August 27, 2023

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

RE: Submission of 2023 Geotechnical Inspection Report No. 1 (June 2023)

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 [Nunavut Water 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 geotechnical inspection for 2023 was conducted by Laszlo Bodi, M.Sc., P.Eng., Senior Principal Civil/Geotechnical Engineer with WSP Environment and Infrastructure Canada Limited. The focus of the inspection was on the Water Licence related infrastructure located at the Mary River Mine Site and Milne Port. The first geotechnical inspection for 2023 was conducted between June 21 and June 27, 2023.

During the inspection, the following structures and facilities were inspected:

Mary River Mine Site

a) Berms of Polishing Wastewater Stabilization Ponds (3)
b) Berms around hazardous waste disposal cells - (HWB-1 to HWB-7)
c) MS-06, MS-07, MS-08 and MS-11 surface water management ponds and adjacent ditches
d) Berms around the former generator fuel bladder cell (located adjacent to the generators)
e) Fuel storage berms (3) – Aerodrome jet-fuel storage, MS-03 and MS-03B diesel fuel farms
f) Solid-waste disposal site (non-hazardous landfill facility) and two adjacent new landfarm cells
g) Camp Lake settling check dams and berms
h) Rock fill slope (riprap) at the water (effluent) discharge area
i) QMR2 and D1Q1 rock quarries
j) KM106 run-of-mine ore storage area and berm

Milne Inlet Port Site

a) Berms of hazardous waste disposal cells - (HWB-1 through to HWB-4)
b) Berms of the MP-01A Polishing Waste Stabilization Pond (PWSP)
c) Berms around the MP-03 fuel tank farm and the Western Globe Fuel Module
d) Berms around the MP-04 landfarm and MP-04A contaminated snow disposal pond
e) Berms of Pond #3, MP-05, and MP-06/MP-06A surface water management ponds and drainage ditches adjacent to the ore stockpiles
f) Q01 rock quarry and north quarry ditch network
g) Surface water collection ditches (P-SWD-3, -5, -6, -7, W3/W14, 380-Person Camp, and PSC ditches)
h) Twin Tote Road culverts (conveying surface water from the Q01 rock quarry area)
i) Rock fill and slope (riprap) at the water (effluent) discharge area
j) LP-5 Storage Pad

Milne Inlet Tote Road

a) Bridges along the Tote Road (4)
b) Representative historic borrow areas (4) and culvert (1) along the Tote Road
c) Section of the Mine Haul Road (MHR) between the Crusher Pad and the Deposit 1 Open Pit

The attached report (Attachment 1) presents the findings and recommendations of the June 2023 inspection for the aforementioned structures. The following subsections of this letter summarize completed actions from the second 2022 geotechnical inspection, and Baffinland's plan for implementing the recommendations identified in the first 2023 geotechnical inspection report.

Completed Actions from the Second 2022 Geotechnical Inspection

MS-06 - Surface Water Management Pond Adjacent to the Crusher
The temporary containment sump adjacent to the south berm of the MS-06 pond was backfilled with native soil to ensure structural integrity of the pond's nearby berm.
Soil was removed from the inlet-end of the culvert under the crusher pad entrance, restoring proper drainage through the culvert.

MS-08 – Surface Water Management Pond Adjacent to the Waste Rock Facility (WRF)
Ditch line was inspected during 2023 freshet, and rollout material was cleaned out of the existing ditch line to restore positive flow in the west perimeter collection ditch.

D1Q1 Quarry
Boulders/loose material close to the edge of the crest of the slope of the quarry were removed.

MP-04A
Repairs to restore ramp and berm including replacement of granular fill cover on the ramp and over the top of the berm.

LP-5 Laydown
Natural surface cracks and depressions at the edge of the LP-5 storage pad were filled with clean sand and gravel.

Recommendations for the Mary River Mine Site Infrastructure from the First 2023 Geotechnical Inspection

Hazardous Waste-Cell Berms (HWB-1 to HWB-7)

Minor disturbance/soil displacement caused by foot and truck traffic on the surface of the slopes and crests at a few locations. It is recommended that foot and truck traffic on the slopes and crest of the berms be limited to maintain the integrity and stability of the berms. Trucks may only use the designated ramps to access the cells.

Baffinland Action: Berm sections disturbed by foot and truck traffic will continue to be maintained during routine maintenance activities. Baffinland continues to educate personnel on access to berms.

Hazardous Waste Berm - HWB-3 and HWB-4
Broken pallets with large nails and screws sticking out of the wood-fragments were observed in these berms. All broken pallets with the nails must be removed from the cells to prevent potential damage to the liners.

Baffinland Action: Baffinland will remove the wooden pallets and wooden pallet debris, to prevent potential damage to the liner, during routine maintenance activities.

Hazardous Waste Berm - HWB-6
HWB-6 was filled to its capacity recently and the crest and slopes of the berms have been disturbed. In addition, there are broken pallets with nails and screws sticking out of the wood-fragments. All broken pallets with nails must be removed to prevent potential damage to the liner and the disturbed slopes and crest of the berms must be regraded to prevent damages to the liner.

Baffinland Action: Baffinland will remove the wooden pallets and wooden pallet debris, to prevent potential damage to the liner, during routine maintenance activities. Berm sections disturbed by foot and truck traffic will continue to be maintained during routine maintenance activities. Baffinland continues to educate personnel on access to berms. HWB-6 is used for temporary storage until materials are packaged for shipment and therefore additional storage capacity is not currently required at this facility.

Hazardous Waste Berm - HWB-7
Due to the large quantity of melted snow in the cell it is suggested that some of the ponding water should be gradually removed and treated.

Baffinland Action: Storm water retained within containment areas associated with the Project's HWBs is discharged to the receiving environment following water quality analysis and treatment, if required. Baffinland will continue to discharge storm water from HWB-7 as needed to ensure adequate freeboard is maintained within the pond.

MS-06 - Surface Water Management Pond Adjacent to the Crusher Facility (CF)

A minor problem with the liner was noted at the spillway; likely due to strong wind lifting up the edges of the liner on the top of the berm at the spillway. It is recommended that the size and number of sandbags, weighing down the liner, be increased to prevent such uplift.

Baffinland Action: This has been completed.

MS-07 - Surface Water Management Pond Adjacent to the KM106 ROM Facility

It is recommended to cover the base and slopes of the temporary containment sump adjacent to the facility diversion berm with riprap. It is also suggested to drain the collected water from the sump to the pond by gravity if the topography of the area would allow.

Baffinland Action: The sump was pumped dry and prepared for riprap placement which is planned to be actioned prior to the end of Q3 pending equipment availability. As local topography does not allow for gravity drainage, Baffinland will continue to manage this area via active pumping.

MS-08 – Surface Water Management Pond Adjacent to the Waste Rock Facility (WRF)

A section of the rock fill berm and liner at the south west berm of the WTP Geotube pond is damaged. The damaged berm section and liner should be repaired as soon as practically possible.

Baffinland Action: Baffinland will repair the damaged berm section and liner when the contractors are on site during summer 2023. A field investigation determined that there is minimal risk to the Geotube pond capacity due to the location of the damage on the top of the crest (Completion Q3 2023).

MS-11 – Surface Water Management Pond and Dam at KM105

Some frost related damages were observed during the first inspection in 2022 along the road next to the southern zone of the MS-11 pond's slope. Some crushed stone was observed placed in some of the cracks, however, the "landscaping" process should be finalized, and all cracks should be eliminated by filling and regrading the area to minimize water infiltration into the ground next to the slope to prevent potential slope instability.

Baffinland Action: As recommended by the design engineer, Baffinland will continue to monitor the topography of the south embankment and implement corrective actions as per the design engineer's recommendations to prevent potential slope instability.

Mary River Landfarm

The slopes of the berms (upstream and downstream) appear to be steeper than the designed inclination of 2H:1V. Also, the loose granular material anchoring the liner on the top of the berms has settled significantly, resulting in a long depression along the top of the berms. The water in the sump has resulted in slumping of the granular cover layer on top of the liner, which resulted in erosion (slumping) of the granular cover layer on the slope of the berms. It is recommended that the deficiencies be

repaired/rectified in both cells. The problems should also be considered (lessons learned) in the design and construction of the still planned two additional cells to prevent such problems in the future.

Baffinland Action: Baffinland will develop a plan to complete this prior to the end of Q3 2024.

QMR2 Rock Quarry

Ponding water continues to cover a section of the main level of the quarry, with potential to cause slope stability and traffic safety issues in the area. To maintain traffic safety and stable side slopes when the operation in this facility resumes, the ponding water at the quarry's main level should be properly drained from the area down on the side-slope located immediately next to the plateau. It is recommended that consideration be given to the installation of a slope-drain pipe, chute, or flume drain, as an erosion protection measure.

