MARY RIVER MINE

TOTE ROAD PERMANENT CROSSING PLAN - ROUND CSP CULVERT INSTALLATIONS

WEEKLY PROGRESS REPORT **WEEK 10 – April 14 to April 20, 2024**

CLIENT:	**Baffinland Iron Mines Corporation**	**PROJECT NO.:**	**NB102-00181/93**
TO:	**Baruck Wile, Rudy Dietrich, Frank Hynes, Michael Burns, Dale Tulloch, Abid Najey, Jim Patterson, Shannon Mulhall, David Bruce, Katie Babin, Todd Swenson (Baffinland), Michael Johnson (NSC)**	**FILE NO.:**	**.F08**
CC:	**Richard Cook, Toby Perkins, Andy Phillips, Greg Johnstone, Mackenzie Aiken, Matthew Trask (KP)**	**REF. NO.:**	**82**
FROM:	**Michael Bourdignon, Darren Kocken**	**PAGES:**	**12**

1 – GENERAL

1.1 RESPONSIBILITIES

- **Baffinland Iron Mines Corporation (Baffinland) -** Owner, drilling and blasting, traffic management plans, and overall project management.
- **Nuna -** Surveying, excavation, culvert installation, and backfill.
- **Knight Piésold Ltd. (KP) -** QA/QC for the excavation, culvert installation, and backfill.
- **ALS Laboratory (ALS) -** Laboratory testing of collected samples.

1.2 KNIGHT PIÉSOLD LTD. (KP) SITE STAFF

- Michael Bourdignon (DS) - April 14, 2024, to April 20, 2024
- Mackenzie Aiken (NS) - April 14, 2024, to April 18, 2024
- Darren Kocken (NS) - April 18, 2024, to April 20, 2024

1.3 HEALTH AND SAFETY

- No health and safety incidents occurred during the reporting period.
- Completed KP safety meeting minutes daily.
- Completed Baffinland field level risk assessments (FLRA's) daily.
- KP attended Nuna's daily toolbox meetings at 6:00 am/pm.

1.4 WEATHER

- The weather ranged between sunny and clear to overcast and snow, with daily temperature highs between -25˚C and -6 ˚C.

1.5 MEETINGS AND CORRESPONDENCE

- KP attended the 7:30 am Daily Coordination Meetings
- KP issued daily progress reports for April 14 to April 20, 2024 (Reference numbers 73, 74, 76 - 80)
- KP issued the weekly report for April 7 to 13, 2024 (Reference number 75)
- KP issued CV-216 Design Change Due to Massive Ice.

2 – CONSTRUCTION ACTIVITIES

2.1 GENERAL

- **CV-001:** Construction activities at CV-001 included completion of the approach ramps and the placement of road topping material. All construction activities at CV-001 are now complete. Hand off to Road Maintenance expected in the coming week.

- **BG-04:** Construction activities at BG-04 included the placement of non-woven geotextile and fine riprap on the upstream slopes, placement of coarse riprap mixed with stream substrate material in the inlet apron, placement of 3/4 inch road topping material, construction of road safety berms, and the continued use of the frost fighter within the low flow culverts for the melting of the entrained snow and ice within the stream substrate material. Remaining tasks to be completed at BG-04 include placement of embedded boulders and boulder clusters in the culverts and riprap lining to existing ditches with rock check dams.
- **CV-216:** Construction activities at CV-216 included the excavation of snow, ice, and unsuitable blast materials, the construction of the access ramps, foundation preparation of the inlet apron, road crossing, and outlet apron, the placement of 32 mm minus culvert backfill material, and the placement of geotextile, geomembrane, and 3/4 inch minus material in the key in trench at the inlet apron.
- **CV-102:** Construction activities at CV-102 included the mobilization of a drill to the road crossing, the construction of the ice road bypass, and the clearing of snow from the work area.
- **CV-106:** Construction activities at CV-106 included the construction of the ice road bypass.

2.2 BAFFINLAND

- Baffinland ore haul trucks (OHTs) backhauled road topping 3/4 inch minus material from the Milne Port to BG-04 on April 16, 2024.
- Baffinland Environmental Department inspected the pooling water at the downstream outlet apron at CV-216 on April 17, 2024.
- Baffinland mobilized a drill to CV-102 on April 19, 2024.
- Baffinland monitored the melting of the entrained snow in the stream substrate material within the low flow culverts at BG-04.

2.3 NUNA

- Nuna completed placement of non-woven geotextile, fine riprap, coarse riprap, stream substrate and road topping material at BG-04.
- Nuna completed installation of the approach ramps and the placement of the road topping material at CV-001.
- Nuna visited BG-04 and monitored the melting of the entrained snow in the stream substrate material within the low flow culverts.
- Nuna continued hauling fine and coarse riprap material from the Mary River Mine site to BG-04.
- Nuna commenced construction of the ice road bypass at CV-106.
- Nuna commenced construction of the ice road bypass at CV-102.
- Nuna continued foundation preparation and the excavation of unsuitable materials from CV-216.
- Nuna commenced placement of 32 mm minus material at CV-216.
- Nuna completed installation of geotextile and geomembrane within the key in trench at the inlet apron at CV-216.

2.4 KP

- KP Visited CV-001, BG-04, CV-102 and CV-106 throughout the week on dayshift and nightshift.
- KP monitored the excavation of snow, ice, and unsuitable materials at CV-216.
- KP monitored placement and compaction of 32 mm minus culvert backfill material and 3/4 inch minus material at CV-216.
- KP monitored the installation of the geomembrane and geotextile for the seepage cutoff trench at CV-216.
- KP monitored the placement of the geotextile, fine riprap, coarse riprap, and stream substrate material at the side slopes and culvert aprons at BG-04.

3 – CONSTRUCTION QUALITY ASSURANCE (CQA) ACTIVITIES

3.1 QUALITY ASSURANCE

KP monitored the melting of the entrained snow in the stream substrate material within the low flow culverts at BG-04.

KP completed an in-culvert survey of the boulders in the low flow culvert at CV-001.

KP provided a verbal foundation approval for the inlet apron area and road crossing area at CV-216.

3.2 QUALITY CONTROL

KP visually inspected the Fine Riprap and Coarse Riprap hauled to BG-04.

KP visually inspected the Stream Substrate Material used for the Inlet apron at BG-04. Stream Substrate Material used for the inlet apron at BG-04 was hauled from the km 97.5 borrow area.

KP visually inspected the Fine Riprap placed on the upstream slopes at BG-04.

KP inspected culvert infill material from the inlet of the BG-04 low flow culverts. KP collected a sample from each of the two low flow culverts for visual inspection of the remaining snow and ice content.

3.3 LABORATORY TESTING

No samples were sent to the laboratory for grain size analysis during the reporting period of April 14 to 20, 2024.

No laboratory testing results were received during the reporting period of April 14 to 20, 2024.

4 – ENGINEERING ITEMS

- **April 14** - the following items were discussed:
  - No Engineering items were discussed on this day.
- **April 15** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - Mike Burns of BIM requested updated quantities (including an estimated quantity of bentonite and a spec sheet and quantities for gabion mattresses) for the culvert design at BG-04 from Greg Johnstone of KP.
    - Greg Johnstone of KP informed BIM and Nuna that the updated design drawings for CV-216 are expected to be provided tomorrow on April 16, 2024.
    - Construction of the ice road bypasses at CV-102 and CV-106 are on hold for the time being until such time as the weather cools down enough to continue.
    - The drilling and blasting of CV-102 (and after that CV-106) is on hold until BIM is confident that the weather and ice bypass roads will hold long enough to complete construction at those two locations.
- **April 16** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - Greg Johnstone of KP informed BIM and Nuna that the updated design drawings for CV-216 are expected to be provided sometime today.
    - Construction of the ice road bypasses at CV-102 and CV-106 are complete.
    - The drilling and blasting of CV-102 (and after that CV-106) is on hold until BIM is confident that the weather and ice bypass roads will hold long enough to complete construction at those two locations.

- **April 17** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - Mike Burns of BIM informed the team that it is a possibility that BG-04 and CV-216 will be the final two culvert crossings to be completed this year.
    - The water found in the CV-216 excavation is to be inspected by Environment today.
    - Baruck from BIM asked Greg from KP for the percent of bentonite to be mixed with ¾ inch material. Greg informed Baruck that it will be approximately 20%.
- **April 18** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - BIM Environment noted that the road topping elevation is above the riprap. RFI 13 indicated that road topping would be above the riprap to reduce the potential for damaging of geotextile.
    - Boulder clusters at BG-04 are pending to be placed.
    - Baruck from BIM and Greg from KP discussed liner placement instead of bentonite at CV-216. Greg stated that KP will submit a design change for this.
- **April 19** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - Baffinland may continue and complete the remaining CSPs this spring. Discussion needs to occur to determine if the crossings will be completed with an ice road crossing or single lane traffic.
    - Drilling to start at CV-102 today.
    - Greg from KP asked the team how they plan to handle water at the outlet of CV-216. Harvey from Nuna confirmed that water is no issue at CV-216.
    - Greg stated that KP provided a response to RFI 14 on the CV-216 foundation design change.
    - Jim asked about the status of the culvert infill material at BG-04. Greg from KP stated that discussions were held to top dress that material and use a concrete vibrator. Jim told the team to organize this.
- **April 20** - the following items were discussed:
  - Michael Bourdignon of KP and Dale Tulloch of BIM discussed the plan to fill the low flow culverts at BG-04 with additional Stream Substrate Material to fill the voids. KP recommends using a concrete vibrator or using a moderate flow of water to achieve this goal. BIM has decided to use five-gallon buckets of Stream Substrate Material to top dress and fill the voids in the culverts. KP will monitor this process tomorrow morning to determine if the desired impact of filling the void spaces is being achieved.

5 – PHOTOS

Photo 1 **Heating progress inside of northwest culvert inlet at BG-04. Photo taken April 18, 2024, facing south.**

Photo 2 **Heating progress inside of southeast culvert inlet at BG-04. Photo taken April 18, 2024, facing south.**

Photo 3 Road topping placed at CV-001. Photo taken April 16, 2024, facing west.

Photo 4 Placement of non-woven geotextile on the upstream slope of BG-04. Photo taken April 16, 2024, facing northwest.

Photo 5 Final riprap placement on the inlet side slopes at BG-04. Photo taken April 16, 2024, facing east.

Photo 6 Completed culvert inlet apron at BG-04. Photo taken April 16, 2024, facing east.

Photo 7 **Excavation of upstream inlet and road crossing at CV-216. Photo taken April 17, 2024, facing northeast.**

Photo 8 **Ice encountered in the inlet excavation area at CV-216. Photo taken April 18, 2024, facing southeast.**

Photo 9 Approval foundation surface at the inlet apron at CV-216. Photo taken April 18, 2024, facing southeast.

Photo 10 Placement of 32 mm minus material at the inlet apron at CV-216. Photo taken April 18, 2024, facing southeast.

Photo 11 Widening of the excavation at CV-216. Photo taken April 19, 2024, facing east.

