Baffinland Iron Mines Corporation

QMR2 Quarry Management Plan

BAF-PH1-830-P16-0040

Rev 1

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TRACK CHANGES TABLE

A review and update of the QMR2 Quarry Management Plan has been undertaken, the following revisions have been completed.

Index of Major Changes/Modifications in Revision 1, July 2017:

Item No.	Description of Change	Relevant Section
1	Updated to reflect current Early Revenue Phase operations and proposed quarry design.	Document wide.

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1 INTRODUCTION

1.1 PURPOSE AND SCOPE

The Mary River Project requires aggregate to sustain current production levels (4.2Mt per annum). This document outlines the site description, operations and reclamation for the Mary River Mine Site Quarry QMR2 (QMR2 Quarry). This plan will be periodically revised to ensure the plan reflects current operations and the aggregate volumes to be extracted from the QMR2 Quarry.

1.2 REGULATORY CONTEXT

The guidelines provided by the Nunavut Impact Review Board (NIRB) and Indigenous and Northern Affairs Canada (INAC) with regards to a Quarrying Permit Application state:

1. A Quarry Operations Plan is required with (this) application and must be approved by a Land Use Inspector prior to approval and issuance of the quarry permit if:
2. The volume being applied for is greater than 1,000 m^3 and/or
3. The quarry site is being operated by multiple users

QMR2 Quarry at the Mary River Mine Site exceeds the volume threshold of 1,000 m^3, and therefore this plan is required. This plan should be used in conjunction with the Borrow Pit and Quarry Management Plan (BAF-PH1-830-P16-0004), and other plans referred to in the document. In the case of the QMR2 Quarry, because the quarry is situated on Inuit Owned Lands, the Qikiqtani Inuit Association (QIA) is the regulatory body that approves the quarry operation. As such, revisions of this plan will be submitted to QIA for approval under the Quarry Concession Agreement that forms part of the Commercial Lease No. Q13C301 (Commercial Lease) agreed upon between QIA and Baffinland Iron Mines Corporation (Baffinland).

1.3 SITE DESCRIPTION

The following physical description and environmental setting are summaries from the Mary River Final Environmental Impact Statement (FEIS). For a more complete description, refer Baffinland Iron Mines Corporation, Final Environmental Impact Statement, 2012, Volumes 6, 7, and 8. Site Physical Description. The layout and drainage plan for the Mary River Mine Site Quarry (QMR2) is shown Appendix A. The basic quarry specifics are shown in Table 1-1 below:

TABLE 1-1: QMR2 QUARRY SPECIFICATIONS

Requirement	Description
NTS Map Sheet (1:50,000)	37 G/2 Edition 1 ASE Series A 713
Corresponding Plan of Property Drawing	Refer to Appendix A for quarry location.
Canada Lands Survey	Conducted in February 2014 by Montieth and Sutherland and provided to QIA.
Topographic Survey Data	Conducted by Baffinland Operations. Provided upon request.
Quarry Vertices Coordinates (UTM)	559997E 7914429N (centre point) 559412E 7914288N (W extent) 560511.48E 7914389N (E extent) 560043E 7914049N (S extent) 560141E 7914598N (N extent)
Total Area of Quarry	258,580 m^2 (25.9 ha)
Current Volume Removed	Approx. 711,000 banked cubic metres (BCM)
Total Volume to be Removed with Contingency	1,500,000 banked cubic meters (BCMs) (~711,000 BCM currently removed plus an additional 800,000 BCM)
Area of Proposed Quarrying	Appendix A shows the quarry permit limits, current development and proposed quarry design footprint. The total area of the proposed quarrying (existing and additional) and associated ground disturbance is 10.7 hectares (107,000 m^2).
Topsoil / Overburden Storage Area	None is required as site is primarily exposed rock
Access Roads/Trails	The main roadway at the Mine Site runs south of the quarry. The quarry access road runs perpendicular to the main Mine Site main roadway, intersecting near the current Ore Haul Truck Laydown.
Camp Locations	No camp will be built specifically for the quarry operation. Personnel will be housed at the existing Mary River Mine Site camps.