Baffinland Action: Baffinland will review QMR2 quarry water management requirements with the design consultant that is currently assisting with Modification No. 13 Water Management Plans and have a remedial plan prepared prior to freshet 2024

Recommendations for Milne Port Infrastructure from the First 2023 Geotechnical Inspection

MP-05 Surface Water Management Pond

Minor liner damage was noted near the crest of the southern inlet channel to the pond. The liner in that area should be repaired as soon as practically possible.

Baffinland Action: Baffinland will repair the minor liner damage prior to the end of Q4 2023.

Ponding water was noted at the south end of the east ditch, indicating that the ditch should be deepened/excavated in that area to facilitate uninterrupted water flow to the MP-05 pond. The start and end points of the long ditch should be surveyed and a gentle slope of the base of the ditch should be provided toward the MP-05 pond.

Baffinland Action: Baffinland will reestablish the ditch to design criteria to ensure effective drainage to the MP-05 pond when conditions permit during summer 2024.

Surface Water Drainage Ditch - P-SWD-3

Sloughing of the sides of the P-SWD-3 ditch, adjacent to the LP2 laydown area, has occurred at several locations along the ditch however the ditch is not able to convey the collected water to the required location due to drainage issues. To improve the drainage capability of this ditch, it is recommended that it should be redesigned and reconstructed to drain the large amount of surface water from the snow-stockpile located to the north-east. The design must consider the fact that large amount of snow is stockpiled adjacent to this ditch every winter that generates excessive quantity of run-off water in the spring/summer that must be drained more efficiently toward the north-east. During the reconstruction, the culvert in the ditch beneath the access road to the snow stockpile should also be reinstalled to the correct invert levels (inlet and outlet). It is also suggested that a perimeter diversion berm be provided around the snow stockpile area and the surface water generated by the melting snow be conveyed to the

P-SWD-3 ditch in a separate new drainage ditch. To prevent the migration of fine soil particles from the ditch to the environment, a rock-fill check dam must be installed/constructed at the discharge point of the upgraded/reconstructed ditch.

Baffinland Action: Baffinland will complete the remaining improvement work in this drainage ditch in 2023. The remedial plan will be implemented in Q3/Q4 2023. In the interim, all water will continue to be actively pumped downstream of this area to the proper receiving location until permanent remedial work to the drainage ditch is complete.

Debris visible in the northern part of the ditch should be removed.

Baffinland Action: Baffinland will remove the debris from the northern part of the ditch, to prevent potential damage, during routine maintenance activities.

Surface Water Drainage Ditch - P-SWD-5

A short section of the P-SWD-5 ditch was noted with missing riprap and continuous water seepage from the side-slope was observed resulting in the periodic sloughing/erosion of the side of the ditch along this short section. It is recommended that the finer soil, currently forming the side of the ditch, be removed to a depth of around 1 m and replaced with crushed rock fill. To minimize migration of fine soil particles from the quarry pad to the ditch, the crushed rock fill should be placed over geotextile. There is also a clogged culvert along this ditch, located beneath the road at the entrance to the quarry. The clogged culvert should be cleaned or replaced if necessary; preferably with a larger diameter culvert.

Baffinland Action: Baffinland will review Q1 quarry water management requirements and have a remedial plan prepared by freshet 2024.

Surface Water Drainage Ditch – P-SWD-6

A large quantity of ponding water is present that is not able to flow into the P-SWD-6 ditch because the culvert invert level is located above the water level. Water from the area flows away from the P-SWD-6 ditch toward the south end of the PSWD-5 ditch. The flow currently occurs uncontrolled over the surface of the nearby road, presenting continuous risk to traffic. It is recommended that the area where water is ponding be connected to the P-SWD-5 ditch by extending that ditch and installing additional culverts.

Baffinland Action: Baffinland will review Q1 quarry water management requirements and have a remedial plan prepared by freshet 2024.

Surface Water Drainage Ditch – 380M Ditch

The culvert connecting the east and south ditches is completely clogged, resulting in ponding water within the east ditch. It is recommended that the culvert be cleaned as soon as possible.

Baffinland Action: This will been completed prior to the end of Q3.

Surface Water Drainage Ditch – PSC

Minor localized slope movements/failure at the west end of the ditch should be repaired, regraded and the riprap rock fill cover reinstated. The sloughing of the slope is apparently caused by frequent water seepage from the granular fill of the LP-2 laydown that likely is a result of the inefficient drainage of surface water from the P-SWD-3 ditch that seeps into the LP-2 laydown and most likely exits at the location in the PSC ditch requiring repairs. Once the drainage conditions in the P-SWD-3 ditch are improved/rectified, the failed slope at the PSC ditch can also be repaired. The reparation should include the removal of disturbed riprap from the affected area, placement of geotextile on the exposed surface of native soils and replacement of the rock-fill riprap. Based on field observations, the outflow end of the ditch must also be upgraded by the installation of geotextile and riprap along the base and side-slopes of the ditch. To prevent the migration of fine soil particles from the ditch to the environment a rock-fill check dam must also be installed/constructed at the discharge point of the upgraded/reconstructed ditch.

Baffinland Action: Baffinland will repair and regrade the identified area in the ditch where localized slope movements/failure have occurred and reinstate the riprap rock cover in Q3 2023. Baffinland will inspect in Q2 2024 and, if required, repair the invert level of the west ditch section culvert, prior to completion of the construction of the PSC drainage ditch.

Milne Port WWTP Effluent Discharge

The sandy valley floor downstream of the WWTP effluent discharge location requires additional crushed rock fill placed over high-strength geotextile fabric to prevent erosion and undermining of the adjacent embankment slopes and to provide adequate support for the heavy casing pipe.

Baffinland Action: Baffinland previously placed material at the WWTP effluent discharge location; however, will reassess the area and add additional material as necessary to prevent erosion and provide adequate casing support prior to the end of Q3 2023.

Tote Road KM17 Bridge

Some elements of the historic abutments steel bolt-a-bin structures are damaged. The damaged elements should be removed, together with part of the sandy backfill from behind them (from the face of the abutment). The sand should then be replaced with clean crushed rock-fill to prevent erosion of the finer soil from the old abutments.

Baffinland Action: Baffinland will remove damaged bolt-a-bin structure elements and aggregate from the damaged bins adjacent to the bridges as planned during late summer 2023 when the ground is sufficiently thawed.

Tote Road KM80 Bridge

Some damages to the upper part of the bolt-a-bin cribs were observed. It is recommended that guardrails be installed at both ends of the bridge at both sides of the road to prevent further damage to the cribs.

Baffinland Action: A third-part bridge inspector recently identified deficiencies in the KM80 bridge abutments. An engineered plan is being developed to straighten the bridge abutments. Execution is planned for 2024, pending engineered evaluation.

Tote Road Borrow Pits

When the historic borrow pits at KM 6.9 and 7.7 were infilled, the base of the borrow area was leveled/graded, just slightly above the crest elevation of the adjacent road. The poor grade control and lack of drainage ditch can result in unwanted surface water flow onto the road from both sides, wherever the surface of the road is located at somewhat lower elevation. It is recommended that critical road sections with such poor grade and drainage controls be mapped, and the drainage conditions be improved by providing adequate side-ditches along the road, wherever the elevation of the road surface is located somewhat lower than the adjacent ground surface. The drainage ditches should be constructed as specified in the Project's Civil Design Criteria and Drawings.

Baffinland Action: Baffinland has engaged a third-party consultant to conduct a full review of the current status of all historic borrow sources with a complete update to the 2019 Tetra Tech report. A multi-year action plan is being developed for implementation in future years.

The toe of the slope at the historic borrow pit at KM28.9 to KM29, which is located relatively close to the edge of the road, appears to be as steep as 1H:1V. The raveling face of the slope and the development of tension cracks indicate further slumping of the slope can be expected in the future. Although there is no immediate risk to the traffic on the road, the sloughing soil from the steep slope may gradually fill up the drainage ditch along the road and prevent surface water from flowing properly in the ditch which could cause instability of the edge of road embankments. At the subject road section, it is suggested that the slope be reshaped (cut back) to shallower inclination (preferably to 2H:1V) and the drainage ditch be cleaned of soils, as soon as practically possible.

Baffinland Action: Baffinland has engaged a third-party consultant to conduct a full review of the current status of all historic borrow sources with a complete update to the 2019 Tetra Tech report. A multi-year action plan is being developed for implementation in future years.

KM 33 Culvert and Check Dams

The inlet of the culvert has been damaged recently, potentially clogging the culvert. To provide uninterrupted flow, the culvert should be replaced as soon as practically possible. More rock-fill should also be placed around the inlet, while the silt deposited at the front of the outlet should be removed. The crest of the nearby check-dams show some loss of rock-fill, which should be replaced as soon as practically possible.

Baffinland Action: Baffinland will repair the culvert, remove the silt at the front of the outlet, and apply rock-fill riprap around the inlet prior to the end of Q3 2023. Baffinland will subsequently monitor the condition of the culvert during regular maintenance and, if required, develop a plan for culvert replacement. Rock-fill at the crest of the check-dams will be replaced prior to the end of Q3 2023.