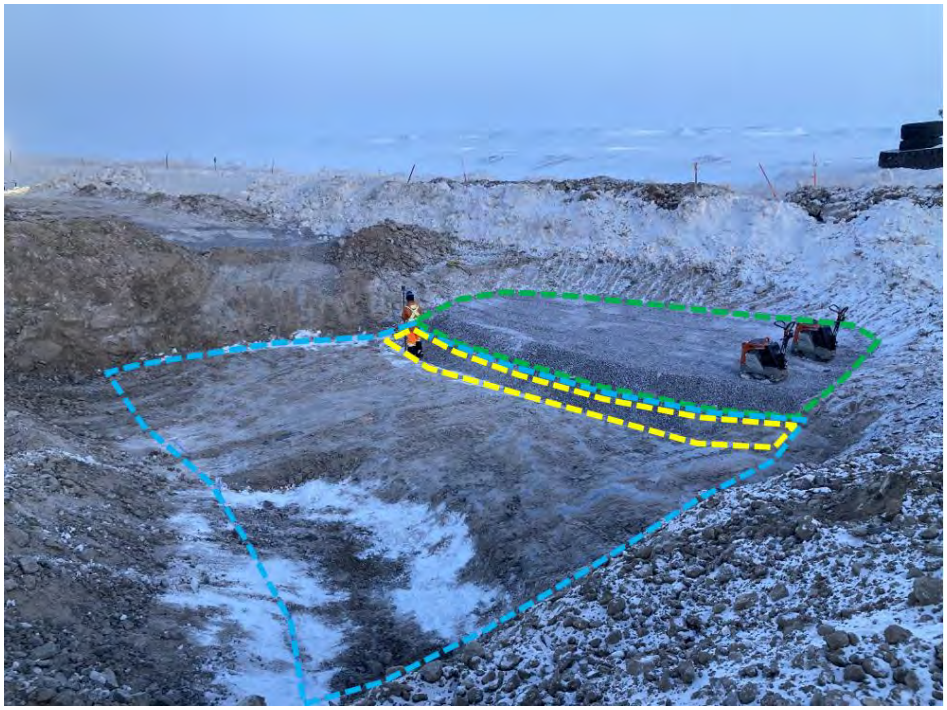

Photo 12 Approved foundation at CV-216 as of April 19, 2024. Photo taken April 19, 2024, facing southeast.

Photo 13 Compaction of 32 mm minus material and location of geomembrane/geotextile key in trench at the inlet of CV-216. Photo taken April 19, 2024, facing northwest.

Photo 14 Compaction of 200 mm lift of 3/4 inch material in the trench at the inlet of CV-216. Photo taken April 20, 2024, facing southeast.

Photo 15 **Placement of 32 mm minus material at the CV-216 road crossing area. Photo taken April 20, 2024, facing west.**

MARY RIVER MINE

TOTE ROAD PERMANENT CROSSING PLAN - ROUND CSP CULVERT INSTALLATIONS

WEEKLY PROGRESS REPORT **WEEK 11 – April 21 to April 27, 2024**

CLIENT:	**Baffinland Iron Mines Corporation**	**PROJECT NO.:**	**NB102-00181/93**
TO:	**Baruck Wile, Rudy Dietrich, Frank Hynes, Michael Burns, Dale Tulloch, Abid Najey, Jim Patterson, Shannon Mulhall, David Bruce, Katie Babin, Todd Swenson (Baffinland), Michael Johnson (NSC)**	**FILE NO.:**	**.F08**
CC:	**Richard Cook, Toby Perkins, Andy Phillips, Greg Johnstone, Mackenzie Aiken, Michael Bourdignon (KP)**	**REF. NO.:**	**94**
FROM:	**Matthew Trask, Darren Kocken**	**PAGES:**	**13**

1 – GENERAL

1.1 RESPONSIBILITIES

- **Baffinland Iron Mines Corporation (Baffinland) -** Owner, drilling and blasting, traffic management plans, and overall project management.
- **Nuna -** Surveying, excavation, culvert installation, and backfill.
- **Knight Piésold Ltd. (KP) -** QA/QC for the excavation, culvert installation, and backfill.
- **ALS Laboratory (ALS) -** Laboratory testing of collected samples.

1.2 KNIGHT PIÉSOLD LTD. (KP) SITE STAFF

- Michael Bourdignon (DS) - April 21, 2024, to April 24, 2024
- Matthew Trask (DS) - April 25, 2024, to April 27, 2024
- Darren Kocken (NS) - April 21, 2024, to April 27, 2024

1.3 HEALTH AND SAFETY

- No health and safety incidents occurred during the reporting period.
- Completed KP safety meeting minutes daily.
- Completed Baffinland field level risk assessments (FLRA's) daily.
- KP attended Nuna's daily toolbox meetings at 6:00 am/pm.

1.4 WEATHER

- The weather ranged between sunny and clear to blowing snow and white out conditions, with daily temperature highs between -6˚C and -15 ˚C.

1.5 MEETINGS AND CORRESPONDENCE

- KP attended the 7:30 am Daily Coordination Meetings
- KP issued daily progress reports for April 21 to April 27, 2024 (Reference numbers 81, 85 - 88, 90, 91)
- KP issued the weekly report for April 14 to 20, 2024 (Reference number 82)
- KP issued the Foundation Acceptance Form CV-216-FND-01 for the entire foundational area of CV-216 (Reference number 83)
- KP issued Surveillance Form BG-04-SRV-03 for the non-compliant installation of the embedded boulder clusters and the protruding boulders within the low flow culverts at BG-04 (Reference number 84)
- KP issued the Foundation Acceptance Form CV-001-FND-02 for the inlet and outlet apron areas of CV-001 (Reference number 89)

2 – CONSTRUCTION ACTIVITIES

2.1 GENERAL

- **CV-001:** CV-001 was handed over to Road Maintenance and is now open for traffic.
- **BG-04:** Construction activities at BG-04 included the placement of additional riprap and Stream Substrate Material in the first four (4) m of the low flow culvert inlets, excavation and removal of the ice road bypass, excavation and construction of riprap lined swales and rock check dams along the east and west sides of the inlet apron.
- **CV-216:** Construction activities at CV-216 included foundation preparation, placement and compaction of 32 mm minus material, installation of insulation material, installation of geotextile and geomembrane material, installation of the 2.0 m diameter low flow CSP culverts, installation of 1.8 m diameter high flow CSP culverts.
- **CV-102:** Construction activities at CV-102 included the excavation of unsuitable blast materials, foundation preparation, placement and compaction of 32 mm minus material, installation of insulation material, installation of geotextile and geomembrane material, placement and grading of 3/16" bedding material for the 1.8 m diameter low flow CSP culvert.
- **CV-106:** Construction activities at CV-106 included the drilling of blasting drillholes.

2.2 BAFFINLAND

- Oversaw drilling at CV-102.
- Oversaw the blasting at CV-102 on April 23, 2024.
- Oversaw drilling at CV-106.
- Completed the filling of the voids within the low flow culvert at BG-04.

2.3 NUNA

- Completed excavation and ripping of blast material at CV-102.
- Continued hauling fine riprap to the 36 km laydown.
- Continued placement of 32 mm minus material at CV-216.
- Completed placement of 3/16-inch culvert bedding material for the three (3) 2.0 m diameter low flow CSP culverts and the two (2) 1.8 m diameter high flow CSP culverts at CV-216.
- Completed installation of geotextile and geomembrane within the key in trench at the outlet apron at CV-216.
- Completed placement of 3/4-inch material in the key in trenches at the inlet and outlet aprons at CV-216.
- Completed installation of insulation material for the entire foundational footprint at CV-216.
- Completed installation of the three (3) 2.0 m diameter low flow CSP culverts and the two (2) 1.8 m diameter high flow CSP culverts at CV-216.
- Commenced placement of 32 mm minus material at CV-102.
- Completed installation of geotextile and geomembrane within the key in trench at the inlet apron at CV-102.
- Completed placement of 3/4-inch material in the key in trench at the inlet apron at CV-102.
- Commenced installation of insulation material for the inlet apron and road crossing areas at CV-102.
- Completed placement of 3/16-inch culvert bedding material for the 1.8 m diameter low flow CSP culvert at CV 102.
- Commenced excavation of the ice from the northern approach ramp foundation footprint at CV-216.
- Completed excavation and removal of the ice road bypass at BG-04.
- Completed excavation and construction of riprap lined swales and rock check dams along the east and west sides of the inlet apron.

2.4 KP

- Visited BG-04, CV-216, CV-102 and CV-106 throughout the week on dayshift and nightshift.
- Monitored placement and compaction of 32 mm minus culvert backfill material, 3/4-inch minus material, and 3/16-inch culvert bedding material at CV-216.
- Monitored the installation of geomembrane and geotextile materials for the seepage cutoff trenches at CV-216 and CV-102.
- Monitored the placement of the geotextile and riprap for the construction of the swales and rock check dams along the east and west sides of the inlet apron at BG-04.
- Monitored the installation of insulation material at CV-216 and CV-102.
- Monitored the installation of the three (3) 2.0 m diameter low flow CSP culverts and the two (2) 1.8 m diameter high flow CSP culverts at CV-216.
- Monitored the placement and compaction of 32 mm minus material at CV-102.

3 – CONSTRUCTION QUALITY ASSURANCE (CQA) ACTIVITIES

3.1 QUALITY ASSURANCE

KP monitored the placement and entrainment of additional riprap and Stream Substrate Material in the low flow culverts at BG-04. Three (3) lifts of sand were top dressed atop the riprap and flushed into the voids using water in between lifts until the void spaces were adequately filled with sandy material.

KP provided a verbal foundation approval for part of the culvert crossing area underneath the road crossing and the outlet apron at CV-216.

KP provided a verbal foundation approval for the entire foundational footprint at CV-102.

KP and Nuna surveyors verified the inlet and outlet invert elevations for the installed low and high flow culverts at CV 216.

3.2 QUALITY CONTROL

KP collected a 3/16 inch culvert bedding material record sample from the bedding material below the centre low flow culvert at CV-216 on April 22, 2024 (Sample ID: R-CBM-07).

KP collected a 32 mm minus culvert backfill material control sample from the stockpile at the 80 km laydown for use in construction at CV-216 (Sample ID: C-CBF-10).

KP collected a 32 mm minus culvert backfill material control sample from the stockpile at the 33 km laydown for use in construction at CV-102 (Sample ID: C-CBF-11).

KP collected a 32 mm minus culvert backfill material record sample from the placed and compacted backfill material in the lift at 0.40 m below the top of the placed low flow culverts at CV-216 (Sample ID: R-CBF-06).

KP collected a 32 mm minus culvert backfill material control sample from the culvert backfill material stockpile at the km 33 laydown area to support the culvert installation at CV-106 (Sample ID: C-CBF-12).

KP collected a 3/16 inch minus culvert bedding material record sample from the culvert bedding material placed under the southern high flow CSP culvert at CV-216 (Sample ID: R-CBM-08).

KP collected a 3/16 inch minus culvert bedding material record sample from the culvert bedding material placed under the low flow CSP culvert at CV-102 (Sample ID: R-CBM-09).

Grain size analysis testing results for BLEND-CBF-08, BLEND-CBF-09, BLEND-CBF-10, BLEND-CBF-11 and BLEND-CBF-12 were received by KP and BIM from ALS on April 27, 2024.

The results for BLEND-CBF-10, BLEND-CBF-11 and BLEND-CBF-12 indicate that the samples are finer than the material specification gradation envelope. KP communicated with Sana, and it was discussed that the material has already been hauled from the stockpile where the samples were collected. KP will collect control samples from the stockpiles at the culvert locations to determine if the material is within specification.