Topography varies considerably across the Project area. Topography at the Mary River Mine Site in the vicinity of the proposed quarry is described as quickly rising to 679 m asl from the fairly flat and sandy outwash plain at 188 m asl where the exploration camp is currently located. The land to the west is equally mountainous with some minor coverage of glaciers. There are several elevated plateaus to the east formed by horizontal sedimentary deposits.

Valley walls are generally steep and abrupt, often with distinct terraces.

Near surface bedrock is dominant in the quarry area. Limited overburden is in the form of localized deposits of till. The majority of the overburden is located in depressions between the numerous bedrock outcrops and is typically overlain by a layer of vegetation and boulders. This is evident along the base of the rock outcrops at the quarry site.

The Project is located in a zone of continuous permafrost. The active layer through the Project area typically ranges from approximately 1 m to 2 m but may be greater in areas where there is loose, sandy soil at the edges of lakes or ponds and less in areas with a substantial surface layer of wet organics. The proposed quarry site has areas where permafrost would be encountered. These are primarily in the deposition areas and deposits to the south of the actual site can range up to 30 m in depth with ice rich deposits. Other Project-related infrastructure at the Mary River Mine Site are located on areas of glaciofluvial terrace.

1.3.1 Environmental Setting

In general, the quarry area at the proposed Mary River quarry is primarily either exposed bedrock hills or bedrock very close to surface. Lower depressions between the hills generally have a moderate layer of wet organics at surface and drainage is poor. These lower areas have a range of materials present from colluvial/alluvial type deposits to till with significant fines present. In areas where overburden was present, this generally comprised of a thin layer of organics, underlain by moist gravely sand with some silt.

At least 10 different surface water bodies exist within 200 m of the quarry permit limits. All of these are relatively small (<2 ha) with several being less than 0.1 ha in size and are shown in the quarry drainage plan in Appendix A. None of these lakes were found to contain fish species, due to the shallow nature of the basins. Camp Lake located 2 km to the west, and the north basin of Sheardown Lake, 500 m to the south east are known to contain arctic char. The Camp Lake tributary is indicated to support char as far east as the East end of the airstrip and may support stickleback upstream of this. Three monitoring points have been established in the drainages downstream of the quarry and upstream of fish bearing waters (refer to Quarry Drainage Plan in Appendix A). The flow path from where the drainage from current operations flows into the fish bearing water of CLT1 is approximately 150 metres.

Vegetation within the Mary River Project area is described in the Vegetation Baseline Study Report in Volume 6 of the FEIS (Appendix 6C). No plant species considered to be “rare” in Canada were found to occur in the survey locations. Vegetation is extremely limited in the area of the proposed quarry, and exists in small patches where organic deposits occur around the base of the rock outcroppings, and in the valleys in between large boulders.

Several species of songbirds and shorebirds migrate to this area annually to breed, and were predominately found in the various types of lowland habitats (river deltas, coastal plains, tundra, and near wetlands) that offer an abundant source of insects and vegetation for foraging and nesting habitat. This

type of habitat is present near Camp and Sheardown lakes, within 2 km of the proposed quarry site. Bird densities though, are considered to be relatively low.

Terrestrial wildlife on north Baffin Island is described in the terrestrial wildlife baseline report (Volume 6: Terrestrial, Appendix 6F). Terrestrial wildlife includes caribou, wolves, foxes, arctic hares, ermine, and small mammals. Occurrence of most wildlife species on north Baffin Island is relatively sparse, and this is expected to be especially true at the quarry site given the type of terrain.

Marine mammals are not present in the area as the quarry site is located 100 km inland from Milne Inlet. No settlements or known hunting camps or areas are located in proximity to the proposed quarry site.

2 BAFFINLAND POLICIES

2.1 HEALTH SAFETY AND ENVIRONMENT (HSE) POLICY

This Baffinland Iron Mines Corporation Policy on Health, Safety and Environment is a statement of our commitment to achieving a safe, healthy and environmentally responsible workplace. We will not compromise this policy for the achievement of any other organizational goals.

We implement this Policy through the following commitments:

- Continual improvement of safety, occupational health and environmental performance
- Meeting or exceeding the requirements of regulations and company policies
- Integrating sustainable development principles into our decision-making processes
- Maintaining an effective Health, Safety and Environmental Management System
- Sharing and adopting improved technologies and best practices to prevent injuries, occupational illnesses and environmental impacts
- Engaging stakeholders through open and transparent communication.
- Efficiently using resources, and practicing responsible minimization, reuse, recycling and disposal of waste.
- Reclamation of lands to a condition acceptable to stakeholders.

