side of the cell (with appropriately high elevation at its highest end) to provide truck access into the cell.

Minor damages to the geotextile (covering the liner) were noted at a few locations on the crest and downstream slope of the berm. It is recommended that the geotextile and soil cover be reinstated at those locations, in order to prevent potential damage to the liner in the future. As part of such maintenance program, regrading of slopes affected by foot traffic disturbance is recommended.

2.3 MS-06 and MS-08 Surface Water Collection Ponds and Ditches

a) MS-06 – Surface Water Collection Pond Adjacent to the Crusher Pad

The MS-06 pond collects surface water from the area of the crusher site. The water is collected in perimeter ditches around the crushed and stockpiled ore and conveyed in those open ditches to the pond. There are two intake locations to the pond at the northeast and southeast corners, and there is an emergency spillway located opposite to the intakes, as shown in Figure 20. The liner within the pond and on the upstream slopes of the berm is intact and no wet downstream slopes or toe seepage were visible.

The side slopes of the water collection ditches were observed to be stable (Figures 21, 22 and 23). As with any other run-off collection ditches, the silt sized soil particles are accumulated at the base of the ditches (siltation), wherever the effluent flow velocity decreases. This is evident in Figures 21, 22 and 23. The siltation tends to reduce the design wet section of the ditches (flow capacity). The observed silt accumulation does not warrant maintenance measures at this time. However, this should be regularly monitored by mine personnel and any significant reductions in the flow capacity of the ditch should trigger maintenance measures by means of silt removal.

As shown in Figure 22, the corrugated steel pipe culvert beneath the tote road is almost fully clogged with silt. It is recommended that the culvert be cleaned, and the collected excess silt be deposited at appropriate location on site. Excessive amount of collected silt within the ditches should also be removed periodically and the material disposed at appropriate location on site. As shown in Figure 23, ponding surface water is visible above the silt within one of the ditches, located between the tote road and the MS-06 pond.

Minor potential pad seepage water was observed at the toe of the berm at one location adjacent to the pond where the pad meets the tundra, as shown in Figure 24. This clear water seepage; however, is not to be mistaken as seepage from the subject pond and ditches.

b) MS-08

The MS-08 sedimentation pond is surrounded by a crescent shaped semicircular berm to the east, north and west and by the waste rock dump to the south, as shown in Figures 25 and 27 in Appendix A. Contact water from the waste dump area flows directly into the pond (see Figure 27) from the south, and conveyed to the pond via open ditches from the other sides of the dump. As shown in Figure 26, the construction of drainage ditches to allow for more flow capacity / minimize erosion is in progress.

The berm was constructed using granular soils form borrow sources similar in composition as the ones underlying the base of the pond / mine complex. The pond is lined with exposed HDPE liner that is secured in place in anchor trenches on the crest of the berm. In addition to the ditch inlets there is an emergency spillway. Based on information provided at the site, the retained water is not suitable for direct discharge to the environment as it does not meet discharge criteria. Therefore, the collected water is pumped to the adjacent plant for treatment, while maintaining the freeboard within the pond.

The entire berm structure around the MS-08 pond appears to be stable (no evidence of tension cracks or crest subsidence). The exposed geomembrane on the slopes above the ponded water level at the time of inspection was noted to be wrinkled, which is common condition for such thick liners in irregularly shaped ponds. No water seepage from the pond was noted at the time of the inspection. Based on personal communication with William Bowden, some water seepage was historically observed at the downstream (north) toe of the berm.

As pointed out above, the water from the pond is pumped to the nearby designated facility for treatment. There is a lined treatment area located immediately next to the plant with stable perimeter berms, as shown in Figure 28. No issue with this treatment area was ever recorded and the entire facility is in excellent condition.

2.4 Genset Pond

The "genset pond" contains melt snow and rainwater that previously contained fuel bladder for the gensets. The pond is located immediately adjacent to the power generators, south-west of the hazardous waste cells (Figure 1). As shown in Figure 29, the perimeter berm around the pond generally comprises granular materials and the pond is lined. Disturbance by foot-traffic is visible along most of the berm's crest and some sloughing of the upstream slope of the berm is also visible at the south-east corner of the pond (see Figures 30 and 31).

Granular fill should be brought to this location and the slope should be filled and regraded manually and compacted using a plate temper or like equipment. Special attention should be given not to damage the liner within the pond and on the slope of the berm during the repair. A few random cobbles that are visible on the crest in the area should be removed and placed on the downstream slope of the berm only.

In addition to the repair work on the slope, the southern, somewhat lower section of the berm should also be reconstructed to its original geometry. Again, truck traffic on the berm must be avoided.

It shall be pointed out that the berm at this pond is generally stable and the liner appears to be intact. No seepage from the pond was noted at the time of the inspection.

2.5 Fuel Farms

There are three fuel farms at the Mary River mine site, two operating and one under construction. The berms around them are in good conditions as shown in the relevant images in Appendix A.

a) Jet Fuel Tank Farm

The jet fuel tank farm is located at the aerodrome and it is surrounded by a stable perimeter berm. In addition, a second berm provides additional protection at two sides of the facility, constructed by using crushed rock fill, as shown in Figure 32. The facility is lined, and the liner within the cell appears to be in good condition. The geotextile fabric that covers the liner is exposed at a few locations along the berm's crest, as shown in Figure 33. During maintenance, these areas should be regraded, and the exposed geotextile and liner should be covered by soil (clean sand and gravel).

b) MS-03 Diesel Fuel Tank Farm

The berms around the diesel fuel tank farm are in excellent condition (see Figure 34) and they are well maintained. The collected precipitation within the cell is clean and its presence indicates that the liner system is fully functional (i.e., no seepage from the cell is visible and the liner is well protected by granular fill throughout the facility).

c) New Fuel Tank Farm (under construction)

A new fuel tank farm is currently under construction, as shown in Figures 35 and 36. Based on our field review the tank farm is constructed as specified in the design drawings (subgrade, berms, bedding layer, liner and protective cover).

2.6 Solid Waste Disposal Area

The solid waste disposal area is located in the southern zone of the Mary River mine site, as shown in Figure 3. Only non-hazardous solid waste is placed into this facility that has no liner, nor a leachate collection system. As shown in Figure 37, the solid waste placed into the facility is covered as required with a layer of locally available clean soils.

No stability issue is present at the solid waste disposal site.

2.7 CLSP Silt-sedimentation Check Dams and Berms

The CLSP silt sedimentation control berms and check dams are located along the access road to the mine's water intake jetty. The primary purpose of these structures is to collect fine soil particles that are eroded from the adjacent road and slopes, and to prevent the siltation around the water intake structure. As shown in Figure 38, the berms are stable, and the check dams are fully functional. The following two recommendations are offered for consideration for this area:

a) The collected silt at the check dams should be frequently removed and disposed at an appropriate location on the site.
b) Figure 39 shows an unprotected drainage line near the lake-shore, in the vicinity of the lowest CLSP check dam. As shown in the image, fine soil particles are eroded from the adjacent slope and transported toward the lake. Although a silt curtain is present at the front of the gully, it is recommended that the gully be stabilized and should receive an erosion resistant layer (coarse gravel / rip-rap).

2.8 Water (Effluent) Discharge Area

The effluent discharge point is located south of the Mary River mine complex, as shown in Figure 3. There are several discharge pipes at that location, conveying the discharged water down the slope toward the adjacent river. Trucks also bring water for discharge to this location and let the water flow down on the adjacent embankment, comprising crushed rock fill, as shown in Figure 40. The rock fill slope appears to be stable and no evidence of surface erosion or instability was observed during the inspection within the immediate discharge area.

However, minor surface erosion was noted adjacent to the rock fill slope, within the native material, as shown in Figure 41. At this stage this erosion does not seem to affect overall slope stability as this relates to the water discharge area; however, it would be beneficial to cover the eroded slope with crushed rock fill to prevent any regressive erosion in the future.

3.0 Milne Inlet Port Site

3.1 Hazardous Waste Disposal Areas - (HWB-1 to HWB-4)

There are four hazardous waste disposal cells at the Milne Inlet Port site. HWB-1 and HWB-2 cells are single detached structures, located north-east and south-east of the large fuel storage area, respectively. HWB-3 and HWB-4 had been constructed as twin-cells, located south/south-west of the fuel storage farm.

a) HWB-1

The HWB-1 cell covers a relatively large area, surrounded by a stable perimeter berm, constructed of granular fill material, as shown in Figure 42, in Appendix B. The cell predominantly contains fuel barrels, cubes of lubricants and other materials. Ponding water was visible across the deeper area of the cell, indicating that the liner within the pond is intact. No seepage from the pond was visible around the toes of the berm. However, ripped geotextile and exposed liner were noted at a few locations at higher elevations along the berm, as shown in Figure 43. It is recommended that as part of the maintenance program the disturbed areas of the berm (generally by foot traffic) on the slopes and crest should be re-graded manually and all exposed liner areas should be covered with a protective layer of soil (clean sand and gravel).

b) HWB-2

The HWB-2 is a small cell that is currently empty. As a result of some recent earthwork immediately adjacent to the cell, sections of the perimeter berm have been impacted, and the slopes and liner were somewhat damaged in the process. There is a small area in one of the corners with ponding water, where the liner is exposed, as shown in Figure 44. It is suggested that the soil cover from above the damaged liner and the liner itself be removed and disposed into the HWB-1 cell. As an alternative option to the full decommissioning the perimeter berm shall be reconstructed and the liner carefully repaired.

c) HWB-3 and HWB-4

The HWB-3 and HWB-4 cells are located immediately next to each other (twin-cells) and contain shipping containers only, as shown in Figures 45 to 48. The berms appear to be in good condition with no indication of slope movements or settlement. The liner within the ponds are intact; however, they are exposed at a few locations on the crest and downstream slopes of the berms. It is suggested that all exposed liner areas be regraded and covered with protective granular fill (clean sand and gravel), to prevent potential damage to the liner in the future.

3.2 MP-01A Pond

The new (2014) MP-01A polishing waste stabilization pond is located immediately south of the MP-03 fuel tank farm. As shown in Figure 49 the berm around the pond is in excellent condition and the liner appear to be intact. No sign of slope instability, settlement or seepage from the pond was noted during the field inspection.

3.3 MP-03 Fuel Tank Farm

The MP-03 fuel tank farm occupies a large area in the center of the Milne Inlet port complex. As shown in Figures 50 and 51 the berms around the facility are well maintained and are in excellent condition. The visible ponding water within the internal cells is an indication of proper liner functionality. The facility is fenced in and no indication of berm instability or seepage was noted on and around the berms comprising compacted granular materials.

3.4 MP-04 and 04A Landfarm and Contaminated Snow Disposal Cells

The MP-04 and MP-04A cells are located south of the port complex at higher elevation, adjacent to the rock quarry. MP-04 is a large landfarm cell that stores contaminated soils, as shown in Figure 53. The berm structure around the cell appears to be in stable condition. The ponding water within the cell indicates proper liner functionality and no wet downstream slopes and toe seepage were noted. Exposed liner was visible on the downstream slope of sections of the berm, particularly along the north berm. It is recommended that the liner be covered (weighed down by a gravel layer) along the toe of the slope to prevent wind uplift related impacts (e.g., wrinkling, etc.) in areas marked by yellow circles in Figure 53.

MP-04A is a smaller cell used generally for the disposal of contaminated snow. This pond was constructed immediately adjacent to the MP-04 landfarm cell, shown in Figure 54. There are no geotechnical problems visible at this cell and the liner appears to be working as intended. No seepage from the cell was noted anywhere around the pond.

3.5 Surface Water Collection Ponds and Ditches (MP-05 and MP-06)

The high-grade iron ore that is mined, crushed, and screened at the Mary River site is transported to the Milne Inlet port, and stockpiled across a large flat area that can accommodate up to 3.5 million metric tonnes of ore. Contact water is collected along the west and north sides of the ore stockpile in side ditches and conveyed into two water collection ponds.

The MP-05 pond is located adjacent to the north-east corner of the stockpile, while MP-06 has been constructed at the north-west corner. Both ponds are in excellent condition with stable, well maintained berms and intact geomembrane liners, as shown in Figures 55, 56, 58 and 59.

No instability, erosion or settlement was noted at the berms and no toe seepage from the ponds is visible anywhere around the ponds' perimeter. The surface water from around the stockpile is collected in the two well maintained drainage ditches, shown in Figures 57 and 60, reporting to the two ponds via the intakes.

Pond MP-06 is divided into two ponds by a liner-covered internal berm and the northern cell within the pond is called the overflow cell, as shown in Figure 59. Both water collection ponds have emergency spillways. The water level in both ponds was well below the spillways' inverts at the time of the inspection.

3.6 Freight Dock Check Dam

The freight dock check dam is a newly constructed structure comprising a crushed rock fill berm with geotextile cover on its upstream slope, as shown in Figure 61. This structure collects fine-grained soil particles (silt and clay) that may erode down from the port site and from the adjacent slope located along the bay's shore, approximately at the front of the HWB-1 pond. The berm/dam appears to be stable for intended purpose. It is suggested, however, that its condition be monitored during ice formation in the bay and check its resistance against the impact of ice forces.

3.7 Surface Water Collection Ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W13/W14, 380M pad)

There are several water collection drainage ditches (listed above), most of them still under construction or improvement, as shown in Figures 62 to 67. These open ditches are excavated somewhat into the native soils and then their sides and inverts receive erosion protection layers composed of fine crushed rock. It was noted during the inspection that geotextile have been used wherever the native subgrade composed of fine-grained material to prevent migration of fines into the rockfill. The condition of these ditches should be monitored, particularly prior to the spring freshet, and any potential slope deterioration should be rectified prior to the anticipated increased flow during the thaw period of the year.

3.8 Tote Road Ditches and Culverts Near the Rock Quarry

Surface water from higher elevations around the rock quarry is collected in drainage ditches and conveyed down the slope through corrugated galvanized steel culverts, installed under an internal haul road and then under the tote road. The water in the ditches is conveyed to small natural ponds, located along the west side of the tote road, as shown in Figures 68 to 71. Figure 68 shows the outlet of two culverts, located under the internal haul road at higher elevation, well above the tote road. The blue arrows in the image show the alignment of the drainage ditch and the theoretical flow path for the collected water. Figure 68 shows the two culverts located under the tote road that should convey the collected surface water to the other side of the tote road. However, since all fill in the area (road embankment and slope cover) comprise crushed rock fill, a portion of the water bypasses the two culverts beneath the tote road embankment (through-flow) and finds its way to nearby ponds (see Figures 70 and 71).

The flow of water may soften the original native subgrade beneath the road embankment and eventually could create some instability of the embankment. To increase the stability of the embankment in the

affected areas it is recommended to regrade the upstream area leading to the culverts and place additional rock fill at the culvert's outlet (toe-berm reinforcement for increased embankment stability).

4.0 Tote Road between Mary River and Milne Inlet - Bridges and Culverts

Four bridges and several culverts were inspected during the recent site visit. The general conditions of those structures are summarized below, and the images are attached in Appendix C.