3.3 LABORATORY TESTING

Table 1: Laboratory Results

KP SAMPLE ID	ALS LAB ID	Plotting ID	Culvert ID	NAME DESCRIPTION	MATERIAL DESCRIPTION	SAMPLE COLLECTION DATE	SAMPLE TESTING DATE	SAMPLE WEIGHT(Kg)	LABORATORY RESULTS							
									Moisture Content (ASTM D2216)	Particle Size Distribution (ASTM D422)						
										31.5	25	16	10	6.3	1	0.1
									%	%	%	%	%	%	%	%
CONTROL SAMPLES																
Blend -CBF-08	Blend -CBF-08	BLEND-CBF-08	N/A	Culvert Backfill Blend Sample 08	32mm minus culvert backfill	2024-04-20	2024-04-21	13.99	6.98	99.3	88.3	53.5	33.8	24.6	9.5	0.0
Blend -CBF-09	Blend -CBF-09	BLEND-CBF-09	N/A	Culvert Backfill Blend Sample 09	32mm minus culvert backfill	2024-04-20	2024-04-21	14.98	0.5	100.0	97.7	65.3	41.0	29.1	10.4	0.0
Blend -CBF-10	Blend -CBF-10	BLEND-CBF-10	N/A	Culvert Backfill Blend Sample 10	32mm minus culvert backfill	2024-04-20	2024-04-21	14.04	0.95	100.0	97.7	70.0	45.4	32.9	12.7	0.0
Blend -CBF-11	Blend -CBF-11	BLEND-CBF-11	N/A	Culvert Backfill Blend Sample 11	32mm minus culvert backfill	2024-04-20	2024-04-21	13.90	1.98	100.0	90.7	60.3	40.4	30.6	13.2	0.0
Blend -CBF-12	Blend -CBF-12	BLEND-CBF-12	N/A	Culvert Backfill Blend Sample 12	32mm minus culvert backfill	2024-04-20	2024-04-21	10.98	0.59	99.4	90.3	66.0	49.1	39.1	16.7	0.0

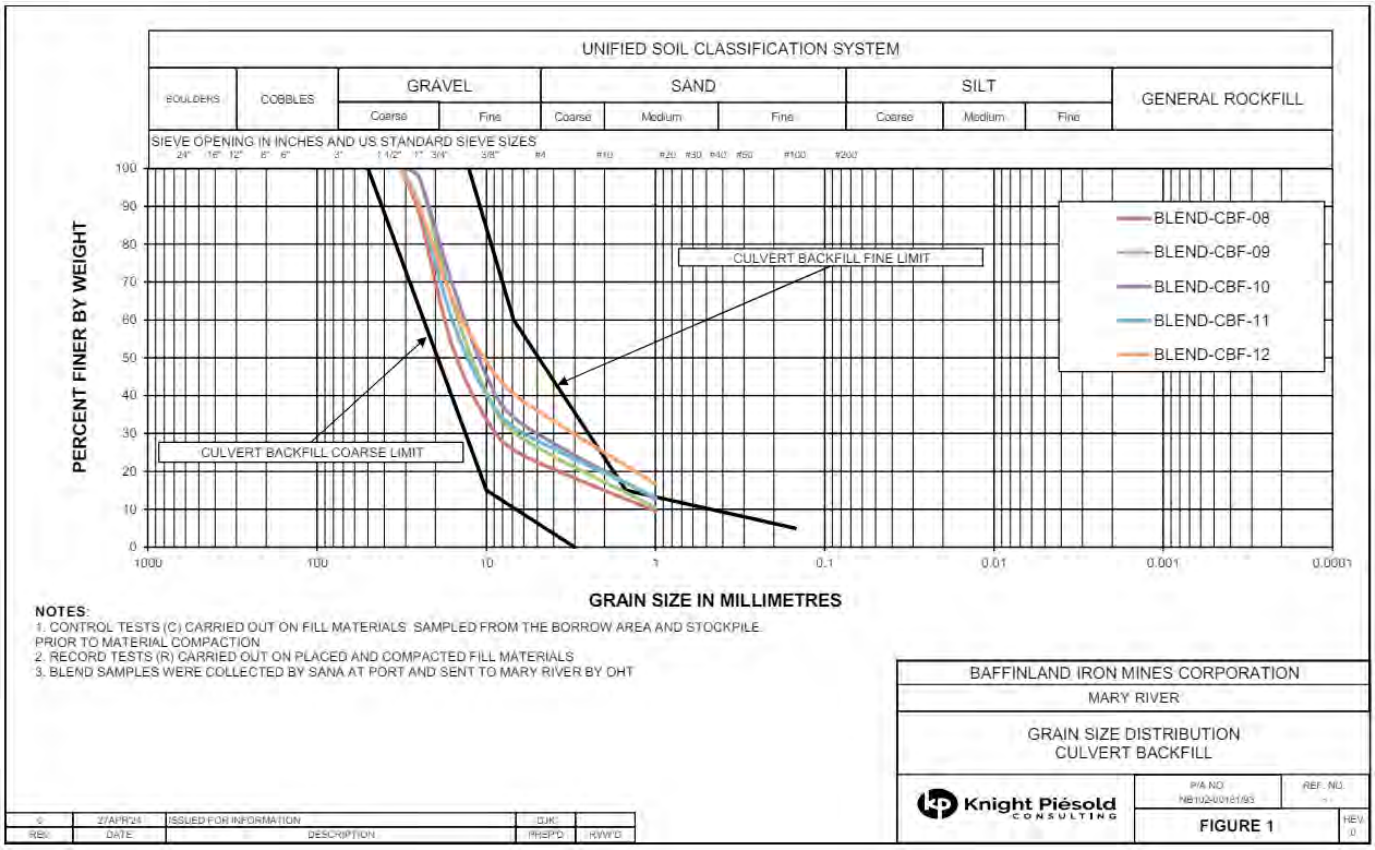

Figure 1: Grain Size Distribution - 32mm minus Culvert Backfill Samples from Sana Crusher

4 – ENGINEERING ITEMS

- **April 21** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - Michael Bourdignon of KP will monitor the placement of additional riprap and Stream Substrate Material in the low flow culverts at BG-04. A water truck will be present to allow for the flushing of the sandy material into the void spaces within the BG-04 low flow culverts.
    - Blasting of CV-102 tentatively scheduled for Tuesday April 23, 2024.
- **April 22** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - Blasting at CV-102 is planned for tomorrow.
    - CV-106 blast design to be completed. The blasting is to be completed this week.
    - Baffinland completed the filling of the voids within the culvert at BG-04. KP to provide correspondence that this has been completed.
- **April 23** - No engineering items were discussed.
- **April 24** - No engineering items were discussed.
- **April 25** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - Drilling at CV-106 to be completed.
    - BG-27 to be blasted next and completed in phases.
    - Dale has asked to use the liner key trench in place of the bentonite at CV-102 and CV-106. KP to provide written correspondence.
- **April 26** - the following items were discussed:
  - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
    - KM 27 spoils site for waste blast material has been identified.
    - CV-106 blast scheduled for Saturday April 27, at 3:00 pm.
    - Nuna asked why the anchor trench at CV-102 was excavated deeper than the design drawing. It was discussed that the excavation was extended to remove the permeable 32 mm minus and extend to frozen ground to tie the geomembrane into.
- **April 27** - No engineering items were discussed.

5 – PHOTOS

Photo 1 Placement of addition Stream Substrate Material in the low flow culverts at BG-04. Photo taken April 21, 2024, facing south.

Photo 2 Compaction of 32 mm minus material at the outlet apron at CV-216. Photo taken April 21, 2024, facing east.

Photo 3 **Anchoring geotextile and geomembrane into the insulation at the inlet trench of CV-216. Photo taken April 22, 2024, facing southwest.**

Photo 4 **Survey verifying the inlet invert elevation of the 2.0 m diameter low flow CSP culverts at CV-216. Photo taken April 22, 2024, looking northwest.**

Photo 5 Installation of the second 9.0 m long segment of the 2.0 m diameter low flow CSP culverts at CV-216. Photo taken April 23, 2024, facing south.

Photo 6 Second layer of plug (geotextile) placed atop the geomembrane in the outlet trench at CV-216. Photo taken April 23, 2024, facing east.

Photo 7 Placement of 32 mm minus culvert backfill material between the low flow CSP culverts at CV-216. Photo taken April 24, 2024, facing northeast.

Photo 8 Placement of 32 mm minus culvert backfill material at CV-102. Photo taken April 24, 2024, facing north.

Photo 9 Compacting second lift of culvert backfill material between placed low flow CSP culverts at CV-216. Photo taken April 25, 2024, facing southwest.

Photo 10 Installation of the first 8.0 m long segment of the eastern 1.8 m diameter high flow CSP culvert at CV-216. Photo taken April 25, 2024, facing northeast.

Photo 11 Backfilled and compacted anchor-trench with ¾ inch minus material at CV-102. Photo taken April 26, 2024, facing south.

Photo 12 Installation of the insulation material layered with the excess geomembrane and geotextile material from the geomembrane anchor-trench at CV-102. Photo taken April 26, 2024, facing east.

Photo 13 Current backfill progress at the end of nightshift at CV-216. Photo taken April 26, 2024, facing northeast.

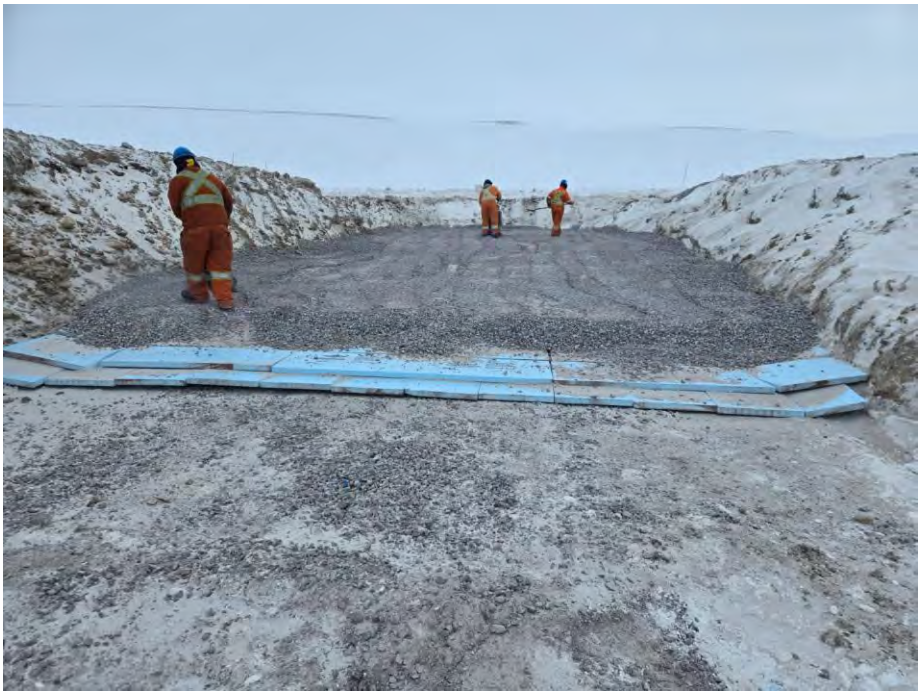

Photo 14 Compaction of the first 200 mm lift of 32 mm minus material above insulation at CV-102. Photo taken April 27, 2024, facing east.