Our commitment to provide the leadership and action necessary to accomplish this policy is exemplified by the following principles:

- As evidenced by our motto “Safety First, Always” and our actions Health and safety of personnel and protection of the environment are values not priorities.
- All injuries, occupational illnesses and environmental impacts can be prevented.
- Employee involvement and active contribution through courageous leadership is essential for preventing injuries, occupational illnesses and environmental impacts.
- Working in a manner that is healthy, safe and environmentally sound is a condition of employment.
- All operating exposures can be safeguarded.
- Training employees to work in a manner that is healthy, safe and environmentally sound is essential.
- Prevention of personal injuries, occupational illnesses and environmental impacts is good business.
- Respect for the communities in which we operate is the basis for productive relationships.

We have a responsibility to provide a safe workplace and utilize systems of work to meet this goal. All employees must be clear in understanding the personal responsibilities and accountabilities in relation to the tasks we undertake.

The health and safety of all people working at our operation and responsible management of the environment are core values to Baffinland. In ensuring our overall profitability and business success every Baffinland and business partner employee working at our work sites is required to adhere to this Policy.

Brian Penney
Chief Executive Officer
March 2016

2.2 BAFFINLAND SUSTAINABLE DEVELOPMENT POLICY

At Baffinland Iron Mines Corporation (Baffinland), we are committed to conducting all aspects of our business in accordance with the principles of sustainable development & corporate responsibility and always with the needs of future generations in mind. Baffinland conducts its business in accordance with the Universal Declaration of Human Rights and ArcelorMittal's Human Rights Policy which applies to all employees and affiliates globally.

Everything we do is underpinned by our responsibility to protect the environment, to operate safely and fiscally responsibly and with utmost respect for the cultural values and legal rights of Inuit. We expect each and every employee, contractor, and visitor to demonstrate courageous leadership in personally committing to this policy through their actions. The Sustainable Development and Human Rights Policy is communicated to the public, all employees and contractors and it will be reviewed and revised as necessary on a regular basis. These four pillars form the foundation of our corporate responsibility strategy:

1. Health and Safety
2. Environment
3. Upholding Human Rights of Stakeholders
4. Transparent Governance

1.0 HEALTH AND SAFETY

- We strive to achieve the safest workplace for our employees and contractors; free from occupational injury and illness, where everyone goes home safe everyday of their working life. Why? Because our people are our greatest asset. Nothing is as important as their health and safety. Our motto is "Safety First, Always".
- We report, manage and learn from injuries, illnesses and high potential incidents to foster a workplace culture focused on safety and the prevention of incidents.
- We foster and maintain a positive culture of shared responsibility based on participation, behaviour, awareness and promoting active courageous leadership. We allow our employees and contractors the right to stop any work if and when they see something that is not safe.

2.0 ENVIRONMENT

- Baffinland employs a balance of the best scientific and traditional Inuit knowledge to safeguard the environment.
- Baffinland applies the principles of pollution prevention, waste reduction and continuous improvement to minimize ecosystem impacts, and facilitate biodiversity conservation.
- We continuously seek to use energy, raw materials and natural resources more efficiently and effectively. We strive to develop more sustainable practices.
- Baffinland ensures that an effective closure strategy is in place at all stages of project development to ensure reclamation objectives are met.

3.0 UPHOLDING HUMAN RIGHTS OF STAKEHOLDERS

- We respect human rights, the dignity of others and the diversity in our workforce. Baffinland honours and respects the unique cultural values and traditions of Inuit.
- Baffinland does not tolerate discrimination against individuals on the basis of race, colour, gender, religion, political opinion, nationality or social origin, or harassment of individuals freely employed.
- Baffinland contributes to the social, cultural and economic development of sustainable communities in the North Baffin Region.
- We honour our commitments by being sensitive to local needs and priorities through engagement with local communities, governments, employees and the public. We work in active partnership to create a shared understanding of relevant social, economic and environmental issues, and take their views into consideration when making decisions.
- We expect our employees and contractors, as well as community members, to bring human rights concerns to our attention through our external grievance mechanism and internal human resources channels. Baffinland is committed to engaging with our communities of interest on our human rights impacts and to reporting on our performance.