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

Regards,

Katie Babin
Environmental Superintendent

Attachments:
Attachment 1: 2023 Geotechnical Inspection Report No. 1

Cc: Karén Kharatyan (NWB)
Chris Spencer, Conor Goddard, Hugh Karpik (QIA)
Omer Pasalic, Sean Noble-Nowdluk, Jeremy Fraser (CIRNAC)
Tim Sewell, Megan Lorde-Hoyle, Lou Kamermans, Francois Gaudreau, Martin Beausejour, Todd Swenson, Katie Babin, Allison Parker (Baffinland)

Baffinland

Attachment 1

2023 Geotechnical Inspection Report No. 1

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

BIM Corporation

August 14, 2023
Project #: OMGM2212-23

Annual Geotechnical Inspections – 2023 Report 1.

Mary River Project – Nunavut

Location of the Mary River Mine and Milne Inlet Port on Baffin Island - Source: Baffinland

WSP E&I Canada Limited
6925 Century Avenue
Mississauga, Ontario, Canada, L5N 7K2

August 14, 2023
OMGM2212-23

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

Re: Annual Site Inspections and Reporting 2023 - Mary River Iron Mine Complex, Nunavut

WSP E&I Canada Limited has been retained by Baffinland Iron Mines Corporation to carry out Annual Geotechnical Engineering Services at the Mary River Project in Nunavut. Based on information and guidance, provided in connection with the site's infrastructure, the undersigned has completed the first of the two required inspections for 2023 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, 2018) – SNC Lavalin
- Annual Geotechnical Site Inspections (2017) – ARCADIS Design and Consultancy
- Annual Geotechnical Site Inspections (2018 August and October) – B.H. Martin Consultancy
- Tote road bridges – Abutment Review (2018 December) – B.H. Martin Consultancy
- Annual Geotechnical Site Inspections (2019, 2020, 2021 and 2022 1st report) – Wood E&I
- Annual Geotechnical Site Inspection (2022 - 2nd report) – WSP E&I Canada Limited
- Construction Summary Reports – Crusher Pad Sedimentation Pond Expansion (2019); Waste Rock Pond Expansion Drainage System; KM-106 Run of Mine Stockpile & Sedimentation Pond (2020) and Mine Site Land-farm Cell 1 and Cell 2 (2022)
- Inspection of the Milne Inlet Tote Road and Associated Borrow Sources – Tetra Tech (2019)
- Annual Geotechnical Site Inspection (2022 - 2nd report) – WSP E&I Canada Limited

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,

WSP Environment & Infrastructure Canada Limited

Laszlo Bodi, M.Sc.; P.Eng. – Senior Principal Civil/Geotechnical Engineer
WSP Environment & Infrastructure Canada Ltd.,

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1.0 Introduction

WSP Environment & Infrastructure Canada Ltd., has completed the first geotechnical field inspection of 2023 at the Mary River Project, which is a condition of the Type "A" Water Licence No: 2AM-MRY1325 – Amendment No.1 ("Water Licence").

Based on the requirements outlined in the Water Licence, the field inspections shall include the review of various facilities and structures that contain waste materials (hazardous and non-hazardous), and store or retain/convey water (surface water management ponds and ditches) at the Mary River Mine and Milne Inlet Port sites. The field review included visual assessment of the current condition of the berms and slopes and reporting on potential seepage/stability problems at the facilities, if any.

In addition to the condition survey of the above noted infrastructure components, critical watercourse crossings (bridges) were also reviewed along the Tote Road connecting the Mary River Mine 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 twice a year and documented by photographs. The inspected structures and facilities in the summer (June) of 2023 included the following:

A. Mary River Mine Site

a) Berms of Polishing Wastewater Stabilization Ponds (3)
b) Berms around hazardous waste disposal cells - (HWB-1 to HWB-7)
c) MS-06, MS-07, MS-08 and MS-11 surface water management ponds and adjacent ditches
d) Berms around the former generator fuel bladder cell
e) Fuel storage berms (3) – Aerodrome jet-fuel storage, MS-03 and MS-03B diesel fuel farms
f) Solid-waste disposal site (non-hazardous landfill facility) and two adjacent new landfarm cells
g) Camp Lake settling check dams and berms
h) Rock fill slope (riprap) at the water (effluent) discharge area
i) QMR2 and D1Q1 rock quarries
j) KM106 run-of-mine ore storage area and berm

B. Milne Inlet Port Site

a) Berms of hazardous waste disposal cells - (HWB-1 through HWB-4)
b) Berms of the MP-01A Polishing Waste Stabilization Pond (PWSP)
c) Berms around the MP-03 fuel tank farm and the Western Globe Fuel Module
d) Berms around the MP-04 land-farm and MP-04A contaminated snow disposal cell
e) Berms of Pond #3, MP-05, and MP-06/MP-06A surface water management ponds and drainage ditches adjacent to the ore stockpiles.
f) Q01 rock quarry and north quarry ditch network

g) Surface water collection ditches (P-SWD-3, -5, -6, -7, W3/W14, 380-Person Camp, and PSC ditches)
h) Twin Tote Road culverts (conveying some of the surface water from the Q01 rock quarry area)
i) Rock fill and slope at the water/effluent discharge area
j) LP-5 Storage Pad

C. Tote Road Between the Mary River Mine and Milne Inlet Port

a) Bridges along the Tote Road (4)
b) Representative historic borrow/cut areas (4) and a culvert (1) along the Tote Road
c) Section of the Mine Haul Road (MHR) between the crusher pad and the open pit (Mary River)

The above listed infrastructure components were visually inspected between June 21 and June 27, 2023, by the author of this report, Laszlo Bodi M.Sc.; P.Eng. of WSP Environment & Infrastructure Canada Limited. During the inspection, the current condition of the structures was visually reviewed, and the findings of the inspection are summarized in the following report. The locations of the inspected infrastructure components, berms, settling ponds and ditches are shown in the following key maps:

a) **Mary River Mine site** – **Central Zone - East** (Figure 1), **North-Eastern Zone** (Figure 2), **South-Eastern Zone** (Figure 3), **Central Zone - West** (Figure 4), **Southern Zone** (Figure 5), and **Western Zone** (Figure 6)
b) **Milne Inlet Port site** – **North-Eastern Zone** (Figure 7), **North-Western Zone** (Figure 8), **South-Western Zone** (Figure 9), and **South-Eastern Zone** (Figure 10)
c) Representative section of the **Tote Road** – (Figure 11)

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

a) **Appendix A**: Mary River Mine site – Figures 12 to 48
b) **Appendix B** : Milne Inlet Port site - Figures 49 to 84
c) **Appendix C**: Bridges, selected former "borrow" areas, selected culverts, and a section of the haul Road between the ore crusher and the open pit: Figures 85 to 108

Mary River Mine Site

Figure 1: Site layout – Mary River Mine Site - **Central Zone – East,** showing the MS-03 and MS-03B fuel farms and the MS-06 surface water management pond, located near the ore crushing facility. © 2023 Digital Globe, Inc.

Figure 2: Mary River Site layout – **North-Eastern Zone** – Waste rock facility with the MS-08 and geotube ponds – D1Q1 rock quarry area. © 2023 Digital Globe, Inc.

Figure 3: Site layout – Mary River Mine Site – **South-Eastern Zone** – KM106 run-of-mine ore storage area and KM106/MS-07 and KM105/MS-11 surface water management ponds. © 2023 Digital Globe, Inc.

Figure 4: Site layout – Mary River Mine Site – **Central Zone - West** – Jet-fuel storage cell and QMR2 rock quarry. © 2023 Digital Globe, Inc.

Figure 5: Site layout – Mary River Mine Site – **Southern Zone** – Non-hazardous landfill area with two new land-farm cells, and the effluent discharge location. © 2023 Digital Globe, Inc.

Figure 6: Site layout – Mary River Mine Site - **Western Zone** – PWS ponds (1-3), HWB hazardous waste storage cells (1-7), genset cell, and Camp Lake check dams. © 2023 Digital Globe, Inc.

Milne Inlet Port Site

Figure 7: Site layout – Milne Inlet Port Site – **North-Eastern Zone.** © 2023 Digital Globe, Inc.

Figure 8: Site layout – Milne Inlet Port Site – **North-Western Zone.** © 2023 Digital Globe, Inc.

Figure 9: Site layout – Milne Inlet Port Site – **South-Western Zone**. © 2023 Digital Globe, Inc.

Figure 10: Site layout – Milne Inlet Port Site – **South-Eastern Zone**. © 2023 Digital Globe, Inc.