4.1 Bridges (4)

a) **Bridge 17** (located approximately 17 km from Milne Inlet port)

As shown in Figures 72 to 75, the abutments of this bridge are stable and no scour in the river-bed was noted during the site visit. The abutments show no differential settlement or any structural discrepancy, like cracking on the foundation concrete. There are two historic abutments, located immediately adjacent to the "new" ones. The metal front and wing walls of both "old" abutments have suffered damages in the past, particularly the south abutment, as shown in Figure 75. That image also shows that a pump is operated on the top of the abutment, supplying water to the water trucks from the river (used for dust control on the road).

To maintain the stability of the currently used bridge abutments, the two old abutments should be kept in place since they provide support to the adjacent new structures. However, the damaged sections should be repaired, particularly if the abutments would continuously be used for taking water from the river. Alternatively, the damaged metal parts of the structures (above the water level) can be removed and the granular fill within them regraded to stable slopes. Additional rip-rap on the regraded granular fill slopes must be placed to prevent river erosion.

b) **Bridge 63** (located approximately 63 km from Milne Inlet port)

As shown in Figures 76 to 78, the abutments of this bridge are stable and no scour in the river-bed was noted during the site visit. The abutments show no differential settlement or any structural discrepancy like cracking on the foundation concrete. The wing-wall at the north-west abutment appears to be short and minor erosion of the road fill was noticed (Figure 78). At that location a metal section should be added to the wing-wall or alternatively some rock-fill be placed there to prevent soil erosion from the road into the river.

Similarly to the previous bridge, there are two historic abutments, located immediately adjacent to the "new" ones and damage to the metal front and wing walls of both abutments are visible. In order to

maintain the stability of the currently used bridge abutments, the two old abutments should be kept in place since they provide support to the adjacent new structures. Similarly, to the previous bridge the damaged part of the structures (above the water level) can be removed and the granular fill within them regraded. Additional rip-rap on the regraded granular fill must be placed to prevent erosion.

c) **Bridge 80** (located approximately 80 km from Milne Inlet port)

As shown in Figure 79, the abutments of this bridge are stable and no scour in the river-bed was noted during the site visit. The abutments show no differential settlement or any structural discrepancy like cracking on the foundation concrete.

Similarly, to the previous bridges, there are two historic abutments, located immediately adjacent to the "new" ones, providing support to the new abutments and road embankment. Therefore, removal of these structures is not recommended. Any damage on the metal parts shall be repaired or the structures should be covered with additional crushed rock fill.

d) **Bridge 97** (located approximately 97 km from Milne Inlet port)

As shown in Figure 80 and 81, the abutments of this bridge are stable and no scour in the river-bed was noted during the site visit. The abutments show no differential settlement or any structural discrepancy like cracking on the foundation concrete.

Similarly, to the previous bridges, there are two historic abutments located adjacent to the "new" ones. At this location the old abutments are located somewhat away from the new ones and they appear to be structurally stable. Since no access is provided to them from the road they shall be left in place. Should removal of them be selected, only the above ground parts can be removed, and the stability of the adjacent bridge must always be maintained.

4.2 Culverts (12)

Twelve culverts (CV-076, CV-078, CV-083, CV-094, CV-102, CV-107, CV-110A, CV-111, CV-112D, CV-114D, CV-202, and CV-225) were inspected during the recent site visit, installed beneath the tote road between the Mary River and Milne Inlet sites. These culverts were selected for inspection based on construction work on these crossings, completed in 2018 and 2019. Most of the culverts are in good condition and they provide uninterrupted flow of water from their upstream to their downstream sides. Photographs of the inlet and outlet ends of all inspected culverts are shown in Figures 82 to 105, in Appendix C.

Culverts that require some rehabilitation work are listed below:

CV-083 (Figures 86 and 87): The outlet of this culvert appears to be short. It should be extended by about 1.5 m and the adjacent road embankment shall be upgraded to a more stable slope with the placement of crushed stone. Crushed rock fill should also be placed adjacent to the culvert at its inlet, to prevent erosion of the road embankment by the flowing water in the creek. Improvement of the creek's alignment at the front of the inlet is also recommended (minimize water flow parallel with the embankment at its toe, to prevent toe erosion and subsequent potential slope instability).

CV-107 (Figures 92 and 93): Both ends of this culvert are short, particularly at the inlet side. Consideration shall be given to replace this culvert with a longer and somewhat larger pipe. It is visible in Figure 93 that the inlet's invert is currently located above the water level, resulting in ponding water at the front of the inlet. A larger and longer pipe would facilitate uninterrupted flow of water from upstream to the other side of the road.

CV-114D (Figures 100 and 101): Both ends of this double-barrel culvert are damaged and too short, particularly at the outlet end. Both pipes should be repaired and extended. Once the pipes are repaired and extended, the road embankment should be widened at the downstream end of the pipes and stable slopes must be provided.

5.0 Conclusions

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), has completed the first of the two required geotechnical field inspections of 2019 at the Mary River iron mine complex in Nunavut. Based on field observations, the condition of the inspected infrastructure components can be summarized as follow:

- All ponds and waste disposal areas are enclosed by relatively shallow, stable berms. The berms show no signs of instability, there are no tension cracks or excessive settlements and no slope erosion is visible at the berms. These structures were constructed by using thaw-stable granular materials, placed over thaw-stable subgrades (based on observations of adjacent areas away from their footprints). Minor disturbance on the surface of the slopes and crests were noted at some of the berms, however, these discrepancies can be rectified by a more frequent maintenance (regrading) program. Foot and truck traffic on the berms must be limited and only one ramped access point should be provided to each cell.
- The water and waste storage ponds comprise HDPE liners, generally in good conditions. No seepage from the currently operating cells was noted around those cells. Minor damages to the liner were noted at a few locations above the water lines. As specified within this report, these damages to the liners should be repaired as soon as practically possible.

- Open ditches across the Mary River and Milne Inlet sites are generally in good conditions with minor erosion and siltation visible at a few locations. As part of a more frequent maintenance program, the eroded sides of the ditches should be regraded and the excess silt from the ditches should be removed and deposited at appropriate locations onsite.
- The new abutments at the four inspected bridges are in good condition and no scour in the riverbed were noted at the time of the site visit.
- The "old" abutments are located immediately next to the new abutments. As pointed out earlier, these old abutments are providing additional support to the new abutments and to the adjacent road embankments. Therefore, their removal is strongly discouraged. The visible damages on the metal frame of the old abutments shall be rectified either by repair work or by their removal above the water line.
- Water crossings by culverts at the inspected locations are generally in good conditions. At a few locations, culverts were noted as being either too short or damaged. As specified within the report, those culverts should be repaired as soon as practically possible.

6.0 Closing Remarks

We trust that the above technical report provides you with satisfactory information in connection with the reviewed infrastructure components at the selected sites of the Mary River Operation.

Should you have any questions regarding this report, please do not hesitate to contact our office.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Prepared by:

Laszlo Bodi, M.Sc., P.Eng.
Principal Geotechnical Engineer
Tel: (905) 568-2929
laszlo.bodi@woodplc.com

Reviewed by:

Aleksandar (Sasha) Živković, M.Sc., P.Eng.
Principal Geotechnical Engineer
Tel: (905) 568-2929
aleksandar.zivkovic@woodplc.com

Baffinland Iron Mines Corporation

Project #: TC190307

Annual Geotechnical Inspections – 2019 Report 1.

APPENDIX "A" - Mary River Mine Site - Photographs

Figure 6 to Figure 41

Table of Contents

Page

1.0 Mary River Mine Site

1.1 Polishing/Waste Stabilization Ponds (3 PWS ponds)

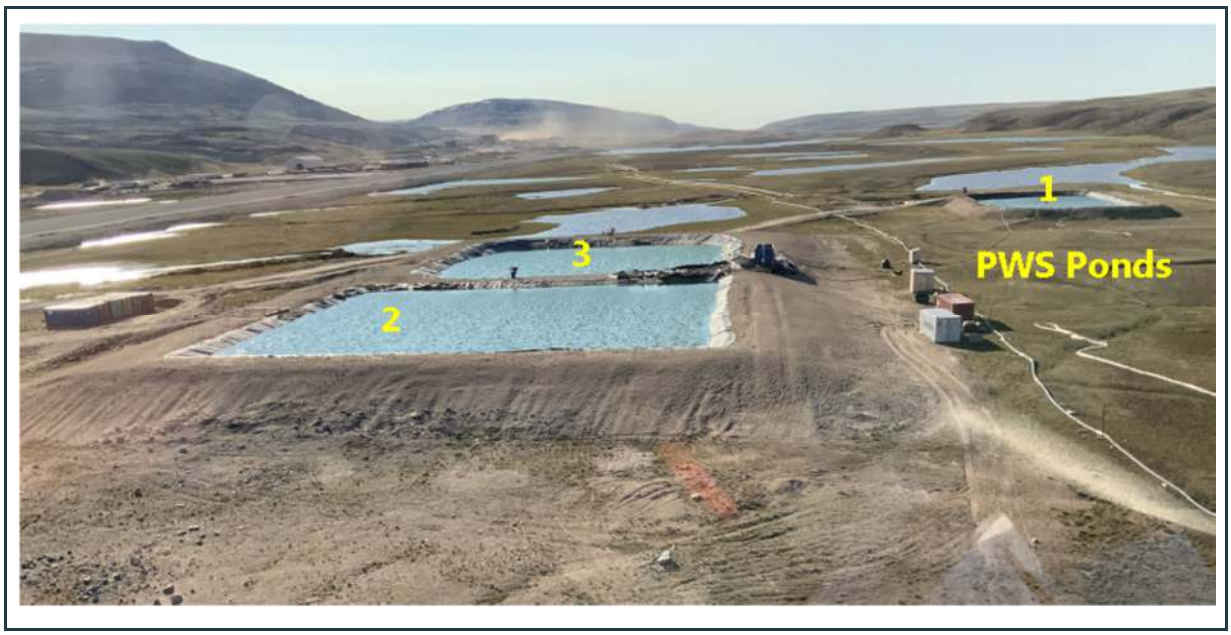


Figure 6: Aerial view of the three PWS ponds

Figure 7: PWS pond #1 – Lower crest elevation (yellow circle) and damages to the liner (red circles)

Figure 8: PWS pond #2 – Lower crest elevation caused by truck traffic at the water discharge point (yellow circle)

Figure 9: PWS pond #3 – A "whale" is visible in pond #3.

Figure 10: PWSP #2 and #3 – Untidy conditions at the water discharge point between ponds #2 and #3

1.2 Hazardeous Waste Disposal Areas

a) HWB-1

Figure 11: View of HWB-1 – Currently this cell is empty

b) HWB-2

Figure 12: View of HWB-2

c) HWB-3 and HWB-4

Figure 13: View of HWB-3

Figure 14: View of HWB-4

d) HWB-5

Figure 15: View of HWB-5

e) HWB-6

Figure 16: View of HWB-6. Note the damaged liner at the yellow circle.

Figure 17: View of HWB-6. Note the shallow berm near the pickup truck.

Figure 18: View of HWB-7

Figure 19: View of HWB-7

1.3 MS-06 and MS-08 Surface Water Collection Ponds and Ditches

a) MS-06 – Surface Water Collection Pond Adjacent to the Crusher Pad

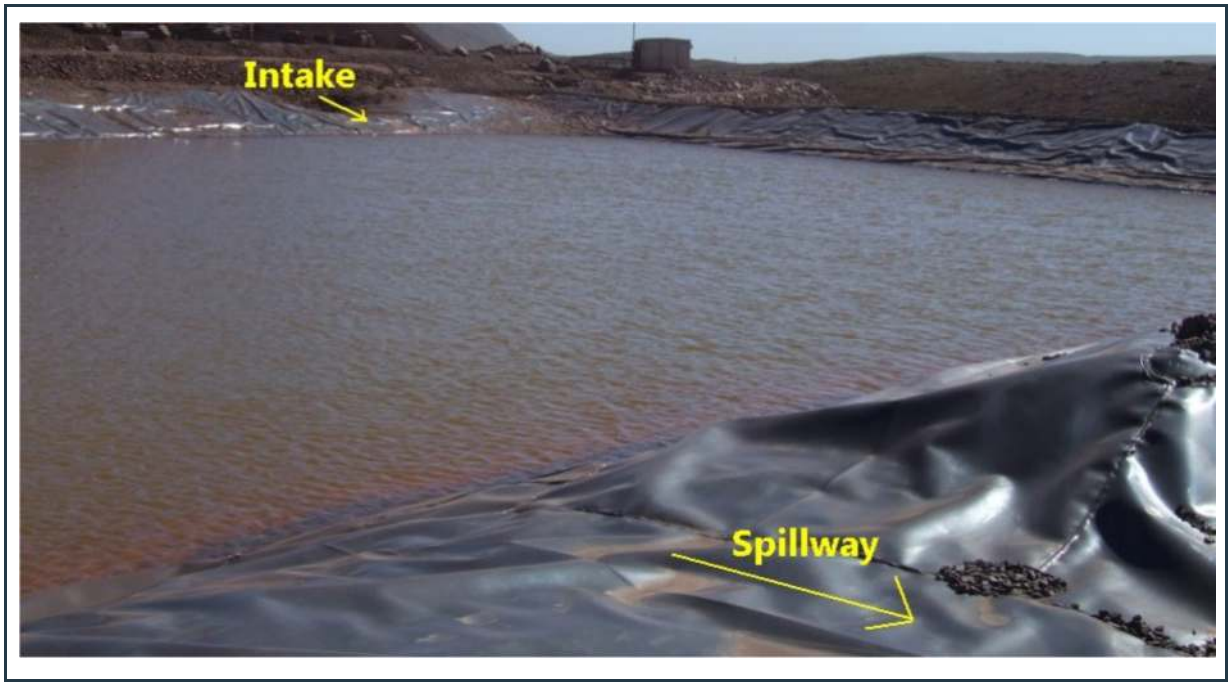


Figure 20: MS-06 surface water collection pond

Figure 21: Surface water collection ditch around the crusher plant

Figure 22: Surface water collection ditch with clogged culvert

Figure 23: MS-06 surface water collection pond and side-ditch

Figure 24: Water seepage at the toe of the tote road embankment near the crusher pad

b) MS-08 Pond next to the waste rock dump

Figure 25: View of the MS-08 pond downstream of the waste rock dump

Figure 26: Side-ditch under construction around the waste rock dump

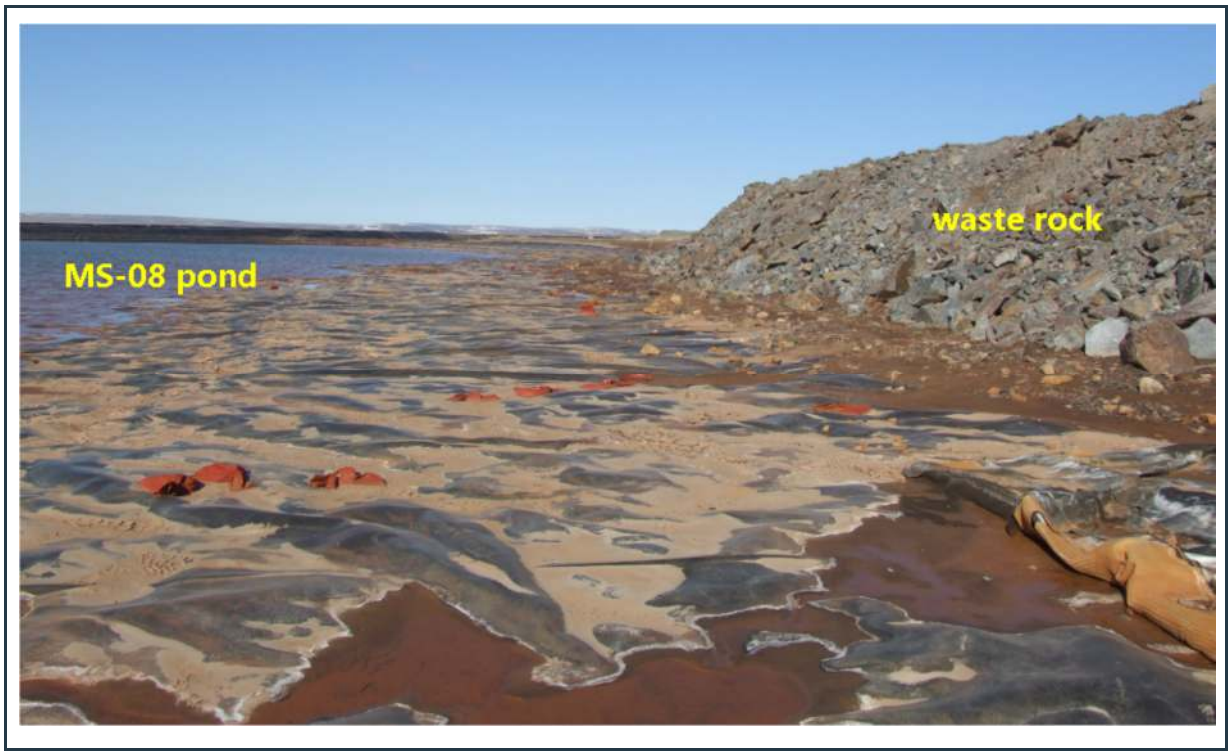


Figure 27: MS-08 pond at the toe of the waste rock dump

Figure 28: Water treatment pond adjacent to the waste rock dump and MS-08

1.4 Genset Pond

Figure 29: View of the berm at the Genset pond

Figure 30: View of minor slope problem at the south-east corner of the berm at the Genset pond