4.0 TRANSPARENT GOVERNANCE

- Baffinland will take steps to understand, evaluate and manage risks on a continuing basis, including those that may impact the environment, employees, contractors, local communities, customers and shareholders.
- Baffinland endeavours to ensure that adequate resources are available and that systems are in place to implement risk-based management systems, including defined standards and objectives for continuous improvement.
- We measure and review performance with respect to our safety, health, environmental, socio-economic commitments and set annual targets and objectives.
- Baffinland conducts all activities in compliance with the highest applicable legal & regulatory requirements and internal standards.
- We strive to employ our shareholder's capital effectively and efficiently and demonstrate honesty and integrity by applying the highest standards of ethical conduct.

5.0 FURTHER INFORMATION

Please refer to the following policies and documents for more information on Baffinland's commitment to operating in an environmentally and socially responsible manner:

Health, Safety and Environment Policy
Workplace Conduct Policy
Inuktitut in the Workplace Policy
Site Access Policy
Hunting and Fishing (Harvesting) Policy
Annual Report to Nunavut Impact Review Board
ArcelorMittal Canada Sustainability and Corporate Responsibility Report

If you have questions about Baffinland's commitment to upholding human rights, please direct them to contact@baffinland.com.

Brian Penney
Chief Executive Officer
March 2016

3 SITE SECURITY AND SAFETY

Copies of all safety and management documents will be made available to on site personnel. On site personnel involved with operations at the QMR2 Quarry are required to take mandatory operational and safety training. The active supervisor, with support from the onsite Environment and Health & Safety departments, will ensure that quarry operations are consistent with other management plans, terms and conditions of the issued permits and safety procedures for the Project.

Security signage will be posted at the entrance to the quarry. The remoteness of the quarry and the onsite presence of operations personnel will make perimeter fencing unnecessary.

Blasting and processing operations will be suspended if incursions into the quarry occur, or if observations of wildlife in the immediate quarry area are made. Personnel working in the area will provide warnings if approach by any animals is noted. All employees working on the quarry operation will receive wildlife awareness training. Baffinland's Operations Blasting Procedure (BAF-PH1-340-PRO-0003) further describes blasting protocols followed onsite.

4 QUARRY OPERATIONS

4.1 Development and Operation

The quarry is accessed by a road that branches off from the main Mary River Mine Site roadway. Current operations transports the following equipment to and from the quarry, as required:

- Drilling equipment
- Rock hauling trucks
- Excavators
- Blasting equipment

4.2 Current Quarry Development and Proposed Design

Development of the QMR2 Quarry began in 2013 at the Mary River Mine Site to support the construction of the Mary River Project's Early Revenue Phase. Following the completion of construction in 2014, the quarry continues to be used to support current operations at the Mine Site.

To ensure Mine Site operations continues to have access to the required amount of aggregate to support production, an updated quarry design that allows for an additional 800,000 BCMs (1,500,000 BCMs total since quarry development in 2013) to be removed, as shown in Figure 5-1, is proposed in this plan. The current quarry development and the limits of the proposed quarry design are within the QMR2 Quarry permit limits and are presented in Appendix A.