Photo 15 **Continued drilling at CV-106. Photo taken April 27, 2024, facing southeast.**

MARY RIVER MINE

TOTE ROAD PERMANENT CROSSING PLAN - ROUND CSP CULVERT INSTALLATIONS

WEEKLY PROGRESS REPORT **WEEK 12 – April 28 to May 4, 2024**

CLIENT:	**Baffinland Iron Mines Corporation**	**PROJECT NO.:**	**NB102-00181/93**
TO:	**Baruck Wile, Rudy Dietrich, Frank Hynes, Michael Burns, Dale Tulloch, Abid Najey, Jim Patterson, Shannon Mulhall, David Bruce, Katie Babin, Todd Swenson (Baffinland), Michael Johnson (NSC)**	**FILE NO.:**	**.F08**
CC:	**Richard Cook, Toby Perkins, Andy Phillips, Greg Johnstone, Mackenzie Aiken, Michael Bourdignon (KP)**	**REF. NO.:**	**103**
FROM:	**Matthew Trask, Darren Kocken**	**PAGES:**	**17**

1 – GENERAL

1.1 RESPONSIBILITIES

- **Baffinland Iron Mines Corporation (Baffinland) -** Owner, drilling and blasting, traffic management plans, and overall project management.
- **Nuna -** Surveying, excavation, culvert installation, and backfill.
- **Knight Piésold Ltd. (KP) -** QA/QC for the excavation, culvert installation, and backfill.
- **ALS Laboratory (ALS) -** Laboratory testing of collected samples.

1.2 KNIGHT PIÉSOLD LTD. (KP) SITE STAFF

- Matthew Trask (DS) - April 28 to May 4, 2024
- Darren Kocken (NS) - April 28 to May 4, 2024

1.3 HEALTH AND SAFETY

- No health and safety incidents occurred during the reporting period.
- Completed KP safety meeting minutes daily.
- Completed Baffinland field level risk assessments (FLRA's) daily.
- KP attended Nuna's daily toolbox meetings at 6:00 am/pm.

1.4 WEATHER

- The weather ranged between sunny and clear to blowing snow and white out conditions, with daily temperature highs between -10˚C and -20˚C.

1.5 MEETINGS AND CORRESPONDENCE

- KP attended the 7:30 am Daily Coordination Meetings.
- KP issued daily progress reports for April 28 to May 4, 2024 (Reference numbers 91, 93, 95, 97 to 101).
- KP issued foundation approval CV-102-FND-01 for the entire foundational footprint at CV-102 on April 30, 2024 (Reference number 92).
- KP issued the weekly report for April 21 to 27, 2024 (Reference number 94).
- KP issued surveillance form CV-216-SRV-01 for the dent observed in the northern high flow culvert at CV-216 on April 30, 2024 (Reference number 96).

2 – CONSTRUCTION ACTIVITIES

2.1 GENERAL

- **CV-216:** Construction activities at CV-216 included placement and compaction of 32 mm minus material, placement and compaction of local blasted fill material, placement of riprap and 3/16 inch material within the interior of the three, 2.0 m diameter low flow culverts, placement of fine riprap and geotextile along the 2H:1V sloped side slopes, placement of coarse riprap and 3/16 inch material in the inlet and outlet apron areas, and placement of 3/4 inch road topping material.
- **CV-102:** Construction activities at CV-102 included placement and compaction of 32 mm minus material in the base of excavation, installation of insulation material, placement and grading of 3/16 inch culvert bedding material, installation of the 1.8 m diameter low flow culvert, installation of the 1.0 m diameter high flow culvert, placement and compaction of 32 mm minus material around the culvert, placement of local blast material above and adjacent to the installed culvert backfill, removal of excess snow from the crossing area, placement of fine riprap and geotextile along the 2H:1V sloped side slopes, and placement of 3/4 inch road topping material.
- **CV-106:** Construction activities at CV-106 included drilling and blasting, ripping and excavation of unsuitable blast material.
- **CV-112:** Construction activities at CV-112 included the construction of the ice by-pass and removal of excess snow.

2.2 BAFFINLAND

- Carried out the drilling of honeycomb drillholes at CV-106 on April 28, 2024.
- Oversaw the blasting completed by Dyno Nobel at CV-106 on April 28, 2024.
- Backhauled additional 32 mm minus material from the Milne Port to the km 80 stockpile on April 28, 2024.
- Carried out remedial measures to straighten the dented section of northern high flow CSP culvert pipe at CV-216 on April 30, 2024.

2.3 NUNA

- Completed placement of 32 mm minus material and local blast material at CV-216.
- Completed placement of coarse riprap and 3/16 inch material within the three, 2.0 m diameter low flow culverts at CV-216.
- Completed grading of the inlet and outlet side slopes to 2H:1V utilizing GPS survey assistance at CV-216.
- Completed removal of snow from the inlet and outlet apron areas at CV-216.
- Completed placement of fine riprap and geotextile along the 2H:1V side slopes at CV-216.
- Completed placement of coarse riprap and 3/16 inch material in the inlet and outlet apron areas at CV-216.
- Completed placement of 32 mm minus material and local blast material at CV-102.
- Completed installation of insulation material for the entire foundational footprint at CV-102.
- Completed placement of 3/16 inch culvert bedding material for the 1.8 m diameter low flow CSP culvert and the 1.0 m diameter high flow CSP culvert at CV-102.
- Completed installation of high and low flow CSP culverts at CV-102.
- Completed grading of the inlet and outlet side slopes to 2H:1V utilizing GPS survey assistance at CV-102.
- Commenced placement of fine riprap and geotextile along the 2H:1V side slopes at CV-102.
- Completed ripping and excavation of unsuitable materials from the foundational footprint at CV-106.
- Continued construction of the ice by-pass at CV-112.
- Hauled additional 3/16 inch material to the KM 80 laydown area.

- Completed excavation of excess snow from the inlet and outlet aprons at CV-112.
- Commenced placement of 3/4 inch road topping material at both CV-216 and CV-102.

2.4 KP

- Visited CV-216, CV-102, CV-106, and CV-112 throughout the week on dayshift and nightshift.
- Monitored placement and compaction of 32 mm minus culvert backfill material at CV-216 and CV-102.
- Monitored the placement of culvert infilling material (riprap and 3/16 inch material) within the three low flow culverts at CV-216.
- Monitored the placement of boulder clusters within the three low flow culverts at CV-216.
- Monitored the installation of insulation material at CV-102.
- Monitored the installation of the 1.8 m diameter low flow CSP culvert and the 1.0 m diameter high flow CSP culvert at CV-102.
- Monitored the placement of geotextile and fine riprap for the slope stabilization along the 2H:1V side slopes at CV-102.
- Monitored the placement of geotextile and fine riprap for the slope stabilization along the 2H:1V side slopes at CV-216.
- Monitored the placement of coarse riprap and 3/16 inch material within the inlet and outlet apron areas at CV-216.

3 – CONSTRUCTION QUALITY ASSURANCE (CQA) ACTIVITIES

3.1 QUALITY ASSURANCE

Nuna surveyors verified the inlet and outlet invert elevations for the installed low flow and high flow culverts at CV-102.

3.2 QUALITY CONTROL

KP collected a stream substrate material control sample from the material stockpile at CV-216. This material was originally from the KM 100 stream substrate stockpile (Sample ID: SSM-06). Sample collected April 28, 2024.

KP collected a stream substrate material control sample from the material borrow source stockpile at km 100. (Sample ID: SSM-07). Sample collected April 29, 2024.

KP collected a control sample of 32 mm minus material used for culvert backfilling from the stockpile at km 36 to be used for culvert backfilling at CV-102. (Sample ID: C-CBF-13). Sample collected April 30, 2024.

KP collected a record sample of 32 mm minus material used from compacted culvert backfill on the top lift of culvert backfill material at CV-102. (Sample ID: R-CBF-07). Sample collect May 1, 2024.

KP collected a control sample of 32 mm minus culvert backfill material from the stockpile at the KM 33 laydown area. (Sample ID: C-CBF-14). Sample collected May 1, 2024.

KP collected a record sample of 3/16 inch minus material from the local stockpile used for infilling the southern low flow CSP culvert at CV-216. (Sample ID: R-SSM-01). Sample collected May 3, 2024.

KP conducted an informal snow melt test on the stream substrate material from the stockpile at km 97.5 on April 29, 2024. The stream substrate material was collected and heated up to see if settlement would occur due to entrained ice/snow. It was observed that the sample settled approximately 20% over an hour-long period. KP also visually inspected the stream substrate stockpile at km 97.5. Large boulders and cobbles were observed in the stockpile. Based on the snow melt test and the visual inspection, KP recommends not to use this material for culvert infill.

KP visually inspected the coarse riprap being used for the apron and culvert infilling at CV-216 on May 2, 2024. The inspected riprap material was estimated to have an average size (D_{50}) too small for use as the coarse riprap material. KP requested that Nuna mix in larger boulders and riprap pieces to increase the D_{50} of the material. Nuna completed this task on nightshift. KP re-evaluated the riprap size and determined that the newly mixed material would be suitable for use as coarse riprap.

KP visually inspected the existing coarse riprap stockpiles at the mine waste dump area on May 4, 2024. The inspected riprap material was estimated to have an average size (D_{50}) too small for use as the coarse riprap material. KP requested that Nuna prepare more coarse riprap material for use in culvert apron and culvert infilling.

Grain size analysis testing results for C-CBF-10, C-CBF-11, C-CBF-12, SSM-06, SSM-07, C-CBF-13, C-CBF-14, R-CBM-07, R-CBF-06, R-CBM-08, R-CBM-09 AND R-CBF-07 were received by KP and BIM from ALS during the reporting period.

The results for C-CBF-11 and C-CBF-12 indicate that the samples were coarser than the material specification culvert backfill gradation envelope. KP communicated with BIM and ALS, and it was discussed that the stockpile which the samples were collected from had become segregated. The collected samples are not considered to be representative of the gradation of the material within the overall stockpile. KP collected two additional control samples, C-CBF-13, and C-CBF-14. The laboratory results for C-CBF-13 were within the culvert backfill gradation envelope, while C-CBF-14 was slightly too coarse and was outside of the coarse limit. Further monitoring of the material within the stockpile at KM 33 is required to ensure that the material being used for construction is meeting the required material specification gradation envelope.

The culvert backfill sample results are shown in Figure 1, the 3/16 inch culvert bedding results are shown in Figure 2 and the stream substrate material sample results are shown in Figure 3..