Figure 31: View of the south section of the berm that needs to be repaired (raised and regraded)

1.5 Fuel Farms

a) Jetfuel Tank Farm

Figure 32: View of the jetfuel farm's double berm system (note the additional crushed rock berm)

Figure 33: Exposed and ripped geotextile fabric on the berm of the jetfuel farm

b) MS-03 Diesel Fuel Tank Farm

Figure 34: View of the MS-03 diesel fuel farm

c) New Fuel Tank Farm (under construction)

Figure 35: View of the new fuel tank farm (under construction)

Figure 36: View of the new fuel tank farm at the Mary River site (under construction)

1.6 Solid Waste Disposal Area

Figure 37: Solid waste landfill facility

1.7 CLSP Silt-sedimentation Check Dams and Berms

Figure 38: CLSP silt sedimentation check dams forming small ponds

Figure 39: Slope erosion in the vicinity of the CLSP check dams

1.8 Water Discharge Area

Figure 40: Water discharge area. Stable slope, comprising a mix of crushed rock and soils.

Figure 41: Minor slope erosion adjacent to the water discharge area.

Baffinland Iron Mines Corporation

August 31, 2019
Project #: TC190307

Annual Geotechnical Inspections – 2019 Report 1.

APPENDIX "B" – Milne Inlet Port Site - Photographs

Figure 42 to Figure 71

Table of Contents

Page

1.0 Milne Inlet Port Site

1.1 Hazardeous Waste Disposal Areas - (HWB-1 to HWB-4)

a) **HWB-1**

Figure 42: View of the HWB-1 pond with stable berm and ponding water within the cell

Figure 43: Ripped geotextile and exposed liner at the HWB-1 cell

b) HWB-2

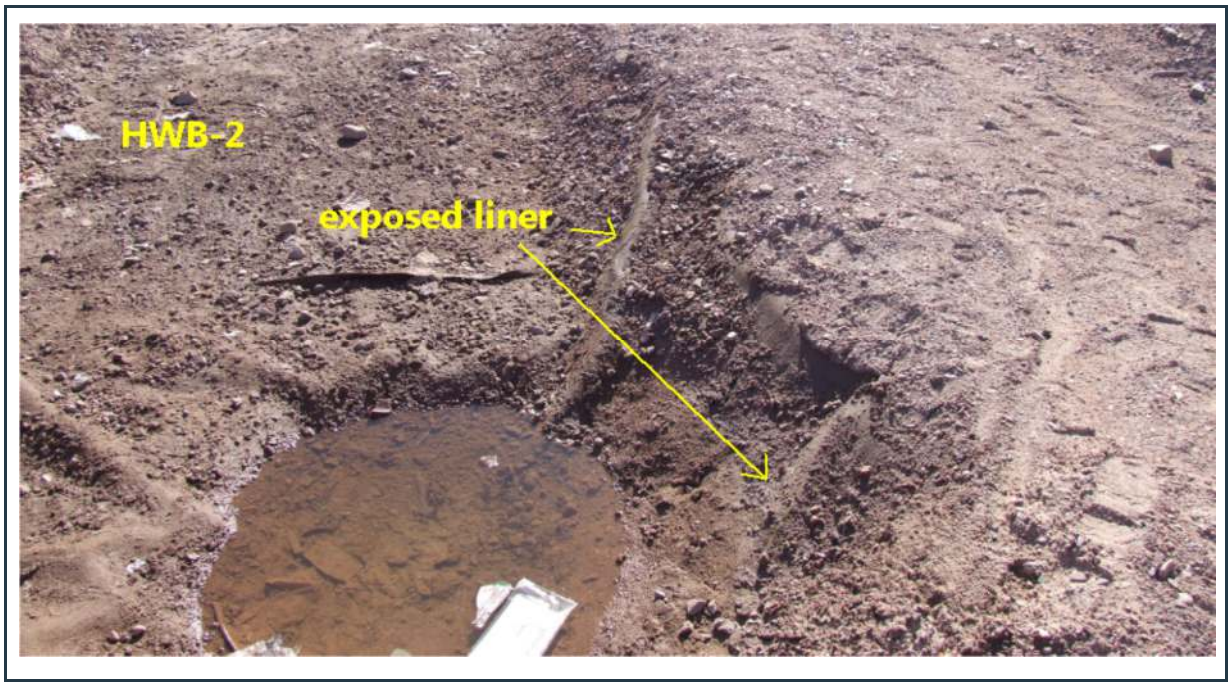


Figure 44: Small area of ponding water within the HWB-2 cell with locally exposed liner

c) HWB-3

Figure 45: View of the HWB-3 cell, containing shipping containers

d) HWB-4

Figure 46: Stable berm at the HWB-4 pond

Figure 47: Exposed liner between the HWB 3 and HWB-4 ponds

Figure 48: Exposed geotextile and liner at the HWB-4 pond, with location of potential damage to liner

1.2 MP-01A Pond

Figure 49: Berm in excellent condition with stable slopes around the MP-01A pond

1.3 MP-03 Fuel Tank Farm

Figure 50: View of stable, well maintained berms around the MP-03 fuel tank farm

Figure 51: View of stable, well maintained berms around the MP-03 fuel tank farm

1.4 MP-04 and 04A Landfarm and Contaminated Snow Disposal Cells

Figure 52: View of the waste and the stable berm at the MP-04 landfarm

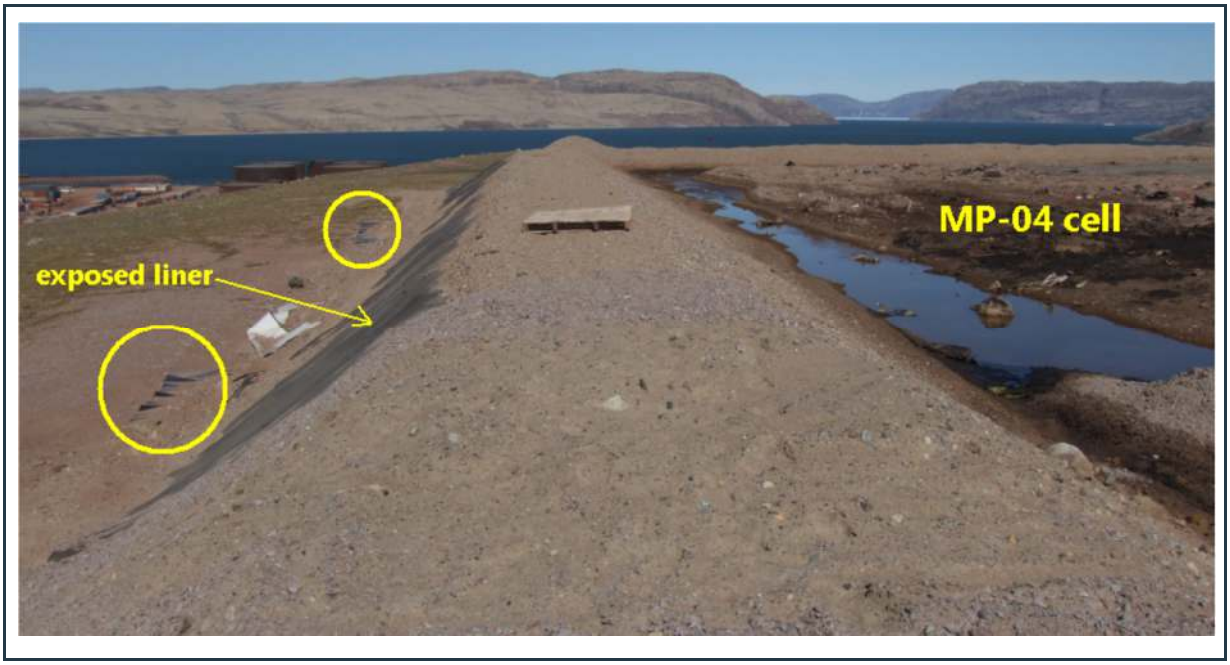


Figure 53: Stable berm at the MP-04 landfarm with exposed liner on the downstream face of the berm

Figure 54: Condition of the ramp at the MP-04A contaminated snow dump

1.5 Surface Water Collection Ponds and Ditches (MP-05 and MP-06)

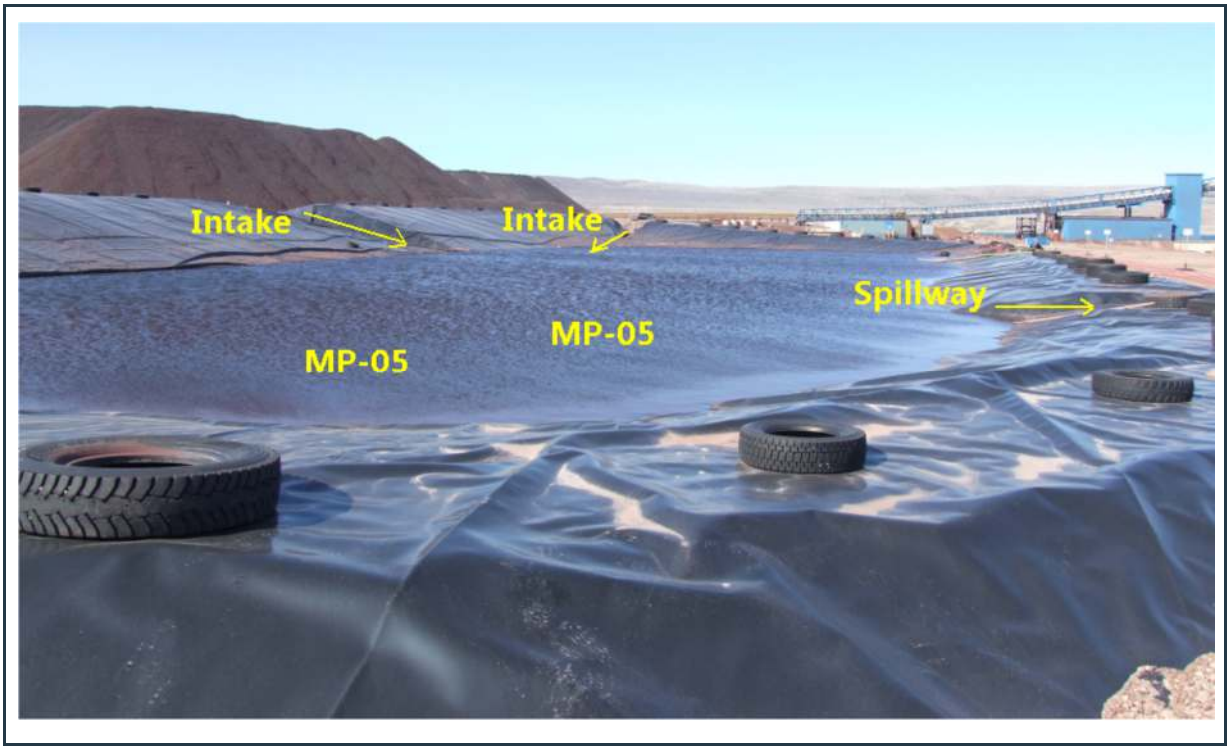


Figure 55: View of the MP-05 pond at the north-east corner of the ore stockpile

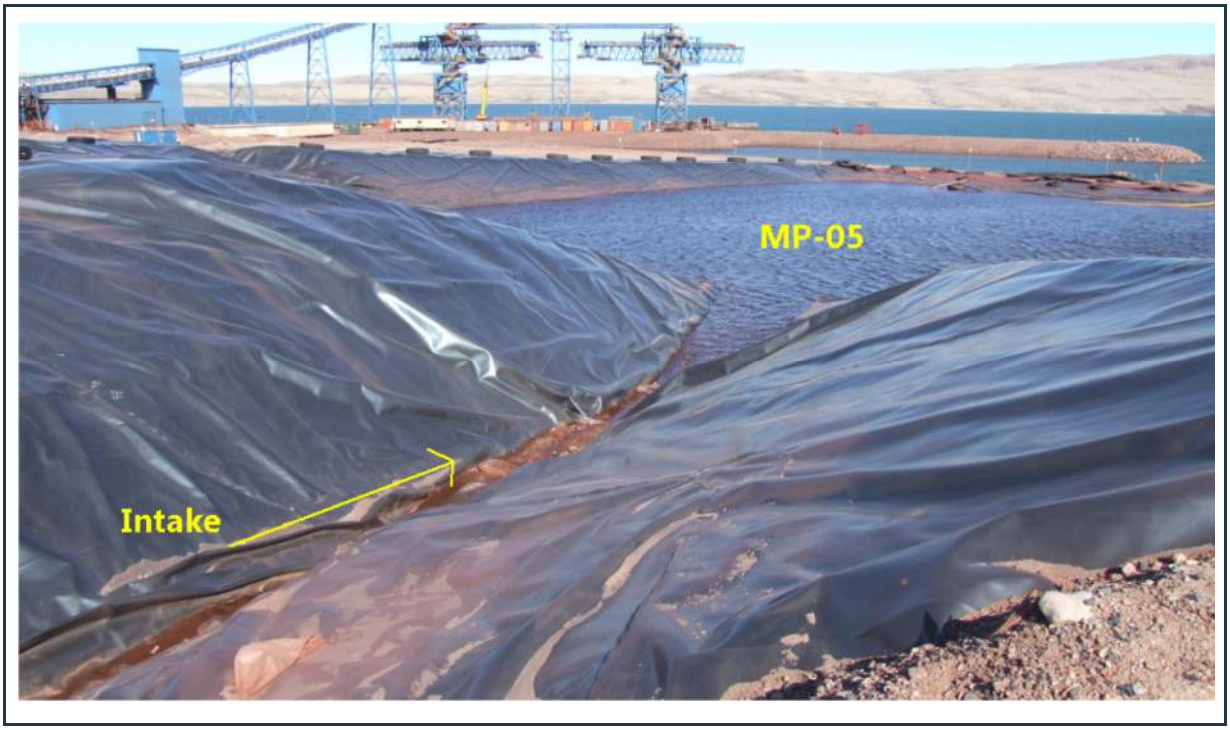


Figure 56: View of the MP-05 pond

Figure 57: Surface water collection ditch adjacent to stored, crushed ore (leading to the MP-05 pond)