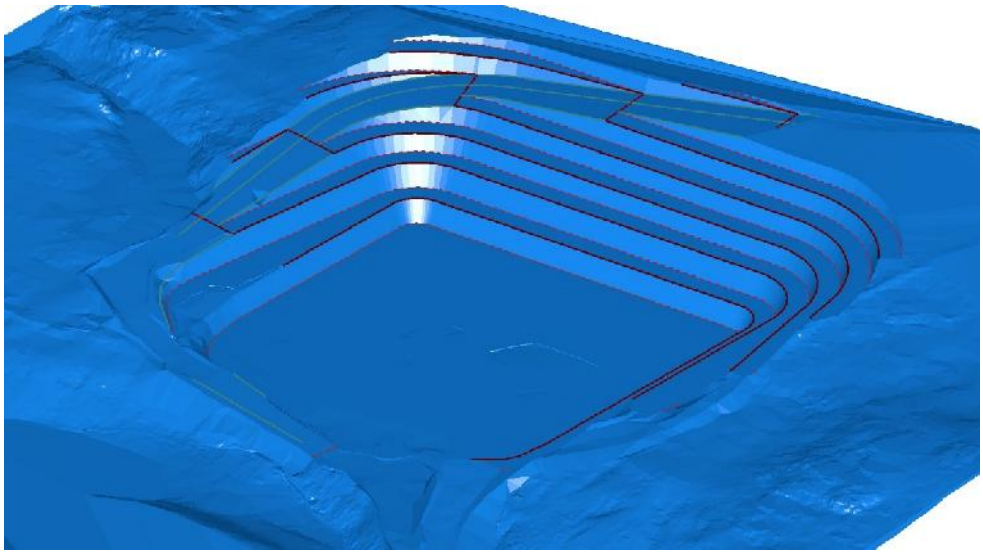


FIGURE 4-1– PROPOSED QMR2 QUARRY DESIGN

4.3 Quarry Development

The following steps provide a general description of how QMR2 Quarry was developed and provides details of the different activities associated with quarry development. Since there may be several faces where quarry mining is progressed at QMR2, the following steps apply to each quarry face.

1. Access Road: Construct an access road with culvert water crossings and sediment and erosion controls from the crusher pad to the quarry face using fill material from a previously developed borrow/quarry site. This access road is used to transport the blasted quarry rock to the crusher pad.

   Note: The Mine Site Crusher Pad, used for production, has been and will continue to be used to process blasted quarry rock from the QMR2 Quarry.

2. Pioneer Bench and Loading Pad: Using a pioneer track drill, the first bench is drilled and blasted at some higher elevation so the bench bottom elevation is similar to the desired loading pad elevation. A portion of the initial blasted quarry rock will be utilized at the quarry face to create a level pad for loading quarry rock into haul trucks. After the loading pad is finished, blasted quarry rock is hauled to the crushing pad as crusher feed material to produce rock products.

3. Bench Drilling: As each drill round is blasted out, the drill either stays at this elevation to expand the bench in a longitudinal direction along the face, or the drill climbs up the quarry site to a higher elevation to drill and blast subsequent higher elevation benches. These benches are expanded in length as required for subsequent blasting of rock at that bench elevation. Benches are created for safety and for efficient drill/blast operations.

4. Subsequent Bench Development: Additional benches are created at higher elevations, starting at the open face of the site. Each bench proceeds toward the main body of rock at that elevation. Lower benches follow behind upper benches and drilled and blasted to move toward the main body of rock. Ramps may be constructed to the upper benches for truck loading near the blasted rock. Material is excavated from benches and loaded onto trucks for delivery to the crusher.

5. Drilling Quarry Rock: Drilling of the quarry rock is normally completed with the use of one drill rig. The boreholes are laid out by a surveyor to the engineered spacing and burden for each particular rock type, geology, and desired product size. The drill is removed from the area for loading explosives and blasting. The drill can proceed along the bench to continue drilling or proceed to a new bench.

6. Blasting Operations: Blasting rock is completed by installing high explosive detonating boosters with initiation wires, followed by dropping pre-packaged sticks of explosives, or pouring from pre-packaged bags, or by pumping bulk explosives (i.e. emulsion) from an explosives truck into the boreholes. Detonation and initiation is carried out with the use of delays to time the detonators in a very fast millisecond sequence of smaller blasts for efficient rock breakage. Blasting lags behind the drill as more drilling is completed. As each new drill round is completed, the drill moves on and the drilled round is loaded with explosives and blasted.
7. Hauling Quarry Rock: The blasted rock is loaded onto trucks for delivery to the crusher.
8. Crushing Operations: Quarry rock is fed to the crusher and screening equipment to size and produce the desired rock product, stored in stockpiles and loaded into trucks for delivery to construction sites.

4.4 Quarry Activities

4.4.1 Explosives Management and Blasting

A Blasting Management Framework has been developed and is presented in Annex 3 of the Borrow Pit and Quarry Management Plan. The framework focuses on the control and mitigation of key potential risks arising from the management and use of ammonium nitrate explosives at Project quarries.