3.3 LABORATORY TESTING

Table 1: Laboratory Results

KP SAMPLE ID	ALS LAB ID	Plotting ID	Culvert ID	NAME DESCRIPTION	MATERIAL DESCRIPTION	SAMPLE COLLECTION DATE	SAMPLE TESTING DATE	SAMPLE WEIGHT(Kg)	LABORATORY RESULTS							
									Moisture Content (ASTM D2216)	Particle Size Distribution (ASTM D422)						
										31.5	25	16	10	6.3	1	0.1
									%	%	%	%	%	%	%	%
CONTROL SAMPLES																
C-CBF-10	H631831	C-CBF-10 (H632831)	CV-216	Control sample - Culvert Backfill Material	32mm minus culvert backfill	2024-04-23	2024-04-29	12.63	0.79	99.2	86.8	41.9	18.2	9.5	2.3	0.0
C-CBF-11	H631830	C-CBF-11 (H631830)	CV-102	Control sample - Culvert Backfill Material	32mm minus culvert backfill	2024-04-24	2024-04-29	7.99	0.25	94.1	65.3	11.9	1.4	0.9	0.9	0.0
C-CBF-12	H631833	C-CBF-12 (H631833)	CV-106	Control sample - Culvert Backfill Material	32mm minus culvert backfill	2024-04-26	2024-04-29	13.10	0.3	94.9	54.6	4.0	0.5	0.4	0.4	0.0
SSM-06	H631834	SSM-06 (H631834)	CV-216	Stream Substrate Material 06	Sandy Aggregate	2024-04-29	2024-04-30	2.54	16.15		98.0	96.5	83.2	73.0	46.0	18.4
SSM-07	H631835	SSM-07 (H631835)	N/A	Stream Substrate Material 07	Sandy Aggregate	2024-04-29	2024-04-30	1.32	6.06		100.0	94.7	78.8	62.8	32.7	10.6
C-CBF-13	H631836	C-CBF-13 (H631836)	CV-102	Control sample - Culvert Backfill Material	32mm minus culvert backfill	2024-04-30	2024-05-01	8.34	1.2	98.9	92.3	53.8	31.7	20.1	6.1	0.0
C-CBF-14	H631838	C-CBF-14 (H631838)	CV-106	Control sample - Culvert Backfill Material	32mm minus culvert backfill	2024-05-01	2024-05-03	11.75	1.01	99.1	85.5	34.8	14.3	7.4	2.1	0.0
RECORD SAMPLES																
R-CBM-07	H631832	R-CBM-07 (H631832)	CV-216	Record Sample - 3/16" Culvert Bedding Material middle low flow	Crushed granite, 5 mm minus sized	2024-04-22	2024-04-29	1.28	3.03	100.0	100.0	99.2	95.8	94.1	52.9	10.1
R-CBF-06	H631827	R-CBF-06 (H631827)	CV-216	Record Sample - Culvert backfill material	32mm minus culvert backfill	2024-04-25	2024-04-29	8.21	1.56	100.0	85.6	47.7	25.8	17.3	7.0	0.0
R-CBM-08	H631829	R-CBM-08 (H631829)	CV-216	Record Sample - 3/16" Culvert Bedding Material southern high flow	Crushed granite, 5 mm minus sized	2024-04-26	2024-04-29	9.84	2.67	100.0	99.4	97.0	94.3	92.1	52.8	9.7
R-CBM-09	H631828	R-CBM-09 (H631828)	CV-102	Record Sample - 3/16" Culvert Bedding Material low flow	Crushed granite, 5 mm minus sized	2024-04-27	2024-04-29	3.90	3.23	100.0	99.2	98.7	96.6	94.7	56.9	11.0
R-CBF-07	H631837	R-CBF-07 (H631837)	CV-102	Record Sample - Culvert backfill material	32mm minus culvert backfill	2024-05-01	2024-05-03	7.95	0.75	98.8	87.0	36.0	13.5	6.7	1.7	0.0