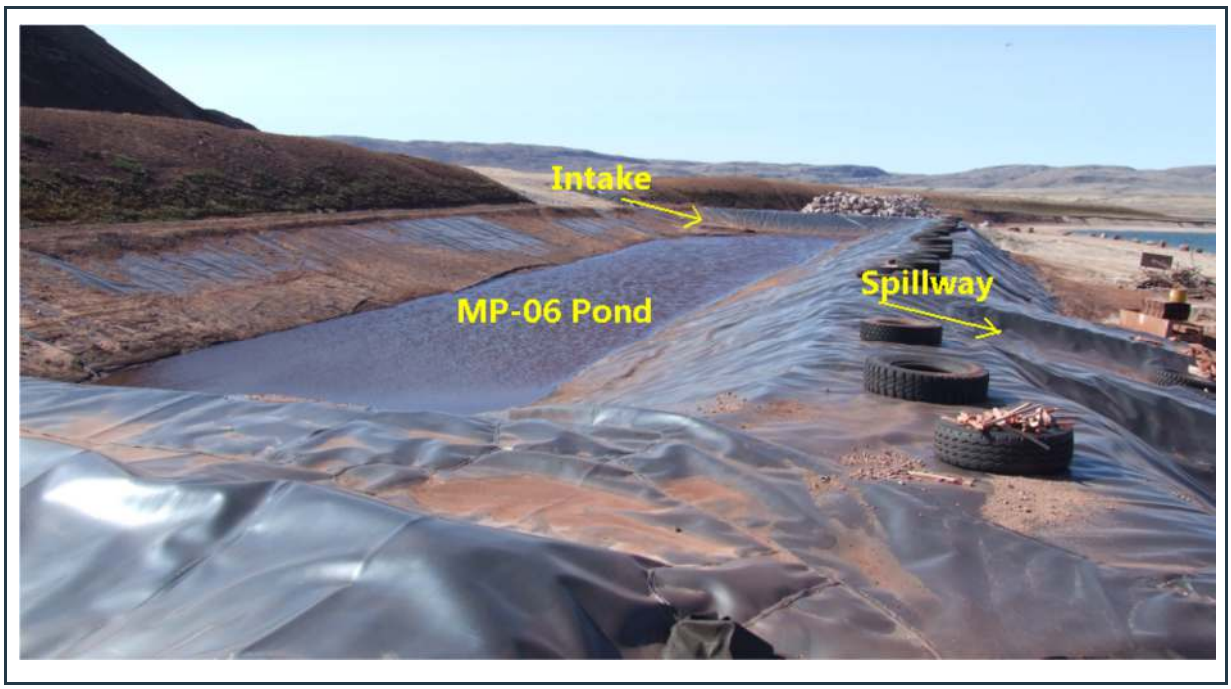


Figure 58: View of the MP-06 pond at the front of the north-west corner of the ore stockpile

Figure 59: View of the MP-06 overflow pond with stable berm in excellent condition

Figure 60: Surface water collection ditch, adjacent to stored, crushed ore leading to the MP-06 pond

1.6 Freight Dock Check Dam

Figure 61: View of the freight dock check dam/berm with geotextile filter on the upstream face of the crushed rock berm, to retain silt

1.7 Surface Water Collection Ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W13/W14, 380M pad)

Figure 62: Future "P-SWD-3 LP2" surface water collection ditch – under construction

Figure 63: P-SWD-5 Q1 North surface water collection ditch

Figure 64: P-SWD-6 Q1 South surface water collection ditch

Figure 65: P-SWD-7 surface water collection ditch adjacent to the new freight dock (under construction)

Figure 66: W13-W14 surface water collection ditch (under construction)

Figure 67: 380 M surface water collection ditch (under construction)

1.8 Tote Road Ditches and Culverts

Figure 68: Culverts and drainage ditch, conveying surface water from higher elevation toward the road

Figure 69: Surface water bypassing the two culverts installed under the tote road

Figure 70: Water seepage through the road embankment adjacent to the tote road culverts

Figure 71: Water seepage through the road embankment adjacent to the tote road culverts

Baffinland Iron Mines Corporation

August 31, 2019
Project #: TC190307

Annual Geotechnical Inspections – 2019 Report 1.

APPENDIX "C" – Tote/Haul Road - Photographs

Figure 72 to 105

Table of Contents

Page

1.0 Tote Road - Bridges and Culverts

1.1 Bridges (4)

a) Bridge 17 (located approximately 17 km from Milne Inlet port)

Figure 72: View of bridge 17 (17 km from the port), looking north-east

Figure 73: Foundation and rip-rap conditions at one of the abutments at bridge 17

Figure 74: The "old" south-east abutment at bridge 17

Figure 75: The "old" north-east abutment at bridge 17

b) Bridge 63 (located approximately 63 km from Milne Inlet port)

Figure 76: View of bridge 63, looking north

Figure 77: View of the "old" abutments at bridge 63

Figure 78: Minor erosion at the north-west wingwall at bridge 63

c) Bridge 80 (located approximately 80 km from Milne Inlet port)

Figure 79: View of bridge 80 with one of the old abutments, looking north

d) Bridge 97 (located approximately 97 km from Milne Inlet port)

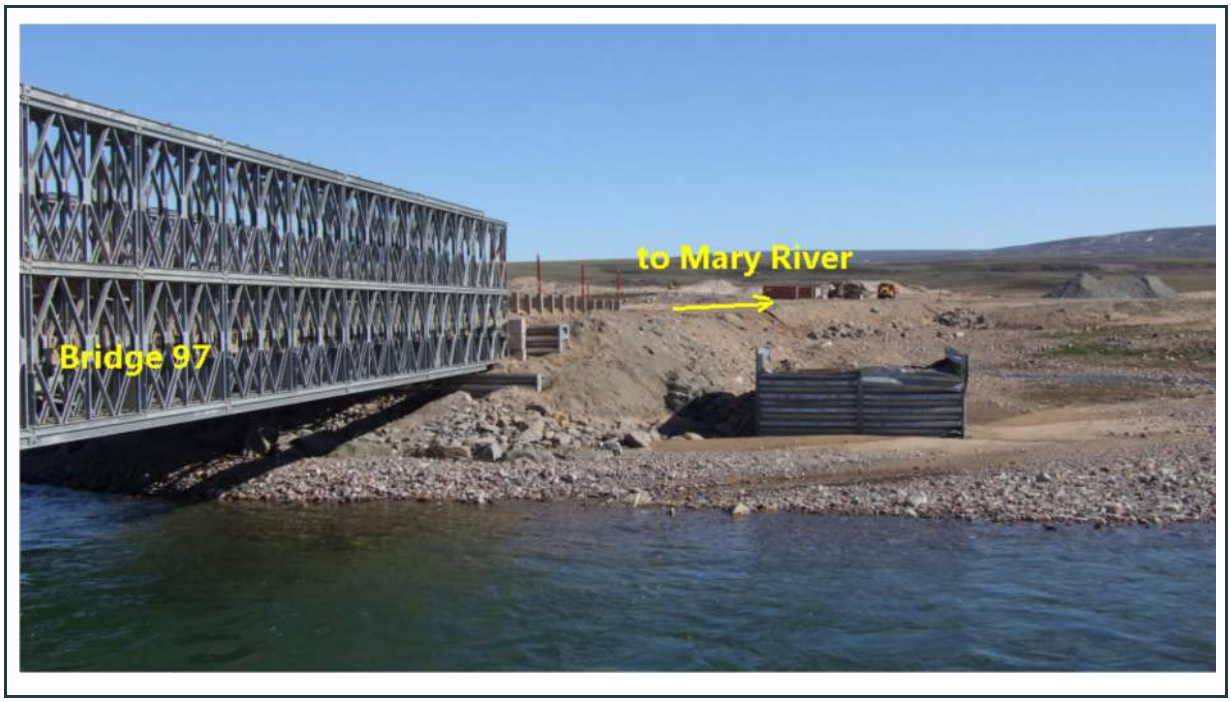


Figure 80: View of bridge 97, looking south

Figure 81: One of the "old" abutments at bridge 97. The section abobe the red-line may be removed, but the removal is not necessary.

1.2 Culverts (12)

a) CV-076

Figure 82: View of culvert 076 (outlet)

Figure 83: View of culvert 076 (inlet)

b) CV-078

Figure 84: View of culvert(s) 078 (outlet)

Figure 85: View of culvert(s) 078 (inlet)

c) CV-083

Figure 86: View of culvert 083 (outlet) with some slope erosion

Figure 87: View of culvert 083 (inlet)

d) CV-094

Figure 88: View of culvert(s) 094 (outlet) in excellent conditions

Figure 89: View of culvert(s) 094 (inlet) in excellent conditions

e) CV-102

Figure 90: View of culvert(s) 102 (outlet) in excellent conditions

Figure 91: View of culvert(s) 102 (inlet) in excellent conditions

f) CV-107

Figure 92: View of culvert 107 (outlet)

Figure 93: View of culvert 107 (inlet). Extension of the culvert is required.

g) CV-110A

Figure 94: View of culvert 110A (outlet) in good condition

Figure 95: View of culvert 110A (inlet) in good condition

h) CV-111

Figure 96: View of culvert 111 (outlet)

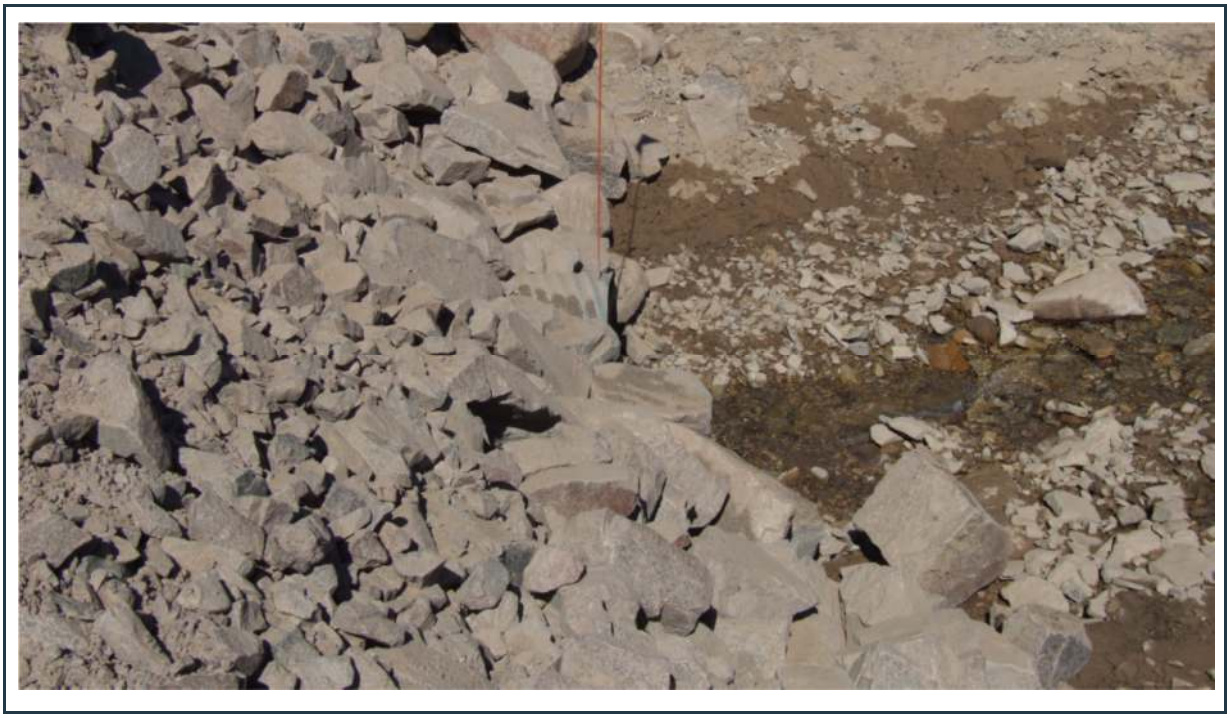


Figure 97: View of culvert 111 (inlet)

i) CV-112D

Figure 98: View of culvert(s) 112D (outlet)

Figure 99: View of culvert(s) 112D (inlet)

j) CV-114D

Figure 100: View of culvert(s) 114D (somewhat damaged outlet). Repair and extension is required.

Figure 101: View of culvert(s) 114D (somewhat damaged inlet). Repair is required.

k) CV-202

Figure 102: View of culvert 202 (outlet)

Figure 103: View of culvert 202 (inlet)

l) CV-225

Figure 104: View of culvert 225 (outlet)

Figure 105: View of culvert 225 (inlet)

November 25, 2019

Assol Kubeisinova
Technical Advisor, NWB
P.O. Box 119
Gjoa Haven, NU X0B 1J0

RE: Submission of 2019 Geotechnical Inspection Report No. 2 (September 2019)

Under Part D, Item 18 of Baffinland Iron Mines Corporation's (Baffinland) Type "A" Water Licence 2AM-MRY1325 Amendment No. 1 (Water Licence), Baffinland is required to conduct biannual geotechnical inspections of specified Mary River Project (the 'Project") infrastructure. Part D, Item 18, of the Water Licence states that:

> "The Licensee shall conduct inspections of the earthworks and geological and hydrological regimes of the Project biannually during the summer or as otherwise approved by the Board in writing. The inspection shall be conducted by a Geotechnical Engineer and the inspection report shall be submitted to the Board within sixty (60) days of the inspection, including a cover letter from the Licensee outlining an implementation plan to respond to the Engineer's recommendations."

In 2019, Baffinland addressed a significant number of the recommendations arising from the first biannual geotechnical field inspection conducted between June 27 and July 2, 2019. The following summarizes the recommendations which were addressed prior to the second inspection in late September.

- Polishing/Waste Stabilization Ponds (3 PWS Ponds) : Repaired minor damages on the liners on the crest of the berms. Backfilled areas of minor truck-tire related depressions on top of the berms with sand and gravel.
- Mine Site Hazardous Waste Berms (HWB) HWB-3 and HWB-4: Removed damaged wood pallets and other debris from the cells to prevent potential damage to the liners.
- Mine Site HWB-6: Implemented extensive clean-up and repair work at this cell to rectify berm disturbance from truck and foot traffic, and cracking and tearing of the liner identified on the upstream face and crest of the berm. Completion of additional manual fine grading of the rough fill surface will be undertaken during spring/early summer 2020. A single ramped access point was also constructed for this cell.
- Mine Site HWB-7: Reinstated geotextile (covering the liner) and soil cover in areas where minor damages were noticed to prevent potential damage to the liner in the future.
- MS-06 – Surface Water Collection Pond Adjacent to Crusher Pad: Cleaned silt blocked culvert, restoring uninterrupted flow of surface water toward the pond.
- MS-08: Upgraded surface contact water drainage ditches around the waste rock dump and reconstructed the MS-08 sedimentation pond, including removing the existing liner and repairing the subgrade.