The blasting operations will be carried out by Operations and/or an experienced contractor(s). Quarry operations will be using a combination of Ammonium Nitrate Emulsion (ANE), manufactured onsite at the Mary River Mine Site Emulsion Plant, and pre-packaged explosives. Transportation of ANE and pre-packaged explosives to and from the quarry site will occur from the magazine storage area(s) and the Mary River Mine Site Emulsion Plant via Project roadways.

Blast hole drilling will take place on an appropriate grid pattern, determined by field testing, in an effort to optimize blast rock size and blasting efficiency. Blasting will normally take place at the beginning and end of each shift on a seven days per week basis. The management of explosives for the QMR2 Quarry will be consistent with the Project's Explosives Management Plan developed by Dyno Nobel (Dyno Nobel, 2013).

4.4.2 Excavation and Crushing

The entire operation takes place in an area of permafrost, and groundwater is therefore not an issue. Drilling will be monitored to avoid creating run off and drainage issues. Washing of aggregate is not required, as the material will be used for site preparation only.

Some minor organic surface soils are present in the quarry area. If these overburden soils cannot be avoided, then they will be stripped and stored separately at the storage area for later re-use. Quarrying will work along the exposed rock faces and will be terraced to minimize run off from the site. Efforts will be made during blasting operations to avoid creating depressions which might collect run off or melt waters. Drilling and extraction exercises may occur concurrently, depending on issues of safety and

schedule. Blasted rock will be cleared by loader and/or scraper and put into rock trucks for transport to the crusher/screener facility. Loaders will feed rock to the crushing and screening operation.

Crushing operations and screening operations will take place as required, occurring during night and day shift, seven days per week, if necessary. Crushing operations will process rock from the quarry, and may also process rock from other areas if required. Final material will be cleaned and stored by aggregate size in stockpiles for transport to the appropriate locations.

4.5 Site Management Measures

Best management practices for quarry operations will be followed for the Mary River Mine Site Quarry (QMR2). The following management activities are incorporated into the site operations:

4.5.1 Pre-Development Assessment for Metal Leaching and Acid Rock Drainage (ML/ARD)

The Mary River Quarry (QMR2) was initially assessed prior to development utilizing the Protocol for the Assessment for the Potential for Acid Rock Drainage (Borrow Pit and Quarry Management Plan, Annex 2). AMEC was retained in the summer and fall of 2010 to undertake an assessment of proposed quarries to assess metal leaching and acid rock drainage (ML/ARD). The sampling certificates showing these results are presented in Appendix B. Industry standard methods have confirmed that aggregate materials used have a low potential for ARD/ML.

Field observations and sampling from quarry operations to date continue to confirm the low potential for ARD/ML at QMR2 Quarry. Operational sampling results for the QMR2 Quarry are provided to QIA annually in the Annual Report, required by the Commercial Lease.

4.5.1.1 Review of Geological Information and Site Reconnaissance

Prior to quarry development, a review was conducted of existing site information and a visual inspection of surface portions of the proposed quarry development area was undertaken by means of a walk around. The review indicated that the quarry and surrounding areas are underlain by Archean age Precambrian rocks consisting of migmatitic gneisses. The gneisses are heterogeneous commonly with inclusions and bands of mafic, metasedimentary and other granitic rocks. Visual observations of the quarry development area indicated that outcrop exposure was excellent with little soil covering. Trace to no sulphides was observed during the site visit and there were no surface areas of visible sulphide oxidation.

4.5.1.2 Sampling

One borehole at QMR2 was advanced to depth of 26 meters. Refer to Appendix A for the borehole location and Appendix B for borehole log. One representative sample of the rock core from QMR2 was sent for laboratory analysis.