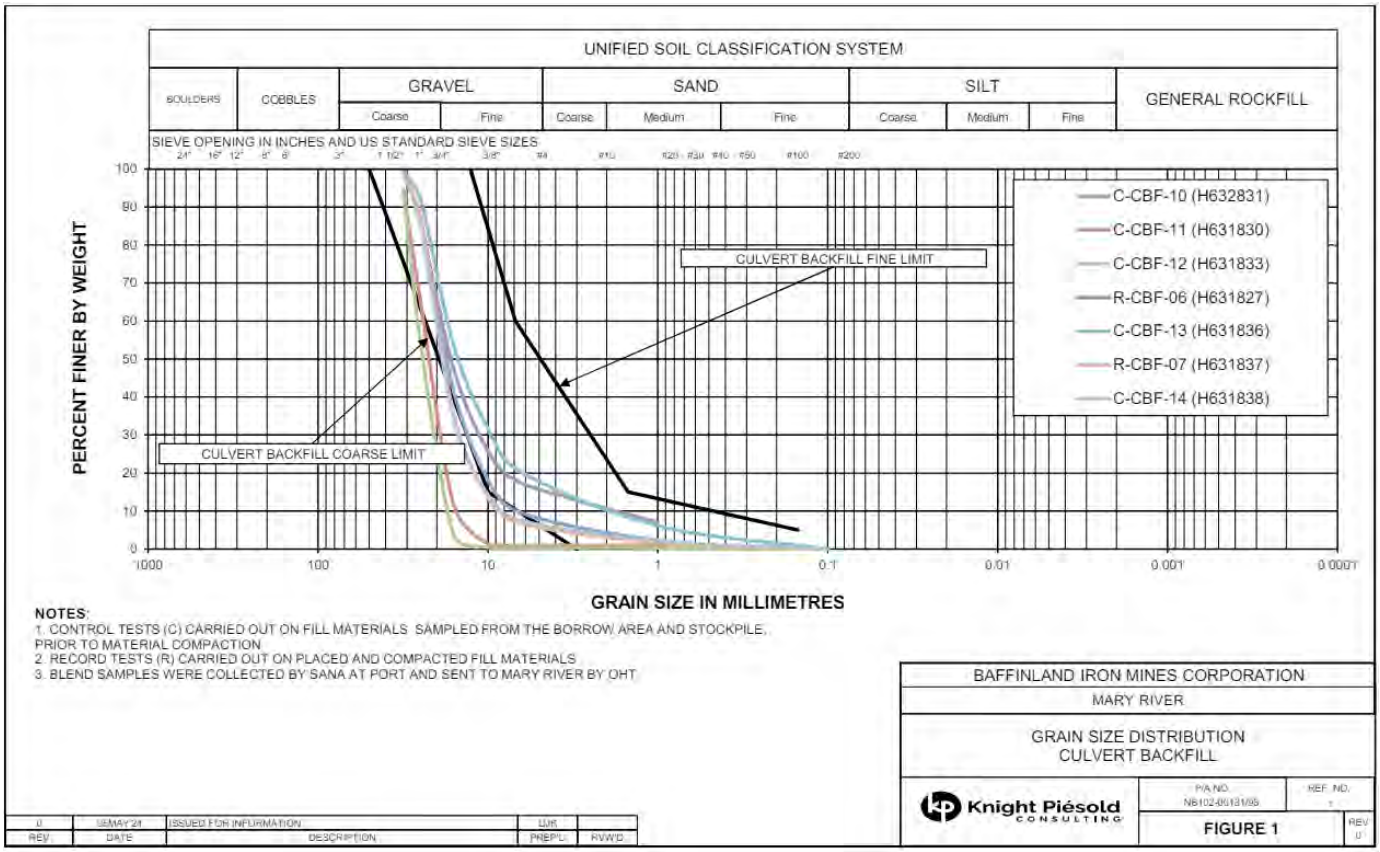

Figure 1: Grain Size Distribution - 32mm minus Culvert Backfill Samples

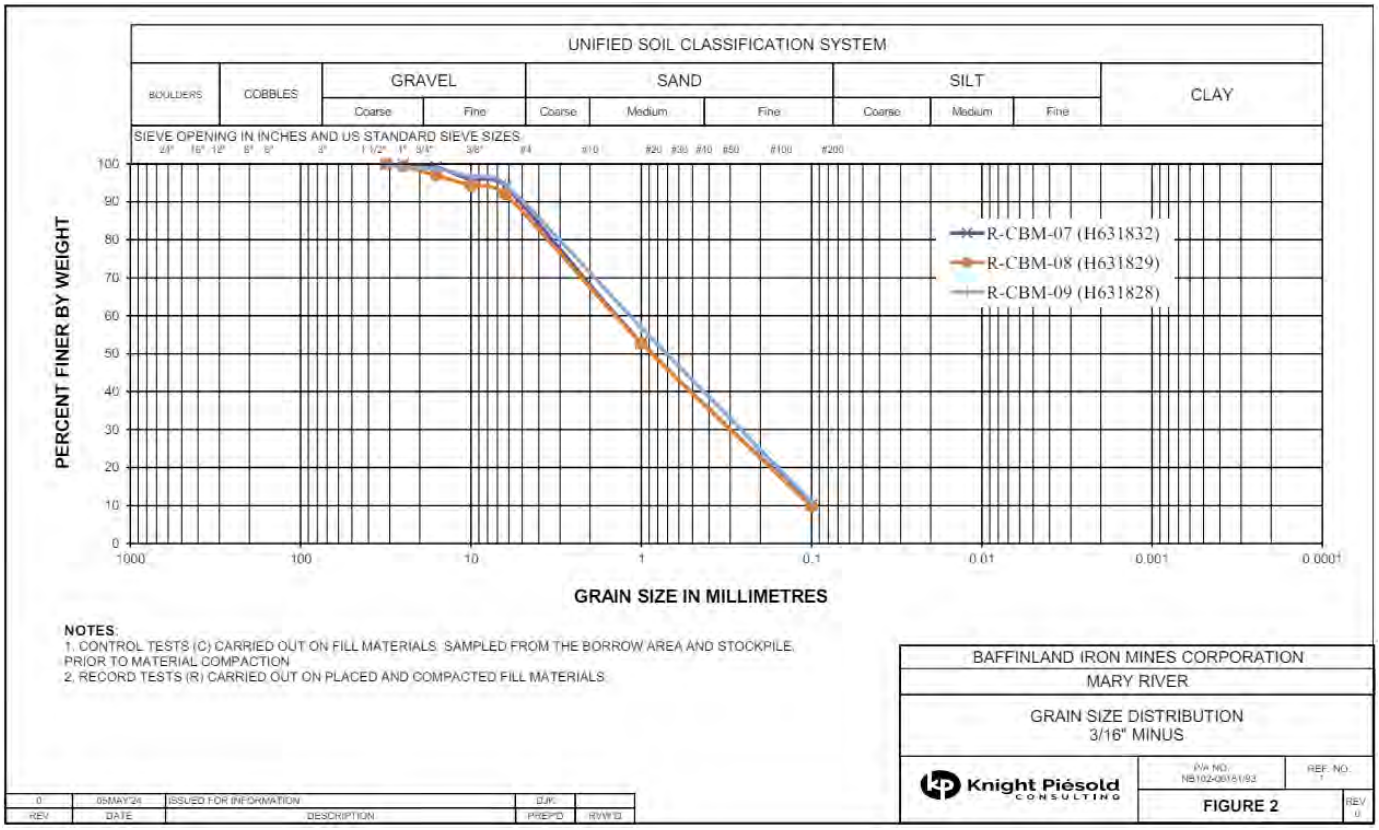

Figure 2: Grain Size Distribution - 3/16 Inch Culvert Bedding Material Samples

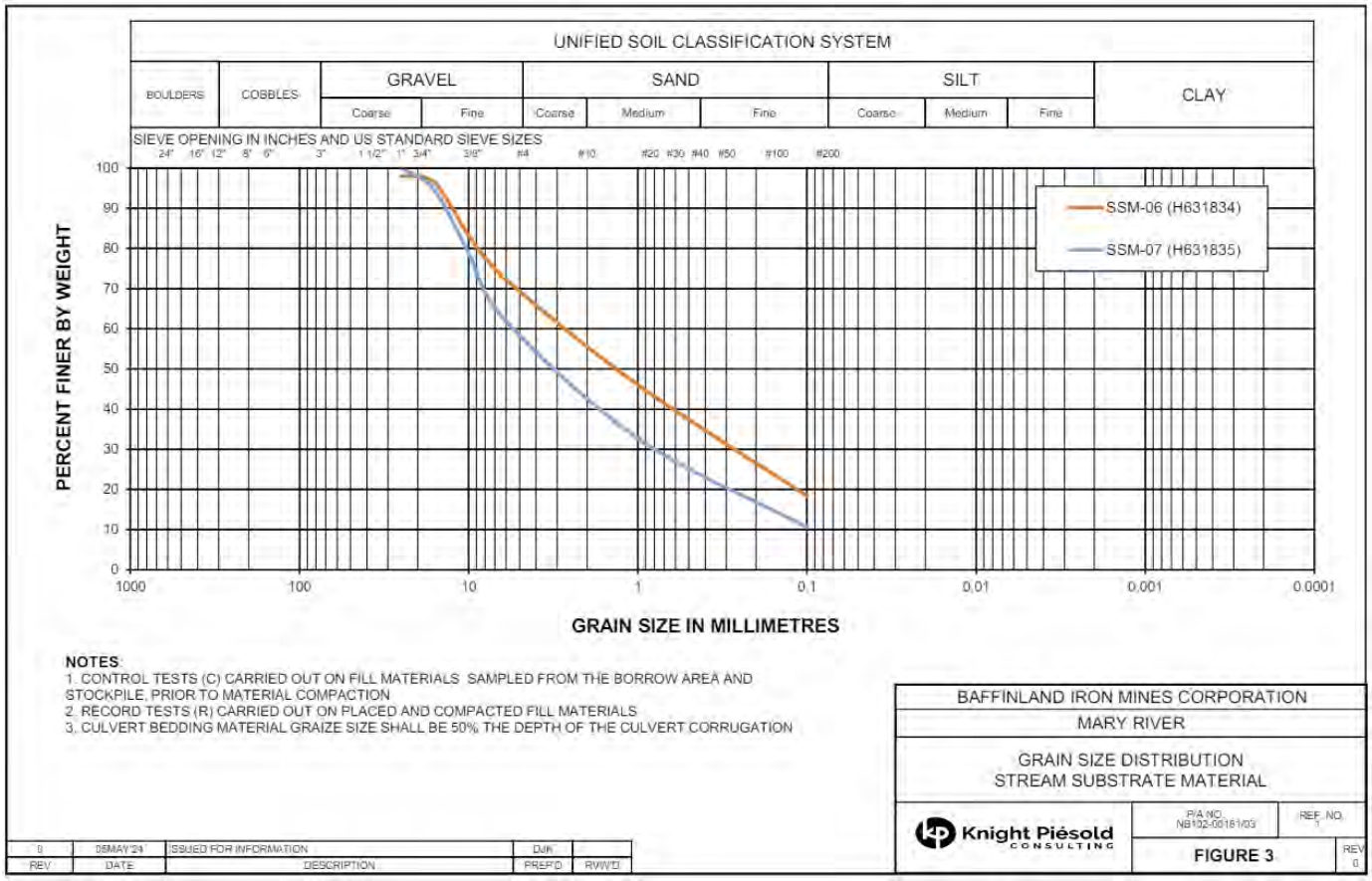

Figure 3: Grain Size Distribution - Stream Substrate Material

4 – ENGINEERING ITEMS

- **April 28** - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Recently submitted samples to the ALS lab are still pending to be tested. Dale Tulloch will confirm that the ALS lab is aware of these samples and that they are analysed.
  - Confirmed that the improved weather conditions will allow for blasting of CV-106 to occur today at 4:00 pm as scheduled.

- **April 29** - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - CV-106 excavation of blast material is ongoing.
  - Nuna re-locating staff to port. KP staff will also be re-located.
  - Dale asked if the culvert pipe location at CV-112 could be altered to be beside one another. Greg from KP explained that the culverts are positioned to be within the two separate low flows channels at this location. Dale agreed this made sense to leave the pipes as in.
  - The stream infilling was noted on the nightshift of April 28, that there was a high percentage of snow/ice in the infill material. It was discussed with Nuna and Baffinland if a different source of material with less snow/ice can be used. Harvey from Nuna mentioned that he will be looking into this.

- **April 30** - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - The dent in the northern high flow round CSP culvert at CV-216 was discussed. Greg Johnstone from KP recommended that Baffinland consult the culvert manufacturer Armtec to determine remedial measures. Baruck from Baffinland stated that they plan to excavate the material overlying the dent in the northern high flow CSP culvert at CV-216 and use hydraulic jack to pop out the dent. The culvert manufacturer will then be contacted after conducting the remedial measures to verify the pipe integrity is sufficient.
  - It has been observed the culvert infilling material at CV-216 has contained a large amount of snow/ice. Alternative 3/16 inch culvert bedding material is to be used in-place of the stream substrate material to fill voids between coarse riprap when infilling the culverts going forwards.
  - All required materials for the proposed extension of the multi-plate culverts are on site after conducting an inventory.
  - Baffinland stated that the remaining boulder clusters to be placed in the southern half at BG-04 will not be completed.
  - Boulder cluster as-built survey at BG-04 will not be completed with active traffic over the crossing. Once safe to complete, the as-built boulder clusters will be surveyed by Baffinland.

- **May 1** - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Baffinland stated that the dent in the culvert has been repaired and is not on the travel surface of the road. Greg informed Baffinland that they should discuss this with Armtec.
  - Greg informed the Baffinland team about the two out of spec samples (C-CBF-11 and C-CBF-12) from the km 33 stockpile and used at CV-102 and CV-106. Buck stated to Greg to send him the results.
  - Baruck asked Greg regarding Andy's email on April 26 what are the risks of construction in non freezing conditions with massive ice. Greg informed Buck that heat can be trapped in the excavation leading to warmer temperatures within the foundation and melting of massive ice. This has the potential to lead to structural issues or possibly failure of the structure.
  - KP and BIM discussed the as-built surveying requirements of the ongoing installation of boulder clusters at CV-216. Dayshift Nuna survey lead confirmed that a total station and mini prism-wand would be most efficient for in-culvert surveying; Nuna however currently doesn't have a total station on site to be used. BIM is to investigate procurement of a total station for in-culvert surveying.

- **May 2** - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Buck stated that they have a total station and will test to see if it will work for the in culvert as built surveying.
  - Buck asked Greg to comment on the samples collected (as per Greg's email sent May 1). Greg stated that the two samples were out of specification collected from the km 33 stockpile, but the photos indicate that the samples were not representative, and that the stockpiles had become segregated. Samples will be collected with the assistance of Nuna going forward to mix the stockpile. It is not recommended that any material is placed until laboratory results are received.

- **May 3** - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Greg informed Baffinland that the latest control sample from the CV-102 stockpile of culvert backfill material was within material specifications (Sample ID: C-CBF-13).
  - Baffinland estimates that drilling at CV-112 is to start in the coming days once the ice road by-pass is complete and open to traffic.
  - Baffinland's Engineer (Abid Najey, P.Eng.) provided the following direction regarding the damaged northern high flow CSP culvert at CV-216 "No removal is require, the bent has a minor impact on the road structural stability and the discharge."

- **May 4** - The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - KP confirmed that the existing stockpiled material is too fine to be used as coarse riprap for the culvert aprons and culvert infilling. Additional material is required to be prepared with an average size (D_{50}) of 12 inch.

5 – PHOTOS

Photo 1 Compacting 32 mm minus material on top low and high flow CSP culverts at CV-216. Photo taken afternoon of April 28, 2024, facing north.

Photo 2 Placement of riprap material within the western 2.0 m diameter low flow CSP culvert at CV-216. Photo taken April 28, 2024, facing south.

Photo 3 Dent in northern high flow CSP culvert at CV-216. Photo taken morning of April 29, 2024, facing northeast (outlet).

Photo 4 Placement of 32 mm minus material over installed insulation in the western apron area at CV-102. Photo taken April 29, 2024, facing east.

Photo 5 Pushed out dent in the northern high flow CSP culvert at CV-216. Photo taken April 30, 2024, facing downstream.

Photo 6 Boulder clusters installed at 6.5 m interval with embedded protruding boulders between clusters within the northern low flow culvert at CV-216. Photo taken April 30, 2024, facing upstream.

Photo 7 **Fully installed low and high flow CSP culverts at CV-102. Photo taken April 30, 2024, facing northeast.**

Photo 8 **Southeast side slopes graded to 2H:1V with non-woven geotextile and riprap placed at CV-216. Photo taken May 1, 2024, facing southeast.**

Photo 9 Placing riprap using the Kubota mini skid steer inside the middle low flow CSP culvert at CV-216. Photo taken May 1, 2024.

Photo 10 Ripped and excavated approach inlet apron at CV-102. Photo taken May 2, 2024, facing southwest.

Photo 11 Placement of fine riprap on the northeastern apron side slopes at CV-216. Photo taken May 2, 2024, facing north.

Photo 12 Outlet low flow CSP culverts and outlet apron area at CV-216. Photo taken May 3, 2024, facing southwest.

Photo 13 Ripping and excavation of the western outlet apron at CV-106. Photo taken May 3, 2024, facing northwest.

Photo 14 Eastern side slopes with geotextile and fine riprap placed at CV-102. Photo taken May 4, 2024, facing south.

Photo 15 Northwest outlet apron side slopes stabilized with non-woven geotextile and fine riprap at CV-216. Photo taken May 4, 2024, facing northwest.

Photo 16 Excavation of unsuitable materials from the inlet apron area at CV-106. Photo taken May 4, 2024, facing southeast.

MARY RIVER MINE

TOTE ROAD PERMANENT CROSSING PLAN - ROUND CSP CULVERT INSTALLATIONS

WEEKLY PROGRESS REPORT **WEEK 13 – May 5 to May 11, 2024**

CLIENT:	**Baffinland Iron Mines Corporation**	**PROJECT NO.:**	**NB102-00181/93**
TO:	**Baruck Wile, Rudy Dietrich, Frank Hynes, Michael Burns, Dale Tulloch, Abid Najey, Jim Patterson, Shannon Mulhall, David Bruce, Katie Babin, Todd Swenson (Baffinland), Michael Johnson (NSC)**	**FILE NO.:**	**.F08**
CC:	**Richard Cook, Toby Perkins, Andy Phillips, Greg Johnstone, Darren Kocken, Michael Bourdignon (KP)**	**REF. NO.:**	**111**
FROM:	**Matthew Trask, Mackenzie Aiken**	**PAGES:**	**16**

1 – GENERAL

1.1 RESPONSIBILITIES

- **Baffinland Iron Mines Corporation (Baffinland) -** Owner, drilling and blasting, traffic management plans, and overall project management.
- **Nuna -** Surveying, excavation, culvert installation, and backfill.
- **Knight Piésold Ltd. (KP) -** QA/QC for the excavation, culvert installation, and backfill.
- **ALS Laboratory (ALS) -** Laboratory testing of collected samples.

1.2 KNIGHT PIÉSOLD LTD. (KP) SITE STAFF

- Matthew Trask (DS) – May 5, 2024, to May 11, 2024
- Darren Kocken (NS) – May 5, 2024, to May 7, 2024
- Mackenzie Aiken (NS) – May 8, 2024, to May 11, 2024

1.3 HEALTH AND SAFETY

- No health and safety incidents occurred during the reporting period.
- Completed KP safety meeting minutes daily.
- Completed Baffinland field level risk assessments (FLRA's) daily.

1.4 WEATHER

- The weather ranged between sunny and clear to overcast, with daily temperature highs between -1˚C and -8˚C.