- Jet Fuel Storage: Completed maintanance to rectify exposed geotextile fabric exposure at locations along the berm's crest. Additional manual fine grading of the soil cover placed will be completed during the spring/early summer 2020.
- CLSP Check Dams: Baffinland continues to remove and dispose of collected silt at the check dams on an as-needed basis to prevent siltation entering Camp Lake.
- Mine Site Treated Effluent Discharge Area: Placement of rock fill across a naturally eroded area to provide slope stability.
- Milne Port HWB-2: Reconstructed perimeter berm and covered exposed liner. The cell was re-graded using clean granular soils.

Note that due to potential liner damage, Mine Site HWB-1 is currently not used and has been left empty. This facility will not be used for the storage of hazardous waste or substances until it has been repaired. Alternatively, this facility may be decommissioned.

The second biannual geotechnical field inspection for 2019 was conducted by Laszlo Bodi, M.Sc., P.Eng., Principal Civil/Geotechnical Engineer with Wood Environment and Infrastructure Solutions. The focus of the inspection was on the Water Licence related infrastructure located at the Mary River Mine and Milne Port sites. The attached report covers the second inspection, which was conducted from September 23 - 26, 2019.

During the September 2019 inspection, the following site facilities were inspected:

Mary River Mine Site

- Polishing/waste stabilization ponds (PWS ponds 1 - 3)
- Hazardous waste berms - (HWB-1 to HWB-7)
- MS-06 and MS-08 surface water collection ponds and ditches
- Generator Fuel Berm
- Bulk Fuel Storage – aerodrome fuel storage, existing diesel fuel farm, and the new fuel farm
- Solid-waste disposal site (non-hazardous landfill)
- Camp Lake Silt Pond (CLSP) check dams
- Treated effluent discharge area

Milne Inlet Port Site

- Hazardous waste berms - (HWB-1 to HWB-4)
- MP-01A pond
- MP-03 fuel storage
- MP-04 and MP-04A landfarm and contaminated snow dump
- Surface water collection ponds and ditches adjacent to the ore stockpile (MP-05 and MP-06)
- Surface water collection ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380M pad)
- Tote road ditches and culverts (conveying surface water from the quarry area)

The attached report (Attachment 1) presents the findings of the September 2019 inspection and recommendations for the aforementioned structures. The following subsections of this letter summarize Baffinland's plan for implementing recommendations.

Recommendations and Implementation Plan for the Mary River Mine Site Infrastructure

Polishing/Waste Stabilization Ponds (3 PWS ponds)

Wrinkled surficial liner was observed in areas around ponds 2 and 3. Large timbers and other miscellaneous items (e.g. used tires) used as weight to secure the liner in-place pose a risk to the liner should ice develop in areas of trapped water within the liner wrinkles and displace the items across the liner. All hard materials other than used tires should be removed from the liner, as noted during the first (June 27 – July 2) inspection. Timbers should also be removed from inside the ponds and from the surface of the berms to prevent potential liner damage.

Baffinland Action: Clean-up of the specified areas to remove hard materials (except used tires) and timbers during spring/early summer 2020.

Mine Site Hazardous Waste Berms

HWB-6

A few boulders were noted at the northern corner of the cell within the berm's profile. These boulders are prone to ice jacking and should be removed and replaced by granular fill.

Baffinland Action: Remove and replace the boulders at the northern corners with granular fill to ensure continued liner integrity in spring 2020.

MS-06 – Surface Water Collection Pond Adjacent to the Crusher Pad

Minor water seepage was observed as ice mount at the toe of the embankment where the crusher pad ditch embankment fill meets the tundra.

Baffinland Action: The identified seepage at the crusher ditch is currently being assessed and potential remedial measures are being reviewed by Golder Associates.

Generator Fuel Berm

Disturbance by foot-traffic along the berm's crest was noted as well as some sloughing of the upstream slope of the berm at the south-east corner of the pond, as previously identified during the first inspection. Note that the berm did not exhibit any signs of instability and the liner appears to be intact.

Baffinland Action: Re-fill the slope with granular fill and re-grade the area. In addition to the repair work on the slope, the southern, lower section of the berm will be reconstructed to its original geometry prior to July 2020.

Recommendations and Implementation Plan for Milne Port Infrastructure

Milne Port Hazardous Waste Berms

HWB-1

Ripped geotextile and exposed liner were visible at a few locations at higher elevations along the berm, as previously identified during the first inspection.

Baffinland Action: Manually regrade disturbed areas of the berm on the slopes and crest as part of the onsite maintenance program. Cover the exposed geotextile and liner in the specified areas with a protective layer of soil (clean sand and gravel) prior to July 2020.

HWB-3 and HWB-4
The liners within the ponds are intact; however, they are exposed at a few locations on the crest and downstream slopes of the berms as previously identified during the first 2019 inspection.

Baffinland Action: Re-grade and cover areas where liner is exposed with a protective layer of granular fill (clean sand and gravel) prior to July 2020.

MP-01A Pond
Some wooden debris (i.e., lumber, timber, a pallet) was visible inside the pond in one corner.

Baffinland Action: Remove debris to prevent potential liner damage in spring of 2020.

MP-04 and 04A Landfarm and Contaminated Snow Disposal Cells
Exposed liner was visible on the downstream slope of sections of the MP-04 berm, particularly along the north berm, as previously noted during the first 2019 inspection.

Baffinland Action: Regrade and cover areas where liner is exposed with a protective granular fill (clean sand and gravel) prior to July 2020.

Surface Water Collection Ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380M pad)
Ditch side slope failure was observed at the LP2 drainage ditch.

Baffinland Action: Repair LP2 drainage ditch slope deterioration prior to spring freshet and continue to monitor surface water collection ditches.

Tote Road Ditches and Culverts near the Rock Quarry
The flow of water may soften the original native subgrade beneath the road embankment and eventually could create some instability of the embankment.

Baffinland Action: Regrade the upstream area leading to the culverts by placing additional rock fill along the affected sections (toe-berm reinforcement for increased embankment stability) prior to spring freshet 2020.

We trust that this submittal meets the requirements for geotechnical inspections as outlined in the Water Licence. Should you have any questions, please do not hesitate to contact the undersigned.

Regards,

Connor Devereaux
Environmental Superintendent

Attachments:
Attachment 1: 2019 Geotechnical Inspection Report No. 2 (November 22, 2019)

Cc: Karén Kharatyan (NWB)
Chris Spencer, Jared Ottenhof (QIA)
Bridget Campbell, Godwin Okonkwo, Jonathan Mesher, Justin Hack (CIRNAC)
Tim Sewell, Shawn Stevens, Megan Lorde-Hoyle, Lou Kamermans, Christopher Murray, Sylvain Proulx, Francois Gaudreau, Amanda McKenzie, Allison Parker (Baffinland)

Attachment 2

2019 Geotechnical Inspection Report No. 2

Baffinland Iron Mines Corporation

November 22, 2019
Project #: TC190307

Annual Geotechnical Inspections – 2019 Report 2.

Mary River Iron Mine – Nunavut

November 22, 2019
TC190307

Mr. Connor Devereaux - Environmental Superintendent, Mary River Iron Mine
Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, Ontario
L6H 0C3

Re: Annual Site Inspections and Reporting - Mary River Iron Mine, Nunavut

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), has been retained by Baffinland Iron Mines Corporation to carry out Annual Geotechnical Engineering Services at the Mary River Iron Mine in Nunavut. Based on information and guidance provided in connection with the site's infrastructure, the undersigned has completed the second of the required two 2019 inspections and summarized the findings in the following report. In addition to field observations, the following historic reports had also been reviewed:

- Annual Geotechnical Site Inspections (2016) – SNC Lavalin
- Annual Geotechnical Site Inspections (2017) – ARCADIS Design and Consultancy
- Annual Geotechnical Site Inspections (2018) – SNC Lavalin
- Annual Geotechnical Site Inspections (2018 August and October) – B.H. Martin Consultancy
- Annual Geotechnical Site Inspections – Wood E&I Report 1 – August 2019

We trust that the content of this report meets your expectations. Should you have any questions regarding the details presented in the following document, please do not hesitate to contact our office.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

REGISTERED PROFESSIONAL ENGINEER
L. BODI
LICENSEE
NT/NU

Laszlo Bodi, M.Sc.; P.Eng. – Principal Civil/Geotechnical Engineer
Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

Table of Contents

Page

1.0 Introduction

Wood Environment & Infrastructure Solutions (Wood), has completed the second geotechnical field inspection of 2019 at the Mary River Iron Ore Mine, which is a condition of the Type A Water Licence No: 2AM-MRY1325 – Amendment No.1 (Water Licence).

In accordance with the Water Licence, the field inspections shall include the review of various engineering facilities that contain waste materials (hazardous and non-hazardous), and store or retain/convey water (ponds and drainage ditches) at the Mary River Iron Mine and Milne Inlet Port sites. The field review assessed the stability of the berms and slopes, and potential seepage problems from the ponds, if any. As specified by the Nunavut Water Board, the conditions of the above listed infrastructure components need to be visually inspected and documented by photographs.

In addition to the condition survey of the above noted infrastructure components, critical watercourse crossings (bridges and selected culverts) were also reviewed during the June 27 to July 2, 2019 inspection along the Tote Road, connecting the Mary River and Milne Inlet Port sites. The culverts and bridges were not inspected during the second visit, because their condition remained the same as reported by William Bowden, Environmental Superintendent at the site. Minor work at four culverts, recommended in the August 31, 2019 report, will be carried out during the coming winter of 2019/2020, and those selected culverts will be revisited during next year's summer inspection.

The structures inspected during the second visit (between September 23, 2019 and September 26, 2019) included the following:

A. Mary River Iron Mine Site

a) Polishing/Waste Stabilization Ponds (3)
b) Hazardous Waste Berms - (HWB-1 to HWB-7)
c) MS-06 and MS-08 surface water collection ponds and ditches
d) Generator Fuel Berm (genset pond, located adjacent to the generators)
e) Fuel Storage Areas (3) – (jet fuel storage, existing and new fuel storage)
f) Solid-waste disposal site (non-hazardous landfill facility)
g) Camp Lake Silt Pond (CLSP) silt sedimentation control cells and berms
h) Water (effluent) discharge area

B. Milne Inlet Port Site

a) Hazardous Waste Berms - (HWB-1 through to HWB-4)
b) MP-01A pond
c) MP-03 fuel storage
d) MP-04 landfarm and 04A snow disposal cell

e) Surface water collection ponds and ditches adjacent to the ore stockpile (MP-05 and MP-06)
f) Surface water collection ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380M pad)
g) Tote road ditches and culverts (conveying surface water from the quarry area)

The above listed infrastructure components were visually inspected between September 23 and 26, 2019, by the author of this report, Laszlo Bodi, P.Eng. of Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited. During the inspection program the condition of the structures was documented, and the findings are summarized in the this report. It shall be pointed out that at the time of the inspection the surface of the stored water in most of the ponds (wherever present) was covered with a thin layer of ice. Snow also covered some of the infrastructure components, as shown in relevant photographs in Appendices A and B.

The locations of key inspected structures, ponds and ditches are shown in the following figures:

a) Mary River Iron Mine site - Northern, Central and Southern zones: Figures 1, 2 and 3
b) Milne Port site - Central zone: Figure 4

A full set of photographs of the inspected structures are presented in the following appendices:

- Appendix A: Mary River Mine site – Figures 5 to 38
- Appendix B : Milne Port site - Figures 39 to 60

Figure 1: Site layout – Mary River Iron Mine Site - Northern Zone

Figure 2: Site layout – Mary River Iron Mine Site - Central Zone

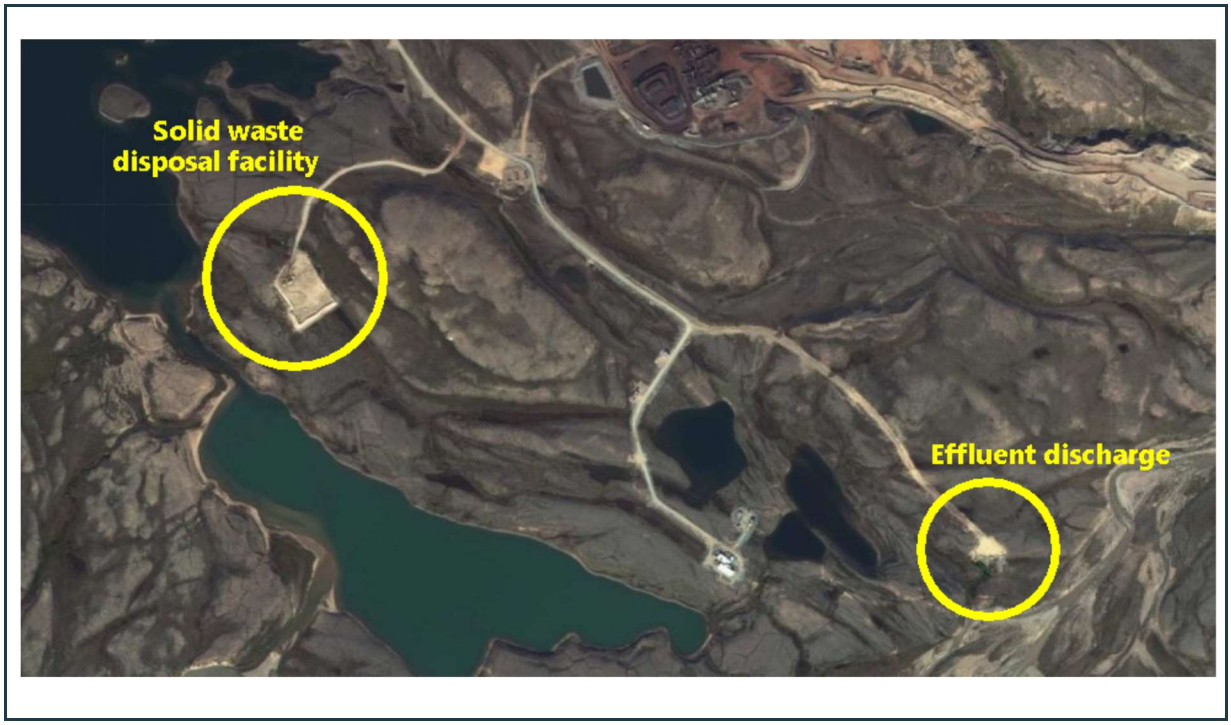


Figure 3: Site layout – Mary River Iron Mine Site - Southern Zone

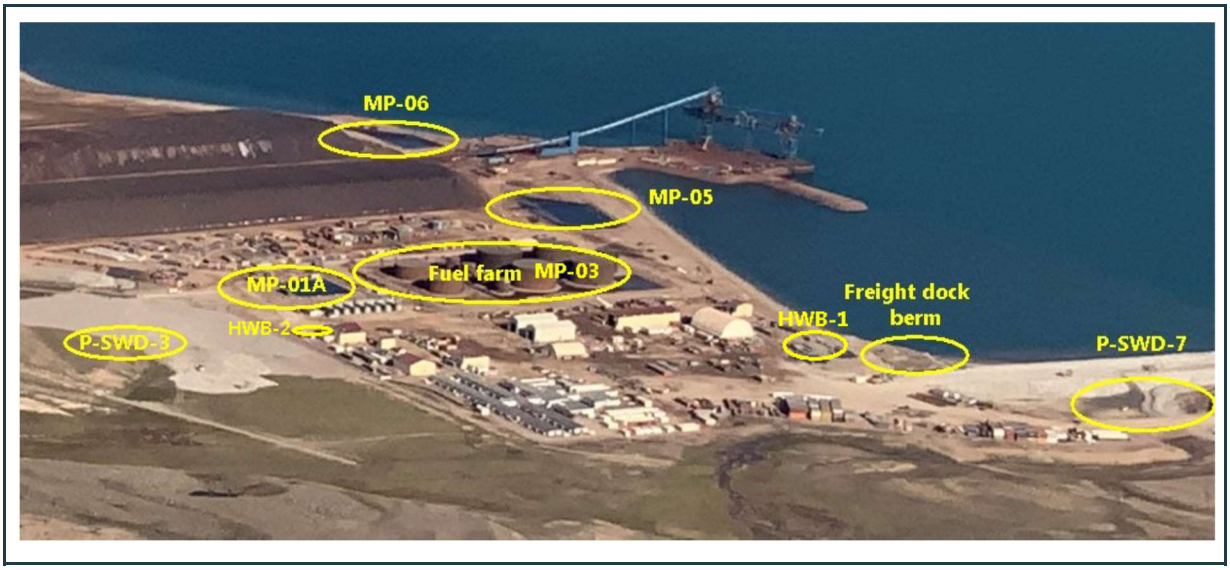


Figure 4: Site layout – Milne Inlet Port Site – Central Zone

Details of the condition survey of the individual structures are summarized in the following sections of the report, while the photographs are shown in Appendix A (mine site) and Appendix B (port site), as integral parts of the document.