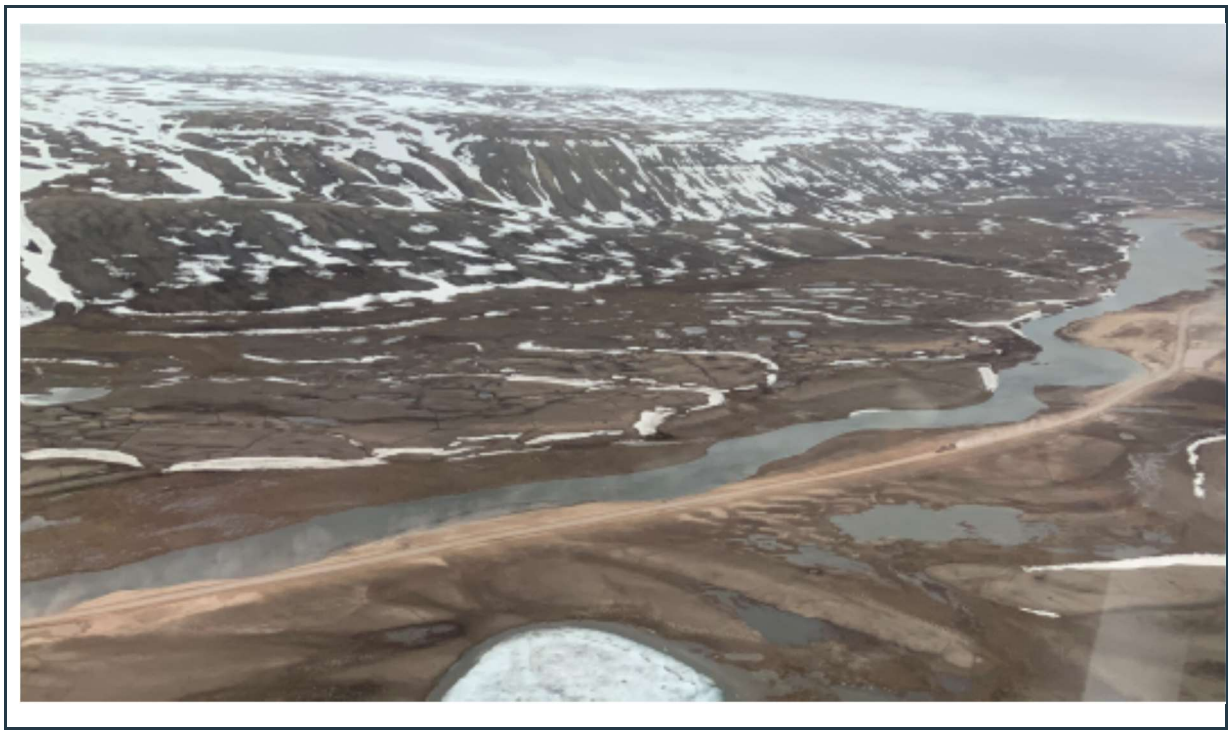

Figure 11: View of a section of the Tote Road between the Mary River Mine and Milne Inlet Port.

Details of the recent condition survey of the individual infrastructure components, reviewed in June 2023, are summarized in the following sections of the report while the relevant photographs are shown in Appendix A, B and C, as integral parts of this document.

2.0 Mary River Mine Site

2.1 Polishing/Waste Stabilization Ponds (3 PWS ponds)

There are three (3) polishing/waste stabilization ponds, located adjacent to the airstrip, as shown in Figure 6. Pond #1 is a single structure, while Ponds #2 and #3 were constructed as twin-cells, as shown in Figure 12. The photograph in Figure 12 is a historic aerial image showing the robust and stable berms around the three ponds. As mentioned in 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 robust, stable berms around the ponds generally comprise granular materials (rock fill, sand, and gravel), with High Density Polyethylene (HDPE) geomembrane liners. No damage is visible on the membranes in the cells or on the upstream face of the slopes (see Figures 13 to 15). Wrinkles visible on the liners are common features and do not present any potential problems to the resistance of the material against seepage.

A relatively common issue (although not a problem) in water storage ponds is the appearance of so-called "whales" within the ponds. Whales are sections of the liners which have risen (float) above the surface of shallow water, particularly in shallow ponds, where the weight of water above the liner is minimal. Such small "whales" were visible during previous inspections at PWS ponds #2 and #3. Similar "whale" was noticed during the June 2023 inspection in pond #2, as shown in Figure 14; however, no damage to the liner or seepage from the ponds was visible.

2.2 Hazardous Waste-Cell Berms (HWB-1 to HWB-7)

There are seven (7) lined hazardous waste storage cells with stable perimeter berm structures at the Mary River mine site (HWB-1 to HWB-7). The HWB-6 cell is located at the north side of the airstrip near the incinerator, while the other six (6) cells are located opposite of HWB-6, at the south side of the airstrip, as shown in Figure 6. All seven (7) HWB cells are lined with HDPE liner, and comprise shallow, stable perimeter berms constructed from locally available, generally granular soils. There is no visible instability at the berms (sloughing, excessive settlement, or tension cracks), other than some minor disturbance/soil displacement caused by foot and truck traffic on the surface of the slopes and crests at a few 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 be limited to maintain the integrity and stability of the berms. Trucks may only use the designated ramps to access the cells.

a) HWB-1

This cell is currently not in use, as shown in Figure 16. As reported previously, concerns had been raised in the past to suspected potential liner damage within this cell, and consequently no material has been stored in this cell since this concern was identified. Baffinland has previously committed to removing the old liner from this cell and replacing it with a new one should use of HWB-1 be required in the future. It was noted during the June 2023 site visit that the HWB-6 cell is used well above its capacity; and hence, it would be advantageous to reconstruct the HWB-1 cell to increase cell capacity to store hazardous waste.

b) HWB-2

As shown in Figure 17, shipping containers are currently stored in this cell. The robust perimeter berms around the cell appear to be stable and the presence of ponding water indicates good liner performance.

c) HWB-3 and HWB-4

These cells were constructed as "twin-cells" and were called "Fuel Containment" cells. As shown in Figures 18 and 19, cell 3 is generally holding fuel barrels, stored on wooden pallets, (jet-fuel and diesel), and similar barrels are stored in cell 4, in addition to a shipping container. The berms and liner around and within the two cells are in good condition and no seepage from either of the cells was noted during the June 2023 inspection. However, as marked by yellow arrows in both images, there are broken pallets with large nails and screws sticking out of the wood-fragments. All broken pallets with the nails must be removed from the cells to prevent potential damage to the liners.

d) HWB-5

As shown in Figure 20, this cell is currently empty. The shallow berms around the cell appear to be stable and there is no visible liner damage in the cell. Baffinland has previously committed to removing the old liner from this cell and replacing it with a new one should use of this HWB-5 cell be required in the future. As mentioned earlier for HWB-1, these two cells (1 and 5) should be reconstructed as one large new cell, to replace the small capacity HWB-6 cell.

e) HWB-6

The berms around this cell and the internal "floor" have been regraded and stabilized last year using clean granular fill. However, as shown in Figure 21, the cell was filled to its capacity recently and the crest and slopes of the berms have been disturbed. In addition, as noted earlier for HWB-3 and HWB-4, there are broken pallets with nails and screws sticking out of the wood-fragments. All broken pallets with nails must be removed to prevent potential damage to the liner and the disturbed slopes and crest of the berms must be regraded to prevent damages to the liner. Stored materials should be disposed in and taken out of the cell through the access ramp only, not over the shallow berms.

f) HWB-7

One (1) large fuel tank is stored in this cell with a few oil filled plastic containers, as shown in Figure 22. The perimeter berms around the cell appear to be stable and the ponding water within the cell is indicative of adequate liner performance. Due to the large quantity of melted snow in the cell it is suggested that some of the ponding water should be gradually removed and treated.

2.3 MS-06, MS-07, MS-08 and MS-11 Surface Water Management Ponds

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

The MS-06 surface water management pond collects surface water from the area of the crusher pad. The surface water is collected in side-ditches, excavated around the crusher pad, and conveyed into the pond. There is one culvert under the road at the crusher pad entrance that connects one (1) of the side ditches with the north corner of the MS-06 surface water management pond. It was noted during the June inspection that the inlet-end of that culvert was recently cleaned and there is now uninterrupted flow through the culvert (see Figure 23).

There are two (2) intake locations to the pond at the northeast and southeast corners, and there is an emergency spillway located opposite to the intakes. The liner within the pond and on the upstream slopes of the stable berm appears to be intact; however, minor problem with the liner was noted at the spillway (Figure 24) at the time of the June inspection. It appears that the problem was caused by strong wind lifting up the edges of the liner on the top of the berm at the spillway. It is recommended that the size and number of sandbags, weighing down the liner, should be increased to prevent such uplift.