1.5 MEETINGS AND CORRESPONDENCE

- KP attended the 7:30 am Daily Coordination Meetings
- KP issued daily progress reports for May 5 to May 11, 2024 (Reference numbers 102, 104 - 109)
- KP issued the weekly report for April 28 to May 4, 2024 (Reference number 103)

2 – CONSTRUCTION ACTIVITIES

2.1 GENERAL

- **CV-216:** Construction activities at CV-216 included placement of 3/4 inch road topping material, infilling voids between coarse riprap in the inlet and outlet aprons and embedding protruding boulders in the inlet and outlet apron areas. On the nightshift of May 5, 2024, Nuna completed construction activities at CV-216.
- **CV-102:** Construction activities at CV-102 included placement of fine riprap and geotextile along the 2H:1V side slopes and placement of 3/4 inch road topping material.

- **CV-106:** Construction activities at CV-106 included ripping and excavation of unsuitable blast material, placement and compaction of 32 mm minus material in the base of excavation, installation of insulation material, construction of the seepage anchor-trench, placement and grading of 3/16 inch culvert bedding material, installation of the 1.8 m diameter low flow culvert, installation of the 1.0 m diameter high flow culvert, placement and compaction of 32 mm minus material around the culvert, placement of local blast material above and adjacent to the installed culvert backfill, removal of excess snow from the crossing area, grading of 2H:1V side slopes, placement of fine riprap and geotextile along the 2H:1V sloped side slopes, placement of riprap and 3/16 inch material within the interior of the 1.8 m diameter low flow culvert, placement of boulder clusters and embedded rocks within the 1.8 m diameter low flow culvert, construction of the thermal berm, placement of coarse riprap and 3/16 inch material in the inlet and outlet apron areas and placement of 3/4 inch road topping material. On the nightshift of May 11, 2024, Nuna completed construction activities at CV-106.
- **CV-112:** Construction activities at CV-112 included the drilling of blast holes. Nuna started the removal of the ice by-pass road of CV-112 on May 10th, 2024.

2.2 BAFFINLAND

- Carried out the drilling of blast holes at CV-112 on May 5 - 6, 2024.

2.3 NUNA

- Completed placement of 3/4 inch road topping material at both CV-216, CV-102, CV-106.
- Completed placement of fine riprap and geotextile along the 2H:1V side slopes at CV-102 and CV-106.
- Completed ripping and excavation of the CV-106 foundation and apron areas.
- Completed the 32 mm minus material placement and compaction at CV-106.
- Completed placement and grading of 3/16 inch culvert bedding material for the 1.8 m diameter low flow CSP culvert and 1.0 m diameter high flow CSP culvert at CV-106.
- Completed installation of high and low flow CSP culverts at CV-106.
- Completed placement and compaction of local blast material at CV-106.
- Completed grading of the inlet and outlet side slopes to 2H:1V utilizing GPS survey assistance at CV-106.
- Completed backfilling of the inlet and outlet aprons with Coarse Riprap and 3/16 inch minus material at CV-106.
- Completed placement and compaction of 32 mm minus material for the construction of the Thermal Berm at CV-106.
- Completed culvert infill with boulder clusters and embedded boulders at CV-106.
- Completed ice by-pass road conditioning for CV-102.

2.4 KP

- Visited CV-216, CV-102, CV-106, and CV-112 throughout the week on dayshift and nightshift.
- Monitored placement and compaction of 32 mm minus culvert backfill material at CV-106.
- Monitored the placement of culvert infilling material (riprap and 3/16 inch material) within the 1.8 m diameter low flow culvert at CV-106.
- Monitored the placement of embedded rocks and boulder clusters within the low flow culvert at CV-106.
- Monitored the installation of insulation material at CV-106.
- Monitored the installation of the 1.8 m diameter low flow CSP culvert and the 1.0 m diameter high flow CSP culvert at CV-106.
- Monitored the continued placement of geotextile and fine riprap for the slope stabilization along the 2H:1V side slopes at CV-102.

- Monitored the placement of geotextile and fine riprap for the slope stabilization along the 2H:1V side slopes at CV-106.
- Monitored the placement of coarse riprap and 3/16 inch material within the inlet and outlet apron areas at CV-106.
- Monitored the placement of 3/4 inch road topping material at CV-216 and CV-102.

3 – CONSTRUCTION QUALITY ASSURANCE (CQA) ACTIVITIES

3.1 QUALITY ASSURANCE

KP provided a verbal foundation approval for the entire foundational footprint at CV-106.

3.2 QUALITY CONTROL

KP collected a record sample of 3/16 inch minus material from the placed culvert bedding material for the low flow CSP culvert at CV-106 (Sample ID: R-CBM-10). Sample collected May 6, 2024.

KP collected a record sample of 32 mm minus material from the first lift of compacted 32 mm minus material adjacent to the low flow CSP culvert at CV-106 (Sample ID: R-CBF-08). Sample collected May 6, 2024.

Grain size analysis testing results for R-SSM-01, R-CBM-10, R-CBF-08 were received by KP and BIM from ALS during the reporting period as summarized in Table 1.

The results for R-CBF-08 indicate that the 32 mm minus culvert backfill material used at CV-106 is within material specifications.

The culvert backfill sample results are shown in Figure 1, the 3/16 inch culvert bedding material sample results are shown in Figure 2 and the stream substrate material sample results are shown in Figure 3.

3.3 LABORATORY TESTING

Table 1: Laboratory Results

KP SAMPLE ID	ALS LAB ID	Plotting ID	Culvert ID	NAME DESCRIPTION	MATERIAL DESCRIPTION	SAMPLE COLLECTION DATE	SAMPLE TESTING DATE	SAMPLE WEIGHT(Kg)	LABORATORY RESULTS								
									Moisture Content (ASTM D2216)	Particle Size Distribution (ASTM D422)							
										31.5	25	16	10	6.3	1	0.1
									%	%	%	%	%	%	%	%	%
RECORD SAMPLES																	
R-SSM-01	H631839	R-SSM-01 (H631839)	CV-216	Record Sample - Culvert Infill Sand Material (3/16 inch minus material) - 01	Crushed granite, 5 mm minus sized	2024-05-03	2024-05-05	9.51	4.1	100.0	99.8	98.9	96.3	93.7	56.8	11.0	
R-CBM-10	H631840	R-CBM-10 (H631840)	CV-106	Record Sample - 3/16" Culvert Bedding Material low flow	Crushed granite, 5 mm minus sized	2024-05-06	2024-05-10	7.88	4.19	100.0	100.0	98.8	95.5	93.2	59.7	15.4	
R-CBF-08	H631841	R-CBF-08 (H631841)	CV-106	Record Sample - Culvert Backfill Material - 08	Crushed Rock (Angular)	2024-05-06	2024-05-10	13.91	1.51	98.4	88.6	52.3	29.3	18.5	5.8	0.0	