2.0 Mary River Iron Mine Site

2.1 Polishing/Waste Stabilization Ponds (3 PWS ponds)

There are three polishing/waste stabilization ponds, located adjacent to the central section of the runway, as shown in Figure 1. Pond #1 is a single structure, while Ponds #2 and #3 had been constructed as a twin-cell structure. According to previous inspection reports, these ponds were associated with the exploration phase of the mine, and currently serve as emergency holding ponds in case problems arise, to prevent the discharge of non compliant effluent directly to the receiving environment.

The berms around the three ponds generally comprise granular soils (sand and gravel), supporting High Density Polyethylene (HDPE) geomembrane liners. The liners are secured in anchor trenches on the crest of the berms, and no damage is visible on the membranes within the ponds. Minor damages on the liners on the crest of the berms (above the maximum water/freeboard line), observed during the June 27 to July 2, 2019 inspection, have been repaired, as shown in Figure 5.

As shown in Figures 5 to 7, the berms around the three ponds are stable, having shallow downstream slopes. They were built by using non-frost-susceptible well compacted granular materials. Based on previous site observations, it appears that the subgrade beneath and around the berms comprise thaw-stable granular soils with trace to some fines. Hence, the berms are assumed to have stable foundations.

This assumption is further supported by the fact that there are no indications of differential settlements, sinkholes, sloughing, etc. at the perimeter berms. Previously, some minor truck-tire related damages (e.g., depression on the crest's surface and related densification) were observed at the top of the berms; however, most of these depressions have recently been backfilled by using sand and gravel, as shown in Figures 5 and 6.

As pointed out above, the berms appear to be structurally stable, and no visible wet downstream slopes and toe seepage was noted. However, as was previously identified in the August 31 inspection report and shown in Figure 8, the surface appearance was not found to be orderly at the front of the water discharge pipes at the middle of the south-western perimeter berm at its juncture with the central berm between ponds #2 and #3. Namely, heavily wrinkled surficial liner was observed to cover the crest at this location and at the junction of the berms. It is suspected that this may have been a water discharge point for further conveyance of the discharged water into the two adjacent ponds.

Large timbers and miscellaneous other elements (e.g., used tires etc.) are utilized as weight to secure the surficial liner in-place at the berm's crest at this location. The downside of this measure is potential ice development in areas of trapped water within the wrinkles, and this could have a potential to displace the above elements across the liner and consequently, result in liner damage (e.g., cracking). Under this scenario, there is a potential of berm fill saturation. As a cautionary measure, it is recommended to clean-up this area and remove all hard materials other than used tires from above the liner. Existing tires, and perhaps addition of more used tires to counterweight the removed weight, will reduce the risk against wind uplift. Furthermore, timbers (shown in Figure 7) should also be removed from inside the ponds and from the surface of the berms, to prevent potential liner damage.

2.2 Hazardous Waste Berms

There are seven hazardous waste berms at the Mary River mine site (HWB-1 to HWB-7), as shown in Figure 1. HWB-6 is located at the north side of the runway near the incinerator. The other six cells are located along the south side of the runway. All HWB cells are lined and comprise shallow perimeter berms. There is no visible instability at the berms (sloughing, excessive settlement or tension cracks), other than some soil displacement by foot and truck traffic on the surface of the slopes and crests at a few locations. It was recommended in the August 31, 2019 inspection report that foot and truck traffic on the slopes and crest of the berms should be limited, with controlled/ramped access points (preferably one) provided for trucks and skid-steers to dispose/remove materials in the cells. Following those recommendations, ramped access points have been provided to the cells and one representative recently constructed ramp is shown in Figure 15.

a) HWB-1

This cell is currently empty, with no water or ice visible within the cell (Figure 9). Based on information obtained during the June 27 to July 2, 2019 visit, it is understood that potential liner damage was suspected here, and consequently no material is stored in the cell.

b) HWB-2

As shown in Figure 10, the perimeter berm around the HWB-2 cell appears to be stable. All previously stored materials have been removed and hence, no waste is currently stored in the cell.

c) HWB-3 and HWB-4

These cells are located side-by side and were called, in previous reports, "Fuel Containment" cells. As shown in Figures 11 and 12, there are only fuel barrels visible now in these two cells, stored on wooden pallets. The berms are stable and there is no visible liner damage in these cells. As recommended in the August 31, 2019 report, all damaged wood pallets and other debris have been removed from the cells to prevent potential damage to the liners.

d) HWB-5

As shown in Figure 13, this cell is currently empty. The few totes of lubricants that were visible during the June 27 to July 2, 2019 inspection, have been removed from the cell. As pointed out in the earlier report, the berms around the cell appear to be stable and there is no visible liner damage.

e) HWB-6

It was highlighted in the August 31, 2019 report that the HWB-6 cell was in poor condition. The berms showed extensive damage by truck and foot traffic, particularly at the northern section of the berm. Cracking and tearing of the liner were also visible at several locations on the upstream face and crest of the berm during the June 27 to July 2 inspection.

Following our recommendations, an extensive clean-up, repair and construction program was implemented at this cell. Reportedly, based on verbal information from William Bowden, Environmental Superintendent at the site, the damaged liner areas was patched and granular soil was brought to the site to cover the liner and improve the berm's profile. As specified in the August 31, 2019 report, a single ramped access point has also been provided to the cell, as shown in Figure 15. The images in Figures 14 and 15 indicate that the earthwork (fill placement on the crest and slopes of the berm) was undertaken using construction equipment (e.g., dozer and backhoe). Additional manual fine grading of the rough fill

surface will be completed during the spring, 2020. A few boulders have also been noted at the northern corner of the cell within the berm's profile. These boulders are prone to ice jacking and should be therefore removed and replaced by granular fill.

f) HWB-7

Based on information obtained from historic reports, the HWB-7 cell was a bulk fuel storage facility in the past. There were fuel barrels, lubricant totes and a large fuel tank visible in the cell during the June 27 to July 2, 2019 inspection. All items except the large fuel tank, have been removed from this cell, as shown in Figure 16. The perimeter berm around three sides of the cell has remained stable since the preceding inspection. There is an access ramp on the outer side of the cell with shallow slopes allowing safe truck access.

2.3 MS-06 and MS-08 Surface Water Collection Ponds and Ditches

a) MS-06 – Surface Water Collection Pond Adjacent to the Crusher Pad

The MS-06 pond collects surface water from the area of the crusher site. The water is collected in perimeter ditches around the crushed and stockpiled ore and conveyed via those open ditches into the pond. There are two intake locations at the northeast and southeast corners, and there is an emergency spillway located opposite and to the east of the intakes. The liner on the upstream slopes of the berm is intact, as shown in Figure 17, and thin ice covered the stored water in the pond. The liner integrity within the pond is assumed to be intact as no wet downstream slopes or toe seepage were visible on and at the toe of the perimeter berm.

The side slopes of the water collection ditches were observed to be stable, as shown in Figure 18. The corrugated steel culvert, conveying the collected surface run-off from the crusher area to the pond (located beneath the tote road), was almost fully clogged with silt during the June 27 to July 2, 2019 visit. That culvert has been cleaned, providing uninterrupted flow of surface water toward the pond (Figure 19).

Minor water seepage was observed as ice mount at the toe of the embankment where the crusher pad ditch embankment fill meets the tundra, as shown in Figure 20.

b) MS-08 – Surface Water Collection Pond Adjacent to the Waste Rock Dump

The waste rock dump is located east of the mine at higher elevation, and it is surrounded by new surface water collection ditches that were being upgraded based on preceding recommendations, as shown in Figures 21 to 23. Similarly, the MS-08 sedimentation pond was being upgraded during the inspection. Some water seepage from the pond had been reported historically, however, no seepage or evidence of seepage was observed during either the June 27 to July 2, 2019 or the September 23-26, 2019 inspections. As part of added assurance in relation to seepage risk mitigation, Baffinland is currently undertaking

complete reconstruction of the MS-08 pond and replacement of the "old" crescent-shaped semicircular berm with new perimeter berms. The pond was being lined at the time of the current inspection, as shown in Figures 24 and 25. As noted during the inspection, the liner is properly anchored into the berm crest around the pond and extends beyond the active zone into to the permafrost, to prevent under-drainage.

Water from the pond is pumped to the nearby designated facility for treatment. There is a lined treatment area located immediately next to the treatment plant with stable perimeter berms. Water treatment issues in relation to this area have not been reported and the entire facility appears to be fully functional. At the time of the inspection, the water in the pond was covered with ice and snow, as shown in Figure 26.

2.4 Generator Fuel Berm

The generator fuel berm contained water with frozen surface during the inspection, covered with some snow. According to information provided by William Bowden, Environmental Superintendent at the site, this cell historically contained a fuel bladder for the gensets at the weatherhaven complex. The pond is located adjacent to the power generators, south-west of the hazardous waste cells (Figure 1). As shown in Figures 27 and 28, the perimeter berm around the pond generally comprises granular materials and the pond is lined. Disturbance by foot-traffic along most of the berm's crest with some visible sloughing of the upstream side of the berm at the south-east corner of the pond has remained the same since the preceding (June 27 to July 2, 2019) inspection (see Figure 28).

Placement of granular fill on the crest and slopes, particularly at the southern, somewhat lower section of the berm, was recommended in the preceding inspection report to re-establish its original configuration. It is understood that the recommended maintenance work at this pond will be carried out during spring/early summer, 2020.

The berm did not exhibit any signs of instability and exposed sections of the liner were observed to be intact. Also, no seepage from the pond was noted on the berm's downstream slope at the time of the inspection.

2.5 Bulk Fuel Storage

There are three bulk fuel storage areas at the Mary River mine site, two operating and one recently constructed. The berms around them are in excellent conditions, as shown in Figures 29 to 33 in Appendix A.

a) Jet Fuel Storage

The jet fuel storage area is located at the aerodrome and it is surrounded by perimeter berm with no visible signs of instability. In addition, a second berm provides additional protection at two sides of the

facility, constructed by using crushed rock fill. The geotextile fabric (liner cover) was exposed at a few locations along the berm's crest during the June 27 to July 2, 2019 inspection. Completion of maintenance work carried out prior to the subject inspection included placement of roughly graded soil cover, composed of sand and gravel, as shown in Figures 29 and 30. Additional fine grading (manual) is recommended on the berms following the next spring.

b) MS-03 Diesel Fuel Storage

The berms around the diesel fuel storage are in excellent condition (see Figure 31), and they are well maintained year-round. The contained clean water from precipitation within the cell is an indication of the proper liner system functionality (i.e., no seepage from the cell is visible and the liner is well protected by granular fill throughout the facility).

c) New Fuel Storage (recently constructed)

The new fuel storage, shown in Figures 32 and 33, has been recently constructed. The tank farm's new containment earthern structure did not exhibit any signs of instability, including seepage. Based on field observations it appears that the geosynthetic liner component of the structure has received protective soil cover throughout.

2.6 Solid Waste Disposal Area

The solid waste disposal area is in the southern zone of the Mary River mine site, as shown in Figure 3. Only non-hazardous solid waste is placed into this facility. As shown in Figure 34, the solid waste placed into the facility is covered with a layer of locally available clean soils. No signs of instability were observed during the inspection.

2.7 CLSP Silt-sedimentation Check Berms

The CLSP silt sedimentation control berms are located along the access road to the mine's water intake jetty. The primary purpose of these structures is to collect fine soil particles that are eroded from the adjacent area, and to prevent siltation around the water intake structure. As shown in Figures 35 and 36, the berms do not exhibit any signs of instability, and were observed to be efficient for sediment catchment.

2.8 Water (Effluent) Discharge Area

The effluent discharge point is located south of the Mary River mine complex, as shown in Figure 3. There are several discharge pipes at that location, conveying the discharged water down the slope toward the

adjacent river. Trucks also bring water for discharge to this location and let the water flow down on the adjacent embankment, comprising crushed rock fill, as shown in Figure 37. The rock fill slope appears to be stable and no evidence of surface erosion or instability was observed during the inspection within the immediate discharge area.

Minor surface erosion was noted adjacent to the rock fill slope during the June 27 to July 2, 2019 inspection, within the native material of the slope. It was pointed out that although the erosion did not seem to affect overall slope stability, placement of crushed rock fills over the eroded areas was suggested, to prevent any potential regressive erosion in the future. Following our recommendations, rock fill has been placed across the eroded area, as shown in Figure 38. The crushed rock fill provides long-term erosion protection and improves the stability of the slope in the area.