No wet downstream slopes or toe seepage from the pond were visible at the time of the June visit. During the 2022 inspections a temporary containment sump was noted near the toe of the berm, which was excavated in the past to contain surface water in the area and pump it into the MS-06 surface water management pond. Last year it was recommended that the sump pit be backfilled with native soil to maintain the structural integrity of the pond's nearby berm. As shown in Figure 25, the sump pit had recently been backfilled (yellow arrow in the image), as recommended.

b) MS-07 – Surface Water Management Pond Adjacent to the KM-106 Stockpile

The MS-07 surface water management pond is located adjacent to the KM-106 stockpile area. The pond has robust, stable perimeter berms and intact geomembrane liner, as shown in Figure 26. No stability or seepage related problems were observed at this pond during the June 2023 site visit.

c) MS-08 – Surface Water Management Pond Adjacent to the Waste Rock Facility

Waste rock from the open pit mining operation is disposed of in the WRF, which consists of waste rock stockpiles, the MS-08 surface water management pond, and continuously upgraded perimeter drainage ditches excavated around the facility. Surface runoff and seepage from the WRF is collected in the ditches and conveyed to the MS-08 pond. The MS-08 surface water management pond is surrounded by robust and stable berm, and the pond is lined with HDPE liner that is secured in place in anchor trenches, extending down into the permafrost.

As shown in Figure 27 and 28, the area of the WRF, the MS-08 pond and both (east and west) side ditches were blanketed by thick snow at the time of the June 2023 inspection. Hence, it was not possible to review the condition of the pond's liner and the ditches at this time. Their condition will be reviewed during the second (September 2023) inspection.

Water from the MS-08 pond is usually pumped to the nearby designated facility for treatment, if required. There is a lined treatment cell (geotube pond) located immediately next to the WRF water treatment plant. As shown in Figure 29, the geotube pond was also covered with thick snow and its condition will be reviewed during the September inspection. As marked by the yellow circle in Figure 29, it appears that a small section of the liner at the south-west section of the berm is still damaged and will require repair prior to the next inspection.

d) MS-11 – New Surface Water Management Pond at KM105

The KM105 surface water management pond (MS-11), shown in Figure 3, was designed, and constructed to provide sediment control for runoff water, originating from the following catchment areas:

- The undisturbed areas upslope of the Mine Haul Road (MHR) and the KM105 ponds from which runoff cannot be easily diverted to other areas,
- The section of the MHR near the ponds, and
- The area of the ponds (north and south) themselves.

The pond includes an emergency spillway with an invert elevation of 220.5 m, which is the design maximum water level in the pond. At normal water level the pond has two separate areas: the "north and south ponds", as shown in Figure 3. As specified in the design, the upstream slopes of the pond embankments are lined with geomembrane liner, underlain by non-woven geotextile as a cushion layer. The geomembrane liner and non-woven geotextile extend up to the interior (upstream) slope of the embankments and are anchored at the crest. The geomembrane liner is covered with an additional layer of geotextile and a layer of compacted liner bedding, which in turn is covered with a layer of compacted transition material followed by more rockfill (riprap), as shown in Figure 30.

Figure 31 shows the stable spillway of the pond that consists of a trapezoidal shaped inlet, constructed through the crest of the northwest embankment, and a stepped gabion basket outlet channel. A boulder apron is also shown in the image; constructed at the base of the spillway outlet channel to dissipate energy as the potentially fast-flowing runoff leaves the spillway. As shown in Figure 30, there is only a small amount of water in the pond since most of the collected water has found its way within the active layer located beneath the liner and flowed toward downstream beneath the spillway. It is understood that the potential location of the leak is currently under investigation and steps will be taken to rectify the situation.

Figure 32 shows loosely filled and cracked liner anchor trench along the road next to the south MS-11 pond's slope. The cracks should be backfilled with fine-grained soils, regraded, and compacted to minimize water infiltration into the ground next to the slope, to prevent potential slope instability. As shown in Figure 32, some crushed stone has already been placed into some of the cracks, however, the "landscaping" process should be finalized, and all cracks should be eliminated by filling and regrading the area.

2.4 Berms of the Cell for Generator Fuel Bladders

This cell has previously contained fuel bladders for the generators; however, it is currently storing a few mobile fuel tanks only. The cell is located immediately adjacent to the power generators, south-west of the hazardous waste cells (Figure 6). As shown in Figure 33, the stable perimeter berm around the cell generally comprises granular materials and the cell is lined. Ponding water within the cell indicates good liner performance.

2.5 Fuel Storage Berms (3)

There are three (3) fuel storage facilities at the Mary River mine site. One (1) is located at the airfield and two (2) adjacent to the main office complex of the mine as shown in Figures 1 and 4. The berms and liners at these facilities are in excellent condition, as shown in the relevant images in Appendix A.

a) Jet-fuel Tank Farm

The jet-fuel tank farm is located adjacent to the airfield, and it is bounded by a stable perimeter berm. In addition, a second berm, constructed from crushed rock fill, provides additional protection at two (2) sides

(Tote Road and airport parking area) of the facility. The fuel farm is lined to the crest of the perimeter berms, and the liner within the cell appears to be in good condition. A well-constructed ramp at the berm provides safe access to the fuel tanks stored within the cell without endangering the liner (Figure 34).

b) MS-03 Diesel Fuel Tank Farm

The robust, stable berms around the historic diesel fuel tank farm are in excellent condition (see Figure 35) and they are well maintained. Some ponding water within the cell 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). No problems with the liner were noted anywhere in this facility.

c) MS-03B Fuel Tank Farm

A large capacity fuel tank farm is located adjacent to the Tote Road, as shown in Figure 36. This new tank farm was constructed as specified in the design drawings (subgrade, berms, bedding layer, liner, and protective cover). Based on site observations (presence of ponding water in the cell), the liner in the facility is intact, and all berms are stable and well maintained.

2.6 Solid Waste Disposal Area and Two New Landfarm Cells

The solid waste disposal area is located in the southern zone of the Mary River Mine site, as shown in Figure 5. Recently, two (2) new landfarm cells were constructed near the gate to the main landfill facility, as shown in Figure 37. It is understood that the number of new landfarm cells will be increased to three (3) as shown in Figure 38.

Figure 39 shows that only non-hazardous solid waste is placed into the unlined main landfill facility and that the site is surrounded by a chain-link fence and a lockable gate. A new berm under construction is visible in Figure 39 outside of the fence, preventing ponding water (collected within the landfill facility) to "leave" the site and flow toward the nearby lake. Cells #1 and #2 have been recently completed covering an approximate area of 10,180 m^2, while cell 3 will be completed at a later date.

Based on relevant documents prepared by Knight Piésold Consulting Engineers (KP), the cells were designed as above-ground structures to avoid disturbing permafrost. The perimeter berms were designed with 2 "horizontal" to 1 "vertical" slope, with a 2m wide crest. According to the KP design documents, the berms for the two completed cells were constructed using 100mm minus granular material and covered by 150mm thick 25mm minus clean sand and gravel. The bedding layer was installed as a cushion to the impermeable 60-mil (1.5 mm) HDPE geomembrane, which is used to prevent any potential contact water from infiltrating into the subgrade and berms and escaping the containment system. The liner is covered with a 300mm thick, clean sand and gravel layer. All liner-ends are anchored into a 300mm x 300mm key trench, located along the top of the berms. As shown in Figure 38, the cells had a sump area in one corner of the cells, to collect water within the cells.

During the June 2023 inspection, the following deficiencies were noted at the two completed cells, shown in Figures 40 and 41:

- The slopes of the berms (upstream and downstream) appear to be somewhat steeper than the designed inclination of 2H:1V.
- The loosely placed granular material filled into the key trenches to anchor the liners on the top of the berms has settled, resulting in a long depression along the top of the berms, allowing increasing erosion/sloughing on the top and sides of the berms.
- The elevated level of collected water in the cells has resulted in erosion (slump) of the granular cover layer placed over the liner, which in turn resulted in the slump of sections of that granular cover layer from the slope of the berms, near the areas of the sumps.

It is recommended that the deficiencies be repaired/rectified in both cells, as soon as practically possible.

2.7 Camp Lake Settling Check Dams and Berms

The Camp Lake settling control berms and check dams (all stable and well-maintained) are located along the access road to the mine's water intake jetty. The primary purpose of these structures is to collect (trap) fine soil particles (silts and clays) that are eroded down from the adjacent slopes, and to prevent the siltation of the lake around the water intake structure. As shown in Figures 42 and 43 the rockfill riprap in the channel and the check-dams have been recently upgraded and a new gabion wall was installed along the road to the lake. The image shows that the check-dams are working well, as intended. Figure 43 also shows a new check-dam, constructed adjacent to Camp Lake to capture suspended solids potentially eroding from the nearby airfield area and to prevent siltation in the lake.

2.8 Water (Effluent) Discharge Area

The effluent discharge point is located south of the Mary River mine complex, as shown in Figure 5. There are two (2) discharge pipes at that location conveying the discharged water down the slope's surface to the adjacent valley. Trucks also bring water for discharge to this location and let the water flow down on the embankment, comprising crushed rock fill, as shown in Figure 44. As shown in the image, new rock fill has been placed on the slope recently and the slope is well-protected against potential erosion.