4.5.1.3 Analytical Testing Methods

Analytical tests included the following:

- Acid base accounting (ABA) including paste pH, modified Sobek neutralization potential (NP), total sulphur, sulphate sulphur, sulphide sulphur by difference, total carbon (TC) and total inorganic carbon (TIC)
- Total metals analysis
- Leachable metals by shake flask extraction (SFE)

4.5.1.4 Results

The results of the above analysis for QMR2 indicate that the bedrock gneiss underlying the QMR2 Quarry development area exhibit the following characteristics:

- Paste pH is weakly alkaline (9.95)
- Sulphide content was less than 0.01%
- The neutralization potential ratio (NPR) is well in excess of three. This material is considered non-acid generating
- Neutralization potential (NP) value was 4.9
- In a comparison of total metal results of samples to crustal abundances, no notable elevation of metals were noted
- There were no concerns regarding the results of the SFE tests

4.5.1.5 Key Conclusions and Recommendations from Pre-Development ML/ARD Assessment

- Based on the results of geochemical and mineralogical analyses and general surface and subsurface geological observations there is a low potential for ML/ARD and the materials are therefore expected to be a suitable quarry source.
- Based on the work to date, both locally and regionally, in other areas of gneiss that have been investigated along the Tote Road, there is no evidence of elevated sulphide.

Based on the recommendation, above, an operational testing program is recommended throughout the quarry extraction process. It is recommended that to start, approximately one composite sample of quarry material representative of a blast (muck or blast hole cuttings sample) be collected per 10,000 m^3 of material quarried. The analytical methods to be adopted will be as for the predictive sampling (MEND, 2009) or a defined alternative that has been shown to be predictive of ARD/ML. The sampling frequency should be adjusted to account for ongoing results. The quarried material can also be visually inspected for the presence of sulphides.

4.5.1.6 Future Reporting

Operational testing results will continue to be included in the Annual Report prepared for the QIA as required by the Commercial Lease.

4.5.2 Blasting Operational Management

A Blasting Management Framework has been developed and is presented in Annex 3 of the Borrow Pit and Quarry Management Plan. The framework focuses on the control and mitigation of key potential risks arising from the management and use of ammonium nitrate explosives at Project quarries.

In addition, blasting operations at the QMR2 Quarry will adhere to the protocols outlined in Baffinland's Operations Blasting Procedure (BAF-PH1-340-PRO-0003).

4.5.3 Drainage Management

The potential exists to alter drainage patterns of overland flow paths and to cause minor effect on local water quality. The hydro-geological regime around the quarry site will need to be maintained and appropriate direction of flows from site managed to maintain the natural flow patterns as much as possible. As much as possible, upstream runoff will be diverted to maintain water quality and avoid contact with quarry operations. Poorly developed overland flow paths that intersect with the quarry development area will be modified as required to accommodate flows around the quarry development. This can be accomplished by means of diversion berms or excavation of shallow ditches.

There will only be a discontinuous discharge from quarries, water runoff from quarries will be managed. As required, the quarry runoff collection locations will change over time. The drainage plans showing interpreted flow paths and downstream receivers for QMR2 Quarry are presented in Appendix A.

Sources of contamination from the operation that could affect water quality include blasting residues from blasting and spills from refuelling of equipment. Blasting residue from explosives will be managed by following best practices to ensure that all material is ignited during the blasting process. Vehicle re-fuelling will be conducted at a centralized fuelling facility off site that has proper containment and spill response capability. Re-fuelling of stationary onsite equipment, such as generators, will take place in a secured area with approved spill containment. Spill kits will be strategically located at the QMR2 quarry site.

4.5.4 Ground Ice and Permafrost Management

Current development of the QMR2 Quarry has uncovered no significant amounts of permafrost (frozen unconsolidated material) and/or ground ice. Due to this and the limited amount of data available, the depth of the permafrost's active layer in unconsolidated rock near the QMR2 Quarry is assumed to be consistent with the Project area's typical depth of 1 to 2 metres.

In the event that significant sections of permafrost and/or ground ice are uncovered during quarry development, a specific action plan will be developed and submitted for approval to the relevant agencies prior to executing the mitigation measures outlined in the action plan. In general, mitigation measures to

prevent degradation of uncovered permafrost and/or ground ice will consist of removing any ponding water and backfilling the impacted permafrost and/or ground ice with available material to reinstate the original topography.

Until the uncovered permafrost and/or ground ice can be addressed, the condition of the uncovered permafrost and/or ground ice will be periodically monitored by Operations personnel and inspected twice a year during the summer months by a Geotechnical Engineer as part of the biannual geotechnical inspections required by Baffinland's Type "A" Water Licence (2AM-MRY1325 – Amend. 1). The condition of the permafrost and/or ground ice at the quarry will be included in the biannual Geotechnical Inspection Reports and provided to the Nunavut Water Board and QIA as required.