3.0 Milne Inlet Port Site

3.1 Hazardous Waste Berms - (HWB-1 to HWB-4)

There are four hazardous waste berms at the Milne Inlet Port site. HWB-1 and HWB-2 cells are single detached structures, located north-east and south-east of the large fuel storage area, respectively. HWB-3 and HWB-4 are twin-cells, located south/south-west of the fuel storage tank farm.

a) HWB-1

The HWB-1 cell covers a relatively large area, surrounded by well-built perimeter berm, constructed of granular fill material, with no visible signs of instability or seepage (Figures 39 and 40, in Appendix B). The cell predominantly contains bagged waste materials, stored on wooden pallets. No ponding water and no signs of seepage from the pond were visible along the berm toe. However, ripped geotextile and exposed liner were noted at a few locations at higher elevations along the berm, as shown in Figure 40. It is recommended that, as part of the maintenance program, the disturbed areas of the berm (generally by foot traffic) on the slopes and crest be re-graded manually and all exposed geotextile and liner areas covered with a protective layer of soil (clean sand and gravel).

b) HWB-2

The HWB-2 is a relatively small cell with stable shallow berms that has recently been re-graded by using clean granular soils. As shown in Figure 41, only empty containers on wooden pallets and clean construction machine attachments are currently stored in this cell.

c) HWB-3 and HWB-4

The HWB-3 and HWB-4 cells are located immediately next to each other (twin-cells) and contain shipping containers only, as shown in Figures 42 to 44. The berms appear to be in good condition with no visible signs of slope instability (e.g., movements or settlement). The liner was found to be exposed at a few locations on the crest and downstream slopes of the berms, as shown in Figures 43 and 44. It is recommended that all exposed liner areas be regraded and covered with a protective layer of granular fill (clean sand and gravel), to ensure proper liner performance in the long run.

3.2 MP-01A Pond

The MP-01A polishing waste stabilization pond is located immediately south of the MP-03 fuel storage. As shown in Figure 45 the berm around the pond had no visible signs of instability and exposed liner areas were found to be intact. No seepage from the pond was noted during the field inspection. However, some wooden debris (i.e., lumber, timber and pallet) were visible inside the pond in one corner (see Figure 45). The debris must be removed to prevent potential damage to the liner.

3.3 MP-03 Fuel Storage

The MP-03 fuel tank farm is a fenced facility that occupies a large area in the center of the Milne Inlet port site. As shown in Figure 46, the berms around the facility, composed of compacted granular materials, were observed to be well maintained and with no visible signs of instability or evidence of seepage. The minor visible ponded water (with a thin ice cover) within the internal cells, is supportive of proper liner functionality.

3.4 MP-04 and 04A Landfarm and Contaminated Snow Disposal Cells

The MP-04 and MP-04A cells are located south of the port complex at higher elevation, adjacent to the rock quarry. MP-04 is a large landfarm cell that predominantly stores contaminated soils, as shown in Figure 47. The berm structure around the cell did not exhibit any signs of instability or evidence of seepage. However, the liner was found to be exposed (e.g. lacking protection of soil cover) on the downstream slope sections of the berm. This was particularly prominent along the north berm. It is recommended that the respective exposed liner areas (see Figure 48) be provided with protective gravel layer (e.g. wind uplift prevention).

MP-04A is a smaller cell used generally for the disposal of contaminated snow impacted by hydrocarbons. This pond was constructed immediately adjacent to the MP-04 landfarm cell, shown in Figure 49. There were no visible signs of instability or evidence of seepage pertaining to the earthen containment. The

evidence of ponded water in conjunction with the lack of downstream seepage is supportive of proper liner performance.

3.5 Surface Water Collection Ponds and Ditches (MP-05 and MP-06)

The high-grade iron ore that is mined, crushed, and screened at the Mary River site is transported to the Milne Inlet port, and stockpiled across a large flat area. Contact water in the area is collected along all sides of the ore stockpile in collection ditches and conveyed into two water collection ponds, MP-05 and 06 respectively (Figure 51).

The MP-05 pond is located adjacent to the north-east corner of the stockpile, while MP-06 has been constructed at the north-west corner. Both ponds were observed to be functional with well-maintained containment berms and intact liners, exhibiting no visible signs of instability (e.g., erosion or settlement, etc.), as shown in Figures 50 and 52.

Both water collection ponds have emergency spillways and the frozen water level in both ponds was well below the spillways' inverts at the time of the inspection.

3.6 Surface Water Collection Ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380M pad)

There are several water collection drainage ditches (listed above), most of them still under construction or continuous improvement, as shown in Figures 53 to 58. These open ditches are excavated partly into the native soils with their sides and inverts ligned with erosion protection layers composed of fine crushed rock from the local quarry. It was noted during the inspection that geotextile have been used in areas where the native soil subgrade was composed of fine-grained material to prevent migration of fines into the voids of the rockfill. It is recommended that the condition of these ditches be monitored, particularly prior to the spring freshet, and that any slope deterioration be rectified to ensure an unobstructed functionality of the ditches. One such obstruction, a consequence of ditch side slope failure observed at the LP2 drainage ditch (see yellow circle in Figure 53) will require repair ahead of the spring freshet.

3.7 Tote Road Ditches and Culverts Near the Rock Quarry

Surface water from higher elevation around the rock quarry is collected in drainage ditches and conveyed down the slope through corrugated galvanized steel culverts, installed under the quarry road and then under the Tote Road. The water in the ditches is then conveyed to small natural ponds, located along the west side of the Tote Road, as shown in Figure 59. As reported earlier, the fill in the area (road embankment and slope cover) comprises crushed rock fill, and therefore a portion of the surface water have the tendency to bypass the two culverts beneath the Tote Road embankment (through-flow) and finds its way to the nearby ponds (see Figure 59) in open, shallow channels. The flow of such water may

soften the original native subgrade beneath the road embankment and potentially destabilize the road embankment. As recommended in the August 31, 2019 inspection report, and to increase the stability of the Tote Road's embankment in the affected areas, construction of a rock fill toe berm is recommended along the affected sections (approximately 50 m south and north from the twin culverts, shown in Figure 59) of the Tote Road.

4.0 Conclusions

Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), has completed the second of the two required geotechnical field inspections of 2019 at the Mary River Iron Ore Mine Complex in Nunavut. Based on field observations, the condition of the inspected infrastructure components can be summarized as follows:

- All ponds and waste disposal cells are enclosed by relatively shallow, stable berms. The berms show no signs of instability (e.g., tension cracks, excessive settlements, notable slope erosion, etc.). These structures were constructed using thaw-stable granular materials, placed over thaw-stable subgrades (based on extrapolated observations from areas adjacent to their footprints). Minor disturbance on the surface of the slopes and crests were noted at some of the berms, however, these remaining discrepancies can be rectified by a continued maintenance (regrading) program. Additional manual grading of the recently placed granular fills on selected berms will be necessary during spring 2020. As specified in the August 31, 2019 inspection report, foot and truck traffic on the berms should generally be limited to one ramped access point. That recommendation was implemented by Baffinland and observed during the second geotechnical inspection.
- The surface water and waste storage ponds comprise HDPE liners, generally in good conditions. No seepage from the currently operating cells was noted around the berms. Most of the previously noted damages have been repaired by Baffinland and only minor damages to the liners were noted during the recent inspection, all above the water lines only. As specified earlier and reiterated herein, such minor damages to the liners should be repaired as soon as practically possible.
- Open ditches across the Mary River and Milne Inlet sites are generally in good conditions with minor erosion and side movements visible at a few locations only. As part of a more frequent maintenance program, it is recommended that the identified eroded sides of the ditches be regraded as well as that the excess silt from the ditches be removed (if any) and disposed off in designated areas.

5.0 Closing Remarks

We trust that the above technical report provides you with satisfactory information in connection with the reviewed infrastructure components at the selected sites of the Mary River Operation.

Should you have any questions regarding this report, please do not hesitate to contact our office.

Sincerely,

Wood Environment & Infrastructure Solutions
a Division of Wood Canada Limited

Prepared by:

Laszlo Bodi, M.Sc., P.Eng.
Principal Geotechnical Engineer
Tel: (905) 568-2929
laszlo.bodi@woodplc.com

Reviewed by:

Aleksandar (Sasha) Živković, M.Sc., P.Eng.
Principal Geotechnical Engineer
Tel: (905) 568-2929
aleksandar.zivkovic@woodplc.com

Baffinland Iron Mines Corporation

November 22, 2019
Project #: TC190307

Annual Geotechnical Inspections – 2019 Report 2.

APPENDIX "A" - Mary River Mine Site - Photographs

Figure 5 to Figure 38

Table of Contents

Page

1.0 Mary River Mine Site

1.1 Polishing/Waste Stabilization Ponds (3 PWS ponds)

Figure 5: PWS pond #1 – View of repaired liner and additional fill on the berm's crest.

Figure 6: PWS pond #2 – View of the berm and frozen water in the pond.

Figure 7: PWS pond #3 – Timber/lumber debris visible on the crest that should be removed.

Figure 8: PWSP #2 and #3 – Untidy conditions at the water discharge point between ponds #2 and #3.

1.2 Hazardous Waste Berms (HWB)

a) HWB-1

Figure 9: View of HWB-1 – Currently this cell is empty.

b) HWB-2

Figure 10: View of HWB-2 – Currently the cell is empty.

c) HWB-3 and HWB-4

Figure 11: View of HWB-3, with fuel barrels stored on wooden pallets.

Figure 12: View of HWB-4, with fuel barrels stored on wooden pallets.

d) HWB-5

Figure 13: View of HWB-5, located immediately adjacent to HWB-1. Both cells are currently empty.

e) HWB-6

Figure 14: View of the HWB-6 cell, with additional fill placed recently on the berm.

Figure 15: View of HWB-6, with recently completed access ramp through the raised berm.

Figure 16: View of HWB-7, with only one fuel tank stored in the large cell.

1.3 MS-06 and MS-08 Surface Water Collection Ponds and Ditches

a) MS-06 – Surface Wat er Collection Pond Adjacent to the Crusher Pad

Figure 17: MS-06 surface water collection pond (low water level with frozen surface).

Figure 18: Surface water collection ditch around the crusher plant.

Figure 19: Surface water collection ditch, with recently cleaned culvert.

Figure 20: Minor water seepage as ice mount at the toe of the embankment where the crusher pad ditch embankment fill meets the tundra.

b) Perimeter drainage ditches and MS-08 pond next to the waste rock dump

Figure 21: View of the waste rock dump.

Figure 22: Snow-filled ditch under construction around the waste rock dump (south-east side).

Figure 23: Snow-filled ditch under construction around the waste rock dump (north-west side).

Figure 24: Construction of the new MS-08 pond, immediately adjacent to the waste rock dump.

Figure 25: Liner installation in the new MS-08 pond, currently under reconstruction.

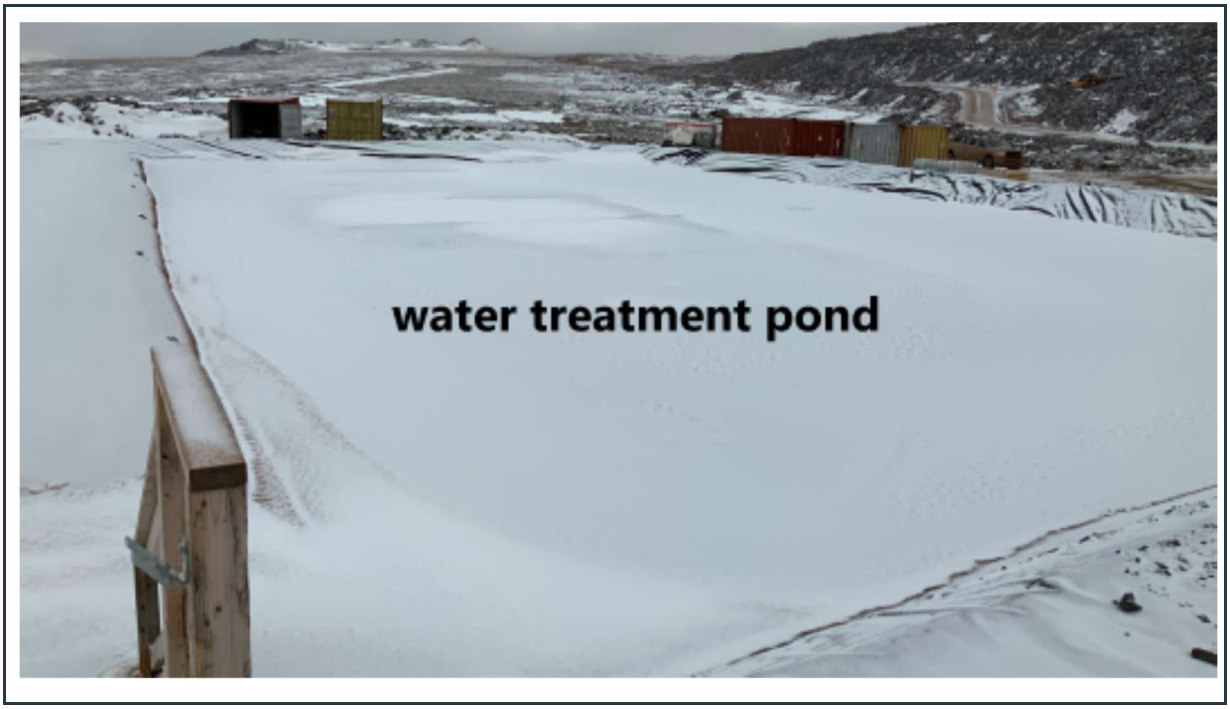


Figure 26: Water treatment pond adjacent to the waste rock dump and MS-08 (ice and snow covered).

1.4 Generator Fuel Berm

Figure 27: View of the locally low generator berm (high water level with frozen surface).

Figure 28: View of minor slope problem at the south-east corner of the generator berm.

1.5 Bulk Fuel Storage

a) Jet Fuel Storage

Figure 29: View of the berm around the jet fuel storage with two fuel tanks.

Figure 30: Recently placed granular fill on the berm's crest, to protect the previously exposed liner.

b) MS-03 Diesel Fuel Storage

Figure 31: View of the MS-03 diesel fuel storage with frozen water surface.

c) New Fuel Storage

Figure 32: View of the recently completed new fuel storage.

Figure 33: View of the recently completed new fuel storage at the Mary River site.

1.6 Solid Waste Disposal Area

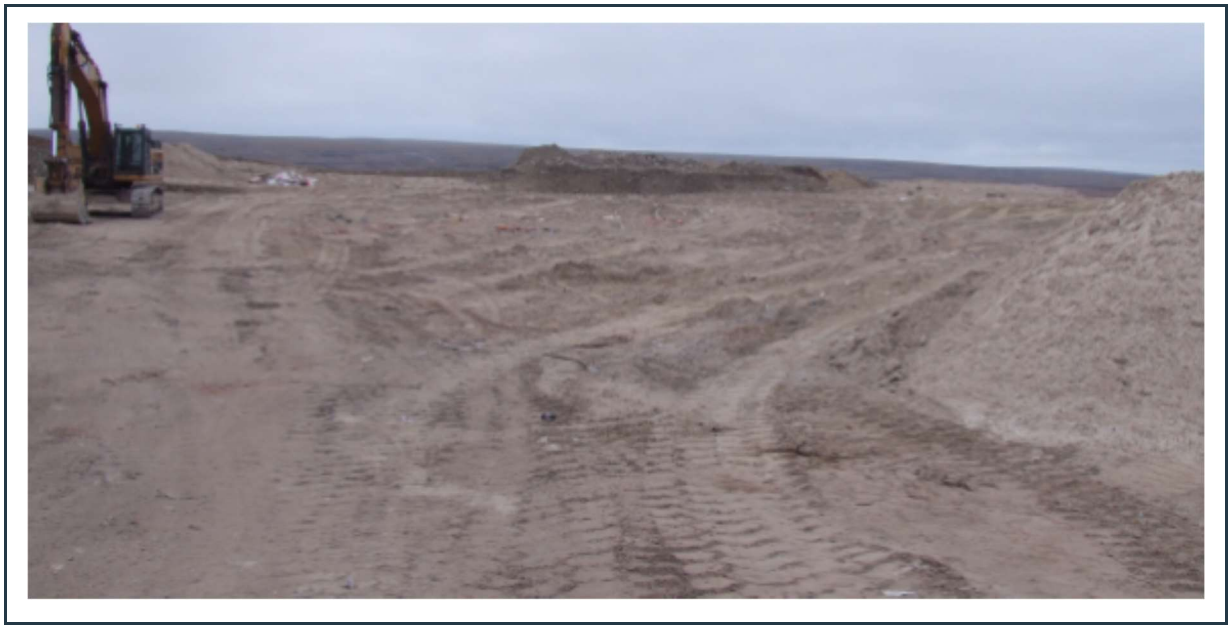


Figure 34: Solid waste disposal facility (waste continuously covered with clean soil fill).