2.9 Rock Quarries (QMR2, D1Q1) and KM106 Ore Stockpile Area

a) QMR2 Rock Quarry

There is no blasting and excavation activity carried out currently in the QMR2 rock quarry (Figure 45). The exposed slopes (rock face) in the quarry appear to be in stable condition overall, with a few localized fall hazards (loose boulders) noted at the top level of the quarry walls in some areas.

As mentioned in earlier inspection reports, the lowest plateau (main level) of the quarry still exhibits somewhat poor surface water control and therefore periodic ponding rainwater still covers a section of the quarry's lower level.

The excess water is flowing uninterrupted along the side of the access road, as shown in Figure 46, still eroding the edge of the road, and initiating erosion and some settlement of the road embankment. As pointed out in earlier reports, the uncontrolled surface water presents not only potential slope stability issues in the area, but also traffic safety issues as well, particularly during freezing periods. To maintain traffic safety and stable side slopes when the operation in this facility will resume, the ponding water at the quarry's main level should be properly drained from the area down on the side-slope located immediately next to the plateau. It is recommended that consideration be given to the installation of a slope-drain pipe, chute, or flume drain, as an erosion protection measure, instead of letting the water flow uncontrolled along the edge of the access road.

b) D1Q1 Rock Quarry

No activity is currently carried out in this quarry and as shown in Figure 47, the access road to the quarry was blocked by lots of snow during the June inspection. The condition of the exposed rock faces in the quarry will be inspected during the September 2023 site visit.

c) Diversion Berm at the KM-106 Ore Storage Area

The area previously considered as the future D1Q2 rock quarry is now serving as an ore stockpile site. As shown in Figure 3, the area is located south of the open pit, along the east side of the mine haul road (MHR). Most of the surface water from the stockpile area is diverted to the adjacent MS-07 pond; however, some of the run-off water is collected in a temporary sump, shown in Figure 48, and subsequently pumped into the MS-07 pond. It is recommended to cover the base and slopes of the temporary sump with riprap. It is also suggested to drain the collected water from the sump to the pond by gravity if the topography of the area would allow such alternative.

3.0 Milne Inlet Port Site

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

There are four (4) hazardous waste disposal cells, three (3) active and one (1) decommissioned, with stable perimeter berms at the Milne Inlet Port site. HWB-1 (active) and HWB-2 (decommissioned) cells are single detached structures, located north-east and south-east of the MP-03 fuel storage area, respectively. HWB-3 and HWB-4; however, were constructed as twin-cells, located south/south-west of the fuel storage area, as shown in Figure 7.

a) HWB-1

The HWB-1 is the largest cell of the four, bounded by stable perimeter berms, constructed of freeze-thaw stable granular soils, as shown in Figure 49 and Figure 50, in Appendix B. Shipping containers, fuel barrels and other materials are stored in the cell, as shown in Figure 49. Ponding water was visible in the rear area of the cell (Figure 50), indicating that the liner within the cell is intact and working as intended.

No seepage from the cell was visible around the downstream toe of the perimeter berm and the granular fill subgrade across the cell's interior is well maintained.

b) HWB-2

The HWB-2 was a small cell that is no longer used to store hazardous waste. As shown in Figure 51, the cell has been decommissioned and the area has been filled/regraded with clean sand and gravel.

c) HWB-3 and HWB-4

The well-maintained HWB-3 and HWB-4 cells are located immediately next to each other (twin-cells), as shown in Figure 52 and Figure 53. These cells contained only shipping containers in the past; however, the cells have been recently emptied and "refurbished". Currently the cells contain fuel barrels on wooden pallets, with only two (2) shipping containers stored in HWB-4. The lined berms around the cells have been re-graded/raised and appear to be in stable condition with no indication of slope movements or seepage. It is also shown in the images that the granular fill inside the cells has been re-graded/lowered, as recommended in the June 2022 inspection report.

3.2 MP-01A Polishing Waste Stabilization Pond (PWSP)

The MP-01A polishing pond is located immediately south of the MP-03 fuel storage facility. As shown in Figure 54, the berms around the well-maintained pond are in excellent condition and the liner within the cell appears to be intact. No sign of slope instability, settlement or seepage from the pond was noted during the field inspection. Wood fragments (pieces of timber and lumber with potential nails in them) have been recently removed from the pond, as recommended in previous reports.

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. As shown in Figure 55, the facility is well maintained and all berms around the site are in excellent condition. The presence of ponding water in a few lower areas within the facility is an indication of good liner performance. The site is fenced in, and no indication of instability or seepage was noted at and around the robust berms at this facility.

Figure 56 shows a Western Globe Fuel Module (WGFM) adjacent to the gate to the fuel farm. Based on information obtained from the Port's site-services, it appears that the HDPE liner that was installed across the entire fuel storage facility, is also present beneath the road fill (beneath the steel container of the WGFM, visible in Figure 56), providing additional protection against potential (accidental) fuel leak to the environment.

3.4 MP-04 and 04A Land-farm and Contaminated Snow Disposal Cells

The MP-04 land-farm is located south of the Port at higher elevation (on the top of a hill), adjacent to the nearby rock quarry. It is a large cell that stores contaminated soils and a few empty shipping containers.

The lined, robust berms around the cell are in stable condition and the ponding water in one (1) corner of the cell indicates good liner performance, as shown in Figure 57. No wet downstream slopes or toe seepage were noted during the June 2023 site visit.

The MP-04A is a smaller cell, constructed immediately adjacent to cell MP-04 and is used generally for the disposal of contaminated snow. This pond is also bounded by stable perimeter berms, as shown in Figure 58. No seepage from the cell was noted anywhere around the downstream toe of the berms, and the ponding water within the cell indicates that the liner is in good condition.

3.5 Surface Water Management Ponds and Ditches (Surface Water Management Pond #3, MP-05, MP-06 and MP-06A Ponds)

The iron ore that is mined, crushed, and screened at the Mary River Mine site is transported to the Milne Inlet Port, and stockpiled across a large area near the ship-loader. Contact water (rain and melted snow) from the area is collected along the west and north sides of the ore stockpile in side-ditches and conveyed into four (4) surface water management ponds, strategically located around the ore storage area, as shown in Figure 7 and Figure 8.

a) Surface Water Management Pond #3

Surface Water Management Pond #3 is located west of the ore storage area, as shown in Figure 8. The pond is bounded along three (3) sides by lined stable berms (Figure 59) and contains two (2) sumps. The geomembrane liner and protective geotextile on the internal slope of the berms were designed to extend 2.5 m below the surface and are anchored into the underlying permafrost zone to prevent any seepage from the pond into the ground below and to the surrounding environment. The berms and liner are in excellent condition. Excess water from the pond is pumped into the nearby, large capacity MP-06 surface water management pond whenever necessary.

b) MP-05 Pond

The MP-05 surface water management pond is located adjacent to the north-east corner of the ore stockpile, while the MP-06 and MP-06A ponds were constructed at the north-west corner. The three ponds are in excellent condition with stable, well-maintained berms and intact geomembrane liners, as shown in Figures 60, 64 and 65.

No instability, erosion or settlement was noted at the berms of the MP-05 pond and no toe seepage from the pond is visible anywhere around the pond's perimeter berm. A small liner damage was noted near the crest of the southern inlet channel to the pond, as shown in Figure 61. The liner in that area should be repaired as soon as practically possible.

The surface water from around the ore stockpile is collected in well-maintained drainage ditches, as shown in Figures 62 and 63. However, there was ponding water noted at the south end of the east ditch during the June inspection, indicating that the ditch should be deepened/excavated in the area of the

yellow circle shown in Figure 62, to facilitate uninterrupted water flow to the MP-05 pond. The start and end points of the long ditch should be surveyed and a gentle slope of the base of the ditch should be provided toward the MP-05 pond.

c) MP-06 and MP-06A Ponds

The large surface water management pond adjacent to the north-west corner of the ore stockpile area is divided into two (2) cells (MP-06 and MP-06A) by a liner-covered internal berm. The main (south) part of the pond is called MP-06 and is shown in Figure 64. The northern cell is called the "overflow pond" MP-06A, shown in Figure 65. The liner in the ponds and the stable, robust perimeter berms are in good condition, and no seepage was noted from the ponds, indicating good liner performance.

3.6 Q01 Rock Quarry

No activity was noted in the Q01 rock quarry at the time of the inspection. The steep snow-covered slopes (rock faces) in the quarry appear to be in stable condition with only minor weathering and bench erosion, as shown in Figure 66.