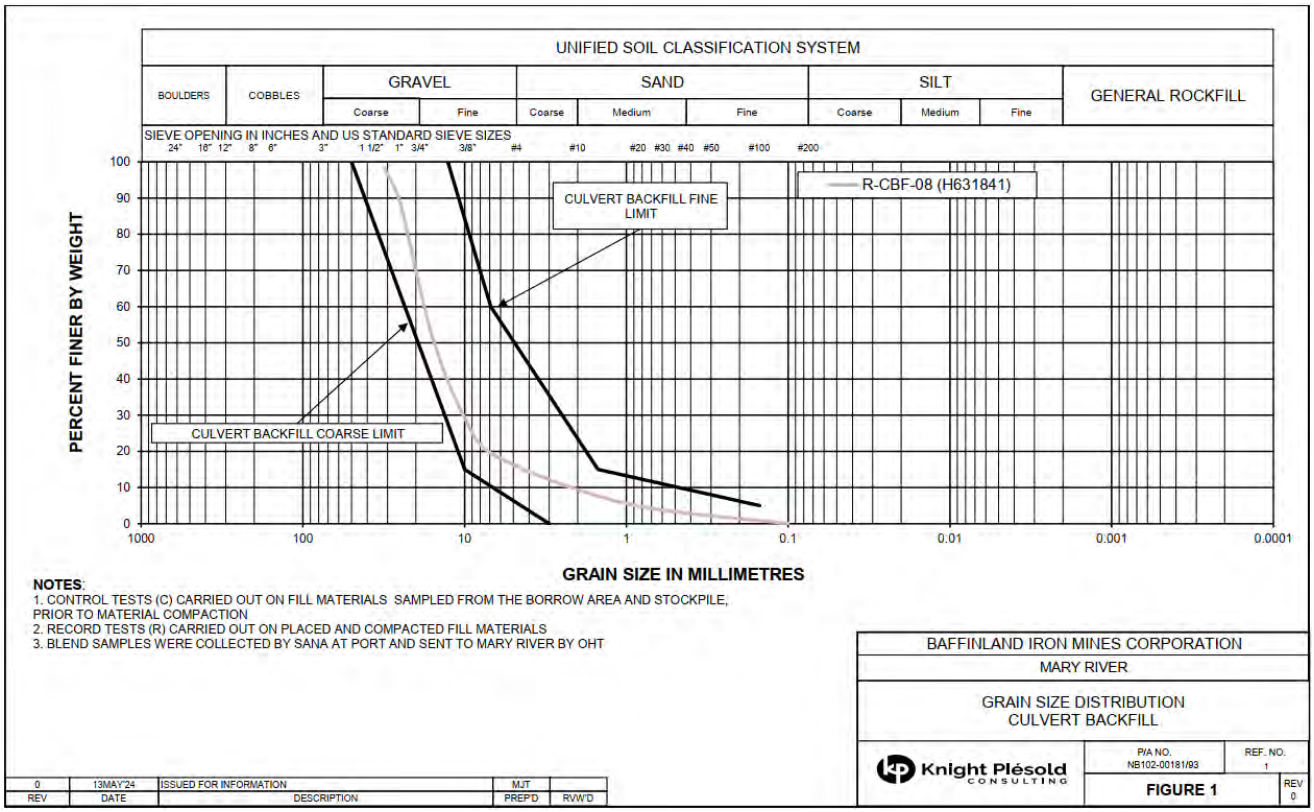

Figure 1: Grain Size Distribution – 32mm minus Culvert Backfill Samples

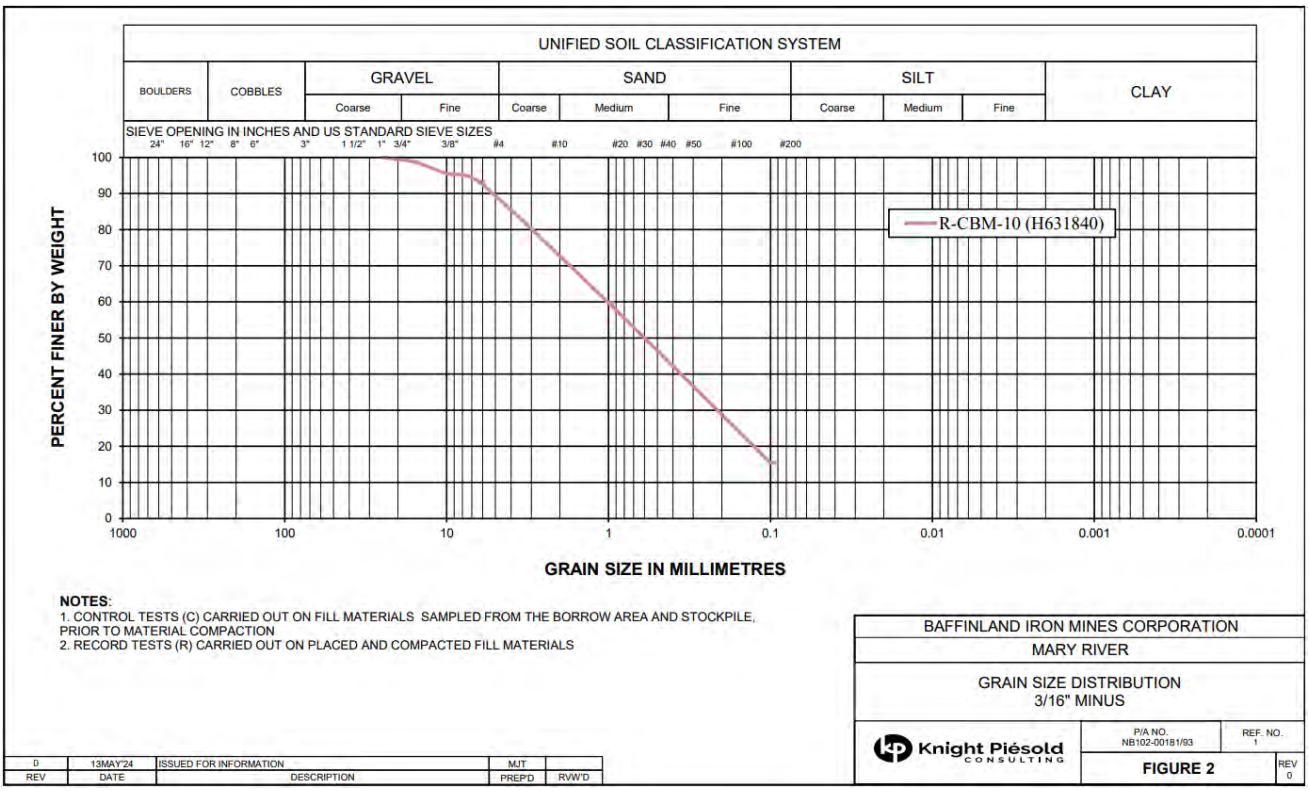

Figure 2: Grain Size Distribution – Culvert Bedding Material

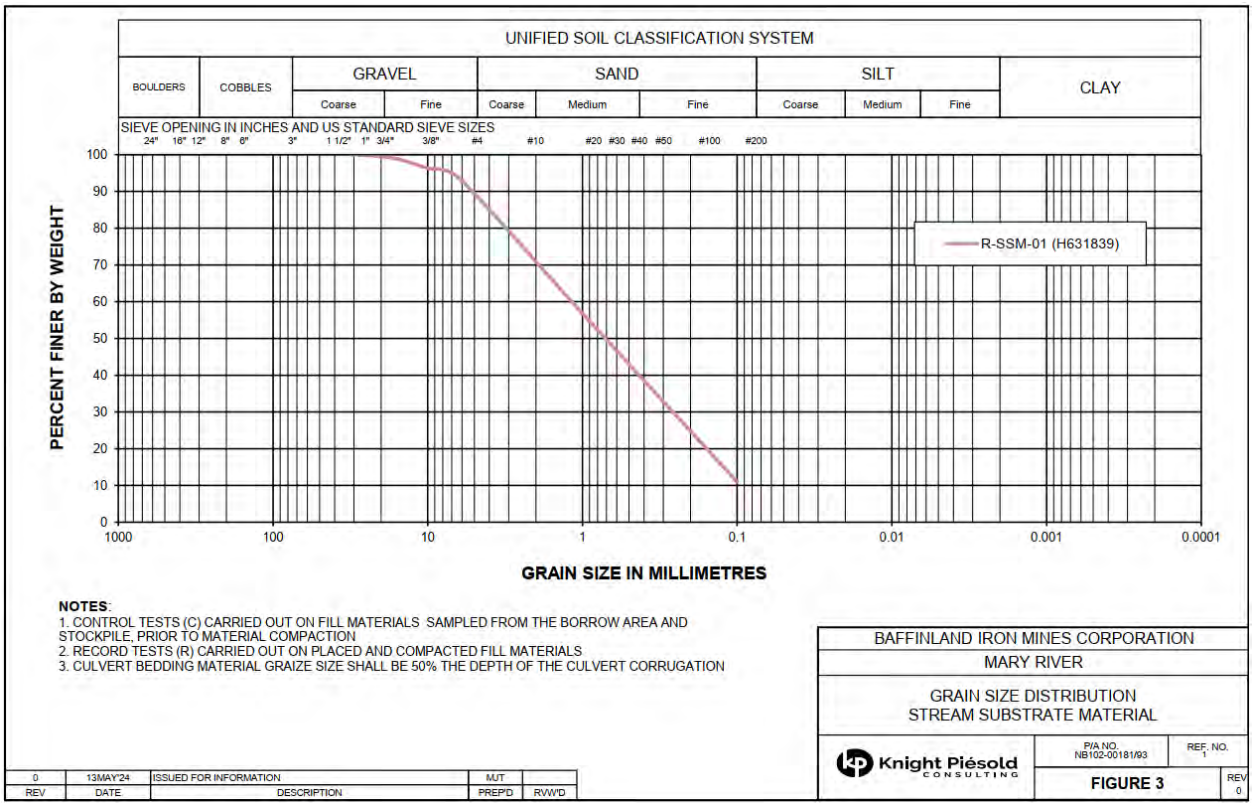

Figure 3: Grain Size Distribution – Stream Substrate Material

4 – ENGINEERING ITEMS

- **May 05** – No engineering items were discussed.
- **May 06** – The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Decision to build CV-112 will be determined today by Baffinland.
  - CV-216 in culvert as built was unable to be completed due to safety concerns. Based on visual observations, the culvert was completed as per the design.
  - Buck and Dale voiced schedule risks and that it is critical all work is completed as efficiently as possible.
  - A health and safety incident occurred where a Nuna labourer rolled his ankle on riprap while adding fines to the apron area.
- **May 07** – The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - The drillholes at CV-112 have collapsed. It is still pending whether this location will be completed.
  - Greg from KP asked how the culvert infilling will be completed at CV-102 now that it is open to traffic. Grant from Nuna informed Greg that it will be cold over the next few days, so they will try to open the ice road when they can to complete the infilling.
  - Greg from KP brought up the issue of timely hot changes. The team discussed that the hot changes may just be for the next few days, or Dale can provide KP with another truck.
  - Greg from KP discussed the reason behind the removal of 32 mm minus during the nightshift of May 5th. Greg informed the team this was due to the excavation not reaching its full extent as indicated by the nightshift surveyor and evidence of uncompacted fill material.

- **May 08** – The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - CV-216 ice bypass to be decommissioned.
  - Baffinland is currently waiting on a decision from permitting to determine if CV-112 can be constructed using single lane construction.

- **May 09** – The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Grant from Nuna plans to have the ice by-pass road re-opened for dayshift today to continue construction works at CV-106.
  - David from BIM Environment discussed adverse erosion and sediment deposition observations at BG-04 that were made by Baffinland's environmental department in the afternoon on May 8th, 2024. Pooled water on the tote road was drained off causing rill erosion on the unarmoured southwest side slopes and sediment fan deposition in the outflow environment. Remedial measures are to be discussed for the areas of concern.
  - The gravel by-pass road for CV-112 culvert crossing is pending approval.

- **May 10** – The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Dave from Baffinland asked Greg from KP, if KP is looking at the BG-04 erosion area. Greg informed Dave that KP received photos from Matt yesterday afternoon and will be reviewing this. KP will provide a recommendation for potential solutions on Monday.
  - Mike Burns from Baffinland asked Greg from KP about risks of construction in warmer weather conditions. Greg from KP discussed the risks of working in warmer conditions with respect to entraining warmth within the excavation potentially affecting ice rich soils, and resulting in future issues with the structure and the road. Greg from KP pointed to Andy Phillips from KP's email sent on April 26th which discusses non freezing construction concerns.
  - Ryan Edwards from Baffinland identified that the BG-04 erosion may be related to a road maintenance issue as a result of road grading to the west of the crossing.

- **May 11** – The following engineering items were discussed during the 7:30 am Daily Coordination Meeting:
  - Grant from Nuna plans to have CV-102 remain on stand-by until CV-106 is finished.
  - Matt from KP discussed boulder clusters at CV-106 are not being installed currently due to Nuna safety policy. Matt informed BIM that boulder clusters are required and have been marked out for the low flow culverts at CV-106 and CV-102. Mike from BIM acknowledges that the boulder clusters will need to be installed.
  - Baffinland department walk-around at CV-216 to occur at 10am today.

5 – PHOTOS

Photo 1 Approved foundation surface of the road crossing area at CV-106. Photo taken May 5, 2024, facing east.

Photo 2 Completed inlet apron area and culvert inverts at CV-216. Photo taken May 5, 2024, facing east.

Photo 3 **Completed non-woven geotextile and fine riprap slope stabilization placement at CV-102. Photo taken May 5, 2024, facing north.**

Photo 4 **Placed and compacted 3/4 inch material in the inlet anchor-trench at CV-106. Photo taken May 6, 2024, facing north.**

Photo 5 **Installation of fourth and final 8.0 m long segment of the 1.8 m diameter low flow CSP culvert at CV-106. Photo taken May 6, 2024, facing southwest.**

Photo 6 **Installation of third segment of 1.0 m diameter high flow CSP culvert at CV-106. Photo taken May 7, 2024, facing east.**

Photo 7 Compacting 32 mm minus material between low and high flow CSP culverts with uncompacted 150 mm zone above the culverts at CV-106. Photo taken May 7, 2024, facing east.

Photo 8 Placing local fill material above the compacted 32 mm minus material and constructing approach ramps at CV-106. Photo taken May 8, 2024, facing west.

Photo 9 Placing and compacting 3/4 inch road topping material at CV-106. Photo taken May 8, 2024, facing north.

Photo 10 Rill erosion and sediment fan deposition in outflow environment on southwest side slopes at BG-04. Photo taken May 9, 2024, facing north.

Photo 11 Grading 2H:1V side slopes at CV-106. Photo taken May 9, 2024, facing south.

Photo 12 Placement of Fine Riprap on Non-Woven Geotextile on graded 2H:1V side slopes at CV-106. Photo taken May 10, 2024, facing east.

Photo 13 Progress of culvert infilling with Coarse Riprap and 3/16 inch material at CV-106. Photo taken May 10, 2024, facing downstream.

Photo 14 Compacting top of 32 mm minus material for the thermal berm along the inlet apron at CV-106. Photo taken May 11, 2024, facing south.

Photo 15 **Non-Woven Geotextile placed on 2H:1V side slopes and thermal berm within the inlet apron area at CV-106. Photo taken May 11, 2024, facing north.**

Photo 16 **Infilled 1.8 m diameter low flow CSP culvert complete with boulder clusters at CV-106. Photo taken May 11, 2024, facing upstream.**

Photo 17 Outlet apron area infilled with Coarse Riprap and 3/16 inch material at CV-106. Photo taken May 11, 2024, facing south.

Photo 18 Inlet apron area infilled with Coarse Riprap and 3/16 inch material at CV-106. Photo taken May 11, 2024, facing north.