1.7 CLSP Silt-sedimentation Check Berms

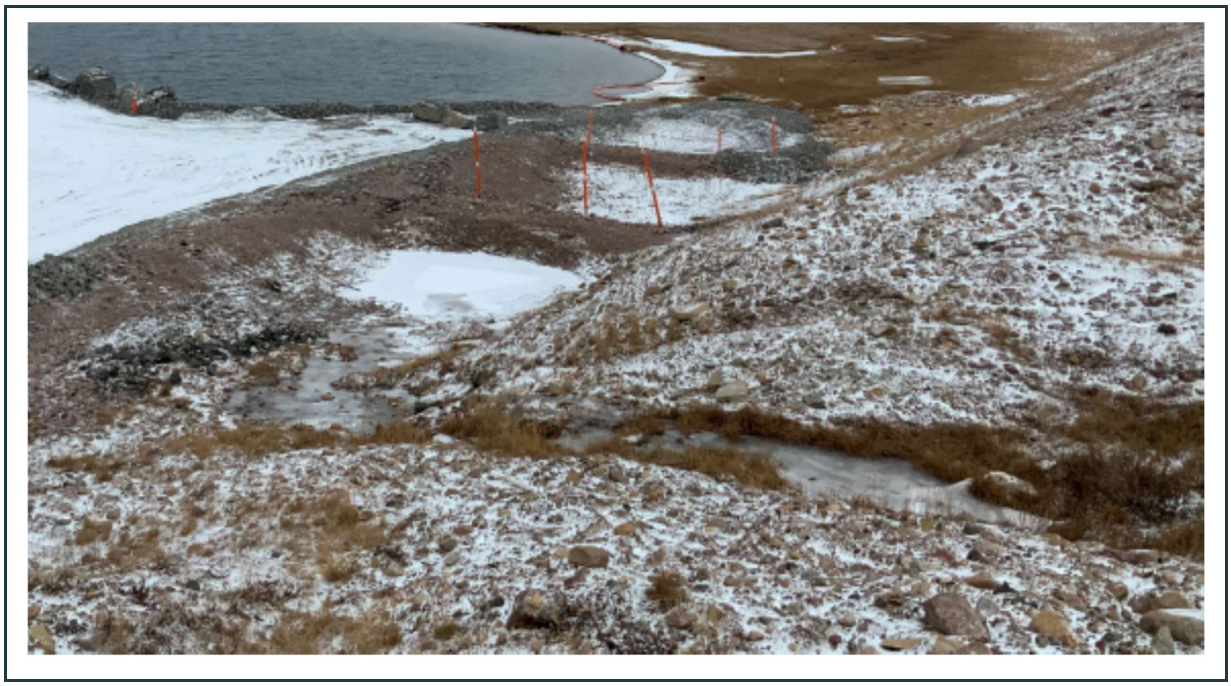


Figure 35: CLSP check berms and silt sedimentation cells.

Figure 36: Use of floating silt curtains in the vicinity of the CLSP check berms.

1.8 Water (Effluent) Discharge Area

Figure 37: Water (effluent) discharge area. Stable slope, comprising a mix of crushed rock and soils.

Figure 38: Recently stabilized slope erosion adjacent to the water (effluent) discharge site.

Baffinland Iron Mines Corporation

November 22, 2019
Project #: TC190307

Annual Geotechnical Inspections – 2019 Report 2.

APPENDIX " B" – Milne Inlet Port Site - Photographs

Figure 39 to Figure 59

Table of Contents

Page

1.0 Milne Inlet Port Site

1.1 Hazardous Waste Berms - (HWB-1 to HWB-4)

a) HWB-1

Figure 39: View of the HWB-1 cell, with large empty area in its center.

Figure 40: Ripped geotextile and exposed liner at the stable northern berm of the HWB-1 cell.

b) HWB-2

Figure 41: View of the HWB-2 cell (only empty containers and "clean" machine attachments are stored).

c) HWB-3

Figure 42: View of the HWB-3 cell, containing frozen water and shipping containers.

d) HWB-4

Figure 43: Perimeter berm at the HWB-4 cell, with exposed geotextile and liner.

Figure 44: Exposed liners between the HWB-3 and HWB-4 cells.

1.2 MP-01A Pond

Figure 45: Berms and liner in good condition, with stable slopes around the MP-01A pond.

1.3 MP-03 Fuel Storage

Figure 46: View of stable, well maintained berms around the MP-03 fuel storage.

1.4 MP-04 and 04A Landfarm and Contaminated Snow Disposal Cell

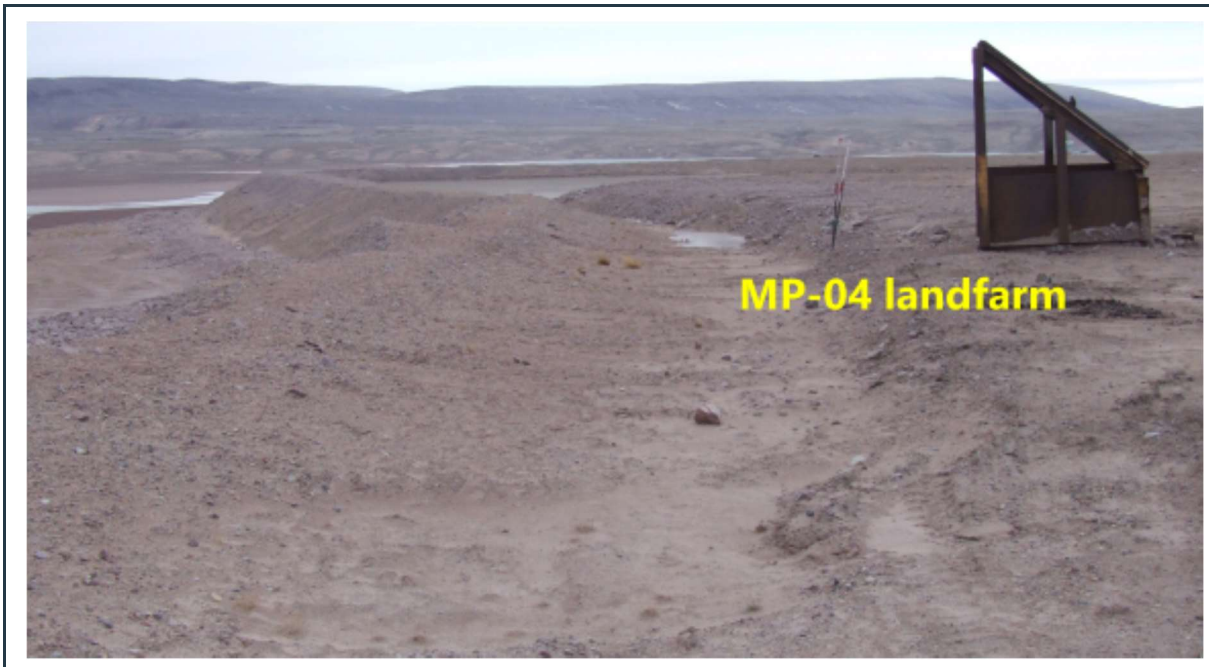


Figure 47: View of stable berms around the MP-04 landfarm.

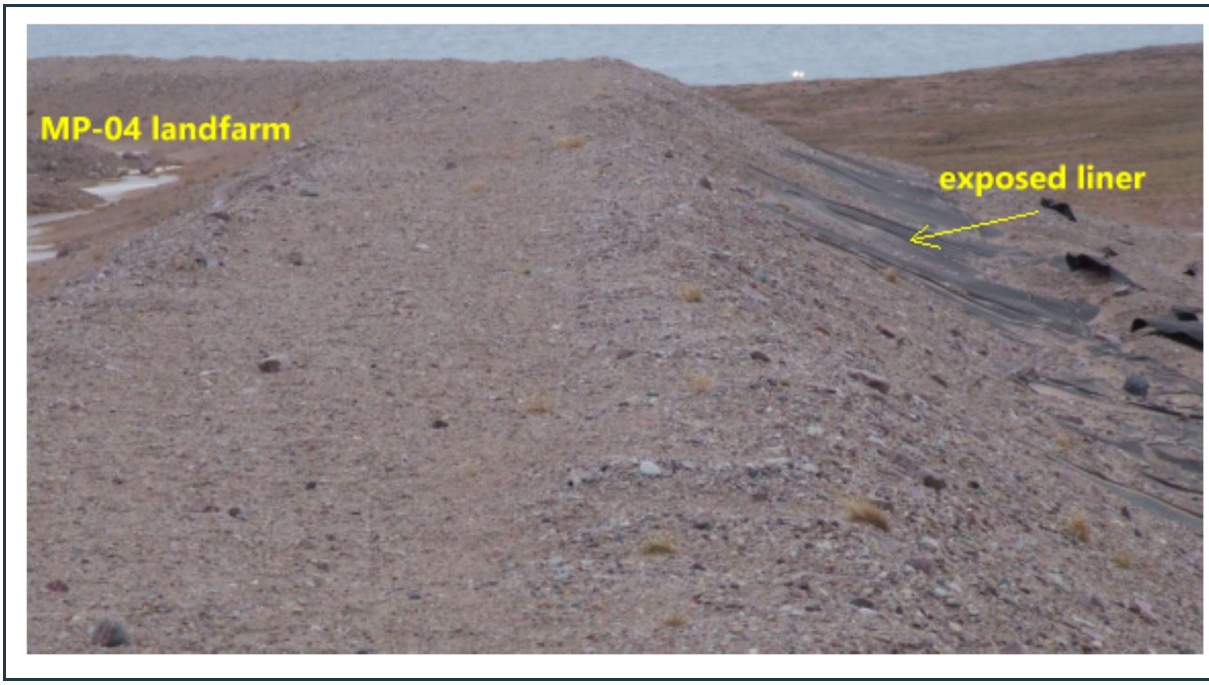


Figure 48: Stable berm at the MP-04 landfarm, with exposed liner on the downstream slope.

Figure 49: Stable berms and frozen water at the MP-04A contaminated snow dump.

1.5 Surface Water Collection Ponds and Ditches (MP-05 and MP-06)

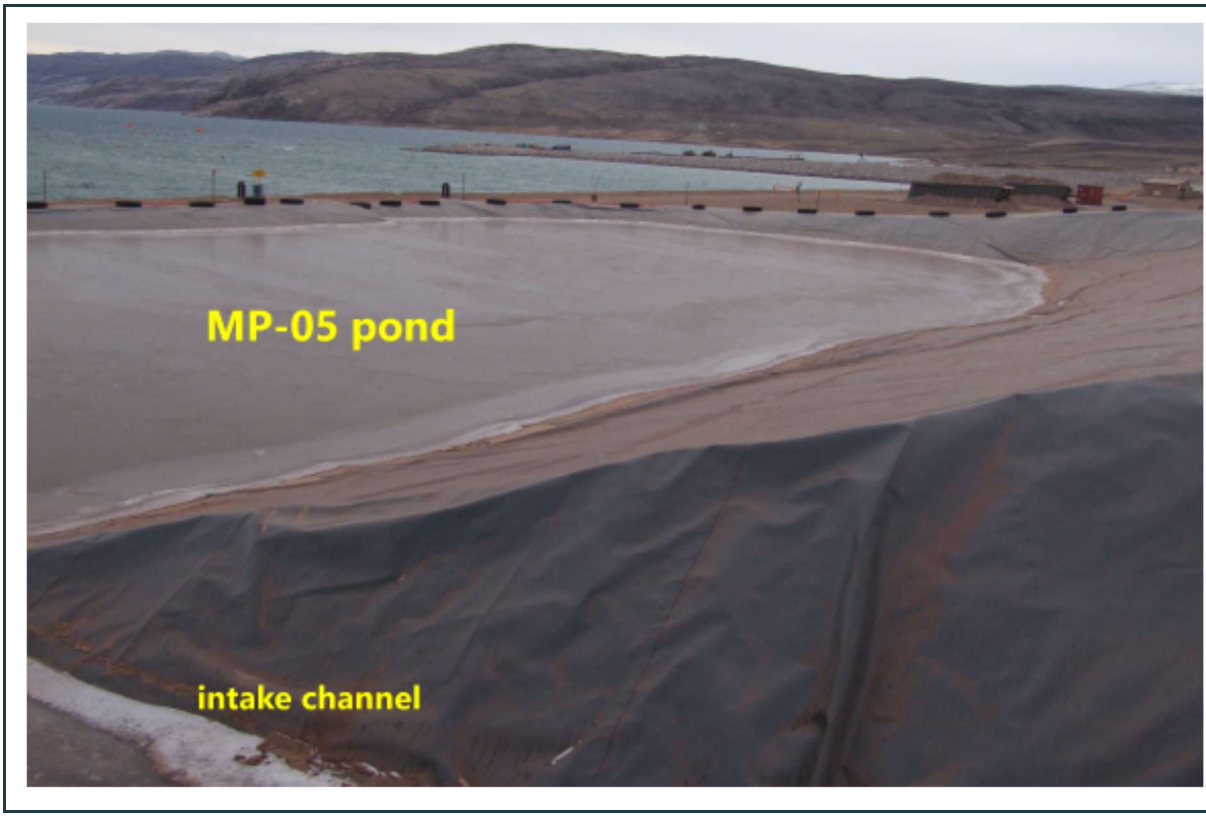


Figure 50: View of the MP-05 pond, adjacent to the north-east corner of the ore stockpile.

Figure 51: Surface water collection ditch, adjacent to the ore stockpile (leading to the MP-05 pond).

Figure 52: View of the MP-06 pond at the front of the north-west corner of the ore stockpile.

1.6 Surface Water Collection Ditches (P-SWD-3, P-SWD-5, P-SWD-6, P-SWD-7, W3/W14, 380M pad)

Figure 53: View of the LP2 surface water collection ditch – still under construction.

Figure 54: Well maintained "P-SWD-5 Q1 North" surface water collection ditch.

Figure 55: Well maintained "P-SWD-6 Q1 South" surface water collection ditch.

Figure 56: View of the P-SWD-7 surface water collection ditch and culverts, adjacent to the new freight dock (under construction).

Figure 57: W3-W14 surface water collection ditch (still under construction).

Figure 58: "380 M" surface water collection ditch (under construction).

1.7 Tote Road Ditches and Culverts

Figure 59: Water seepage through and beneath the road embankment near the tote road culverts.