3.7 Surface Water Collection Ditches (P-SWD-3, -5, -6, -7, W3/W14, 380-Person Camp and PSC ditches)

There are several surface water collection drainage ditches across the Milne Inlet Port site, some of them are still under construction or improvement, as shown in figures 67 to 79. These open ditches are excavated somewhat into the native soils and then their sides and inverts are protected by fine to coarse crushed rock fill riprap or in many cases geotextile and riprap. Geotextile fabric has been used wherever the native subgrade along sections of the ditches is composed of fine-grained soils to prevent migration of fines into the overlying crushed rock fill and eventually into the ditches. The issues (5) that were identified at these ditches during the June 2023 inspection are summarized below:

- As described in previous inspection reports, sloughing of the sides of the **P-SWD-3** ditch, adjacent to the LP-2 laydown area, has occurred at several locations, as shown in Figures 67 and 68. It is evident that the sloughing of the ditch's slopes is a direct result of uncontrolled sheet-flow of surface water (melting snow from the adjacent snow-stockpile), flowing into the ditch that is not able to convey the collected water to the designated discharge location, marked by green circle "A" in Figure 7. As pointed out first in the 2021 inspection reports, the ditch currently slopes gently toward south-west, while the ditch was designed (and should) to drain the water toward north-east, toward the above noted discharge point (green circle "A").

  To improve the drainage capability of this ditch, it is recommended that it should be reconstructed to drain the large amount of surface water from the snow-dump to the north-east. During the reconstruction, the culvert in the ditch beneath the access road to the snow-dump should also be reinstalled to the correct invert levels (inlet and outlet). The debris, shown in Figure 68, that is visible in the northern part of the ditch should also be removed. To prevent

the migration of fine soil particles from the ditch to the environment, a rockfill check dam must be installed/constructed at the discharge point of the upgraded/reconstructed ditch (green circle "A").

- A section of the **P-SWD-5** ditch was noted with missing riprap, as shown in Figure 69. It appears that there is continuous subsurface water seepage from within the adjacent granular pad at this location, resulting in periodic sloughing/erosion of the side of the ditch just along this short section. It is recommended that the somewhat finer soil, currently forming the side of the ditch, be removed to a depth of around 1 m and replaced with crushed rock fill. To minimize migration of fine soil particles from the quarry pad to the ditch, the crushed rock fill should be placed over a layer of geotextile fabric. Figure 70 also shows that there is a clogged culvert in this ditch, located beneath the road at the entrance to the quarry. The completely clogged culvert must be replaced at this critical location of the ditch as soon as possible since the water flowing onto the access road from the ditch presents serious traffic safety risk and deterioration of the road's structure.
- As shown in Figure 10, the **P-SWD-6** ditch was constructed south of the rock quarry to drain surface water collected across the southern part of the quarry to strategically installed culverts at the south end of the ditch and subsequently to the west side of the tote road. Unfortunately, an area of the southern part of the quarry was over-blasted (blue circle in Figure 10), resulting in large quantity of ponding water there that is not able to flow into the **P-SWD-6** ditch since its invert level is located well above the water level in this man-made "pond". As shown in Figure 72, water from the pond flows away from the P-SWD-6 ditch toward the south end of the P-SWD-5 ditch.

  The flow currently occurs uncontrolled over the surface of the nearby road, presenting continuous risk to traffic. It is recommended that the pond should be connected to the P-SWD-5 ditch by extending that ditch to the pond, which process will require the installation of one or two new culverts.
- As shown in the middle image of Figure 9, the **380 M ditch** comprises two sections, the east and the south ditches, connected by a steel pipe culvert. During the June inspection it was noted that the steel culvert (Figure 77) is completely clogged, resulting in ponding water within the east ditch. It is recommended that the culvert be cleaned as soon as possible.
- The **PSC** drainage ditch has a somewhat "L" shaped alignment (see Figure 7) and is located north of the P-SWD-3 drainage ditch along the northern edge of the LP-2 laydown area. As shown in Figure 78, localized slope degradation/sloughing is visible at a short section of the ditch (marked by a red circle in Figure 7). The sloughing of the slope is apparently caused by frequent water seepage from the granular fill of the LP-2 laydown pad (blue arrows in Figure 78). It is likely that the frequent seepage at this location is a result of the inefficient drainage of surface water within the above discussed P-SWD-3 ditch.

As pointed out above, the collected surface water in the P-SWD-3 ditch should drain toward its north-east end. However, currently the water flows to the opposite direction. At the south-west end of the ditch the collected water seeps into the granular fill pad of the LP-2 laydown area and most likely exits at the location where the frequent slope problem is visible at the PSC ditch. It is recommended that the drainage conditions at the P-SWD-3 and PSC ditches be reviewed and rectified as early as practically possible. Once the drainage conditions in the P-SWD-3 ditch would be improved/rectified, the failed slope at the PSC ditch can also be repaired. The reparation should include the removal of disturbed riprap from the affected area, placement of geotextile on the exposed surface of native soils and replacement of the rockfill riprap. Based on field observations, the outflow end of the ditch must also be upgraded by the installation of geotextile and riprap along the base and side-slopes of the ditch. To prevent the migration of fine soil particles from the ditch to the environment a rockfill check dam must also be installed/constructed at the discharge point of the upgraded/reconstructed ditch (green circle "B" in Figure 7).

3.8 Tote Road Ditches and Culverts

Surface water from the P-SWD-6 drainage ditch is conveyed down toward the Tote Road through corrugated galvanized steel culverts, installed under an access road to the quarry and then under the Tote Road (Figures 80 and 81). The collected water is conveyed through the Tote Road culverts to small natural ponds, located along the west side of the Tote Road. Only minor siltation is visible at the inlet of the culverts (Figure 80), but both culverts appear to be clean, and the seasonal flow through them is uninterrupted.

3.9 Effluent Discharge Pipe and Slope

The discharge end of the effluent water pipe in the Port is located just north of the fuel storage facility, as shown in Figure 7. The slope in the immediate vicinity of the discharge point is covered with riprap; however, deterioration of the adjacent slopes of the valley, comprising native sandy soils, is visible (Figure 82). As shown in the image, there is a temporary steel casing pipe (frequently used by the Port's site services), supported by the slopes. In order to prevent further deterioration of the sandy slopes it is recommended that the valley beneath the casing pipe be filled with crushed rock fill, placed over high-strength geotextile fabric. Placement of such rock fill will prevent erosion of the fine soil particles from the valley to the bay and also provide adequate support for the heavy casing pipe.

3.10 LP-5 Storage Pad

A network of natural cracks and depressions were noted on the surface at the edge of the LP-5 storage area in 2022. This storage pad was apparently constructed over patterned native ground, where the periodic formation and thawing of ice wedges resulted in a network of "stripes" (depressions/cracks) within the active layer. It is most likely that this network of "ground depressions" was generally "eliminated" beneath most of the storage pad during its construction; however, a few depressions may

still develop, particularly along the edges. As recommended earlier, the cracks have been filled recently with the same material that was used for the construction of the pad (clean sand and gravel), as shown in Figures 83 and 84.

4.0 Tote Road Between Mary River Mine and Milne Inlet – Bridges, Former Borrow Areas, and a Culvert

Four (4) bridges, four (4) former borrow areas and a culvert with check dams were visually inspected during the June 2023 site visit. The general condition of the foundations at the bridge abutments and the slopes at the former borrow areas are summarized below, and the relevant images are shown in the attached Appendix C document.

4.1 Bridges (4)

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

Figures 85 and 86 show the main components of the bridge abutments. Important components of the abutments are the guardrails installed along both sides of the approach embankments to the bolt-a-bin earth-filled steel crib structures. The gaps between the ends of the bridge frame and the cribs are filled with precast reinforced concrete blocks. The purpose of the guardrails is to provide safety to the vehicles/trucks traveling on the road and to protect the cribs from damages.

As shown in Figure 87 and Figure 88, the abutments of this bridge appear to be stable, and no scour was noted in the riverbed around the abutments during the recent site visit. The abutments show no visible differential settlement or any structural discrepancy like deterioration of the steel bolt-a-bin abutments or sloughing of the riprap rock fill.

There are two (2) historic abutments located immediately adjacent to the "new" ones, one (1) of which is visible in Figure 88. As reported earlier and noted during the most recent visit, the metal bin structures of both "old" abutments have suffered damages in the past, most likely during the construction of the new abutments. As shown in Figure 88, some elements of the steel bolt-a-bin structure became damaged. The damaged elements should be removed, together with part of the sandy backfill from behind them (from the face of the abutment). The sand should then be replaced with clean crushed rock fill to prevent erosion of the finer soil from the old abutments (although the actual erosion from the abutments is somewhat minor). As recommended in the past, the two (2) old abutments should be kept in place since they provide additional support (even with the damaged steel box) to the adjacent "new" abutments and approach embankments.

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

As shown in Figure 89 and Figure 90, the abutments of this bridge are stable and no scour around the abutments was noted during the site visit. The abutments show no visible differential settlement or any structural discrepancy like damages to the bolt-a-bin foundation cribs. Similar to bridge 17, there are the

"remnants" of two (2) historic abutments (one of them is visible in Figure 90), located immediately adjacent to the "new" ones and some minor damages to the metal bins of both old abutments are visible. In order to maintain the stability of the currently used bridge abutments and approach embankments, the two (2) old abutments should be kept in place since they provide support to the adjacent structures.

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

As shown in Figure 91, there are no guardrails installed at this bridge although the abutments are generally stable and no scour in the riverbed and around the abutments was noted, as shown in Figures 92 and 93. However, it appears that the lack of guardrails resulted in some damages to the upper part of the bolt-a-bin cribs, shown in Figures 94 and 95. It is suspected that heavy maintenance equipment were driving closer to the cribs, resulting in some displacements of the upper parts of these structures. At this stage the movements do not represent stability problems; however, it is recommended that guardrails be installed at both ends of the bridge at both sides of the road to prevent further damage to the cribs. It shall be noted that as opposed to other bridges, the "old" bolt-a-bin abutments are still in relatively good condition at this location.

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

As shown in Figures 96, 97 and 98, the abutments of this bridge appear to be stable and no scour in the riverbed around the foundations and approach embankments was noted during the June 2023 site visit. The abutments show no differential settlement or any structural discrepancy like deterioration of the foundation bins.

4.2 Former Borrow Areas (4) and one Culvert (1)

Four (4) representative former borrow areas and a culvert with check dams were visually inspected during the June 2023 site visit, by following up on comments on typical ground conditions along the Tote Road, presented in a 2019 report by Tetra Tech. Two typical conditions were identified in that report, which conditions may have some adverse effects on the road:

a) The surface of the road appears to be located near the original ground level in some areas, with surface water ponding near or even flowing onto the road during snowmelt or rain.
b) Potential slope stability issues in cut areas of former borrow sites.

Two locations with condition (a) were inspected (**KM 06-900** and **KM 07+700**), and the actual conditions presented in Figure 99 and Figure 100. As shown in the images, there is poor grade and drainage control along the edge of the road at those locations due to lack of side ditches. The poor grade control and lack of drainage ditch can often result in unwanted surface water flow onto the road from both sides, wherever the surface of the road is located at somewhat lower elevation, as shown in the two images. The surface water can be rainwater but more often melted snow from the snow that is pushed to the sides of the road during winters and thaws during the early weeks of summers. Flowing run-off water on the surface of the road may result in erosion of road-fills and present traffic safety issues, particularly when the snow is

melting during sunny periods but freezes back again when the temperature is dropping back below zero. As it was recommended earlier, the critical road sections with such poor grade and drainage controls be mapped, and the drainage conditions be improved by providing adequate side-ditches wherever the elevation of the road surface is located somewhat lower than the adjacent ground surface. The drainage ditches should be constructed as specified in the Project's Civil Design Criteria and Drawings.

Two former borrow areas with condition (b) are present at locations **KM 09+700** and **KM 28+900**, where potential slope instability issues were identified in the past. Slope conditions at these two locations are presented in Figures 101 and 102. At the KM 09+700 location, the subject slope (with an approximate inclination of 1.5H:1V) is located well away from the edge of the road without endangering the traffic on the road; hence no action by the road maintenance team is required at this location.

A somewhat more critical slope was inspected around KM 28+900. As shown in Figure 102, the toe of the slope in that area is located closer to the edge of the road and the slope appears to be as steep as 1H:1V. In addition to spalling and raveling of the soils on the face of the slope, tension cracks near the crest's edge of the slope are also visible. The raveling face of the slope and the development of tension cracks indicate that the factor of safety against potential slope movement is close to unity at this slope and further slumping of the slope could be expected in the future. As pointed out above, the toe of the slope is located somewhat closer to the road, but at this stage it may not present risk to the traffic on the road or to the stability of the road. However, the slope should be monitored and reshaped (cut back to shallower slope inclination) if necessary. Although there is no immediate risk to the traffic on the road, the sloughing soil from the steep slope may fill up the drainage ditch gradually along the road. Poorly maintained drainage ditches always collect surface run-off from melted snow and rain and may result in potential softening of the ground along the edges of roads or may even result in some instability of the edge of road embankments. At the subject road section, it is suggested that the slope should be reshaped (cut back) to shallower inclination (preferably to 2H:1V) and the drainage ditch be cleaned of soils, as soon as practically possible.

One culvert and some check dams were also inspected near the Lake Access Road at **KM 33+000**. As shown in Figure 103, the culvert's inlet has been damaged recently, potentially clogging the culvert. To provide uninterrupted flow, the culvert should be replaced as soon as practically possible. More rockfill should also be placed around the culvert's inlet, while the silt deposited at the front of its outlet should be removed (Figure 104). The crest of the nearby check-dams (Figure 105), show some loss of rock fill, which should be replaced as soon as practically possible.

4.3 Section of the Haul Road Between the Crusher Pad and the Open Pit

The drainage condition along a section of the haul road between the crusher pad and the open pit was also reviewed during the June 2023 inspection. As it was pointed out in the 2019 Tetra Tech (TT) report, several large erosion channels were visible downslope from the open pit along the upslope side of the haul road. Such large erosion channels are common in other areas as well, with steep natural slopes. The

TT report has suggested that blankets of riprap should be installed on slopes along critical road sections and below culvert outlets.

As shown in Figures 106, 107 and 108, significant improvement to control surface erosion along the haul road was completed recently and became an ongoing task for the Mine Operations team. The improvement included upgrading the side ditches along the uphill side of the haul road, as shown in Figures 106 and 108. Run-off, flowing on the surface of the wide haul road is being captured by the formation/construction of a number of whoa-boys and cross ditches, as shown in Figure 107. Whoa-boys are low profile, trafficable earth banks combined with shallow ditches across roads. They intercept runoff flowing down a road and allow it to drain to the improved side ditches. Whoa-boys are also referred to as water bars, cross banks, humps, or diversion banks. Their presence is important since roads produce runoff much faster than the surrounding landscape.

5.0 Conclusion

WSP Environment & Infrastructure Canada Ltd., has completed the first of the two (2) required geotechnical site inspections of 2023 at the Mary River Project in Nunavut. Based on field observations, the condition of the inspected infrastructure components can be summarized as follow:

- The surface water management ponds and waste disposal areas are enclosed by relatively shallow, stable, in many cases robust, berms. The berms show no signs of instability, there are no tension cracks or excessive settlements, and no detrimental slope erosion is visible on the berms. These structures were constructed by using thaw-stable, generally granular materials, placed over thaw-stable subgrades. Foot traffic on the berms (crest and slopes) must be minimized, while truck traffic on them must always be avoided. Wherever truck traffic into the cells is necessary, ramps are provided, and those ramps shall be maintained in good condition. Some localized damages on the crest and slopes were noted at a few waste disposal cells (HWB-06 for example), which should be remediated/repaired as soon as practically possible.
- The water and waste storage surface water management ponds and cells comprised of HDPE/LLDPE liners are in good condition. No seepage from the currently operating ponds and cells was noted. Minor damage to the liner was noted at a couple of locations (MS-06 spillway in Mary River and MP-05 in Milne Inlet Port), as detailed above in the report and shown in the relevant images in Appendix A and B. As specified, these minor damages to the liners should be repaired as soon as practically possible. Sloughing of the cover layer from the slope/liner was visible at two localized areas in the two new landfarm cells in Mary River. The eroded cover layers should be reinstated in those areas as specified in the relevant design drawings.
- Open drainage ditches and culverts across the Mary River and Milne Port sites are generally in good condition with some erosion and sloughing of slopes visible at a few locations, particularly where the riprap slope protection is missing, or the flow is blocked by materials (cobbles and boulders) sloughing/rolling into the ditches. As part of a more frequent maintenance program,

the eroded sides of the ditches should be repaired/regraded, and the missing rock fill riprap replaced. One (1) of the drainage ditches in the Port (P-SWD-3) still requires special attention. Currently the floor of this drainage ditch slopes away from the designed discharge point (north-east end), which resulted in a situation where the ditch is discharging water into the granular fill pad of the LP-2 storage area. It is recommended that the P-SWD-3 ditch be redesigned and reconstructed to facilitate efficient drainage of all surface water to the north-east. The design must consider the fact that large amount of snow is stockpiled adjacent to this ditch every winter that generates excessive quantity of run-off water in the spring/summer that must be drained more efficiently toward the north-east. Installation of a rockfill check-dam at the outlet of that ditch is also recommended.

- The MS-11 surface water management ponds (north and south ponds) at KM-105 in Mary River, were designed and constructed to provide sediment control for runoff, originating from large areas along the mine haul road. It was noted that the recently collected water from the pond has found its way within the active layer (bypassing the liner) and seeped toward downstream beneath the spillway. It is understood that the potential location of the leak is still under investigation and steps will be made to rectify the situation and bring the pond back into service.

6.0 Closing Remarks

We trust that the above technical report and its appendices provide you with satisfactory information in connection with the reviewed infrastructure components at the selected sites of the Mary River Project. Should you have any questions regarding this report, please do not hesitate to contact our office.

Sincerely,

WSP Environment & Infrastructure Ltd.

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