4.5.5 Dust Management

The primary sources of dust associated with activities at QMR2 Quarry are blasting, loading and crushing and screening of aggregates. Very little topsoil exists at the quarry site, and is not considered a primary source of dust. The management of dust will be accomplished by minimizing the creation of dust at source. Crushing activity will take place as far from surface water or dust sensitive areas as is practical at the site. If possible, protection from prevailing winds will be accomplished by situating the crushing operation to take advantage of the local topography for shelter. Transport of material will be subject to speed limit restrictions to help reduce dust.

Dust management activities will include dustfall monitoring. Dustfall monitoring for the QMR2 Quarry will consist of monitoring the snow near the quarry for deposits of quarry dust by means of visual observations in concert with the Project's Dustfall Monitoring Program, developed to quantify the extent and magnitude of dust fall generated by Project activities. If significant dust deposits are observed, an action plan will be developed to mitigate potential risks to receiving water bodies. The Project's current Dustfall Monitoring Program is presented in Baffinland's Terrestrial Environment Mitigation and Monitoring Plan (BAF-PH1-830-P16-0027) and includes several monitoring locations at and around the Mine Site.

4.5.6 Noise Management

Quarry activities will generate noise from equipment operation, blasting and crushing and screening operations. Noise receptors within the area are restricted to wildlife, as no dwellings or other land use that is sensitive to noise occur nearby.

During quarry operations, personnel will inform the management if significant wildlife activity, such as caribou movements, is occurring. Depending on the concentrations and likely effect of the noise generating activity, management may temporarily suspend operation of the quarry.

4.5.7 Chance Finds (Carving Stone Deposits and Cultural Heritage Sites)

The Mary River Project area has been occupied by humans for over 4,000 years. Archaeological sites are very common throughout the region, mostly consisting of stone structures that usually represent tent rings and shelters, caches, traps, hunting blinds, cairns and inukshuks. Therefore the potential exists to encounter undiscovered cultural heritage or archaeological resources (Chance Finds) during quarry development.

The quarry permitted limits, as shown in Appendix A, for the QMR2 Quarry were fully assessed for cultural heritage and archaeological sites as well as "carving stone" deposits during 2007 and 2008. No sites or deposits were found in the permitted quarry limits during the assessment.

In the event that a cultural heritage or archeological site is discovered, the discovery will be managed as outlined in the Section 2.1 of Baffinland's Environmental Protection Plan (BAF-PH1-830-P16-008).

Similarly, discoveries of "carving stone" deposits, as defined in the Commercial Lease, will be reported to the onsite Environment Department and confirmed by the onsite Project geologist. If confirmed, Baffinland will notify the QIA and relevant agencies of the discovery and manage the deposit in accordance with Article 19 of the IIBA between the QIA and Baffinland.

4.6 MONITORING

Operation of the Mary River Mine Site Quarry (QMR2) must be monitored to ensure compliance with the Borrow Pit and Quarry Management Plan and to meet the terms and conditions of the regulations and land-use permits granted for the Project. Current monitoring focuses on:

- Regular inspection of site-preparation measures
- Regular inspection of drainage from the quarry site
- Volume and quality estimates of the granular resource material produced
- Monitoring for permafrost and ground-ice presence
- Monitoring for presence of avian, terrestrial and marine mammals in the area
- Monitoring of water quality for changes
- Monitoring of snow surrounding quarries for dust deposition
- Any additional reporting requirements as outlined in any permits

Water quality monitoring locations (MQ-C-A, B and D), as shown on the drainage plan in Appendix A, will be sampled and compared to the relevant discharge criteria in accordance with Baffinland's Type A Water Licence 2AM-MRY1325. In addition, the Project's Aquatic Effects Monitoring Program (AEMP), which monitors several waterbodies near the Mine Site, monitors the Camp Lake tributaries and fish habitat downstream of the QMR2 Quarry.

In the event that water quality at monitoring locations exceed the relevant discharge criteria, additional investigative water sampling will be conducted to identify the source of elevated water quality parameters and prescribe the appropriate corrective actions to ensure water quality meets the relevant discharge criteria outlined in the Type A Water Licence.

5 SUPPORTING MANAGEMENT PLANS

This plan should be viewed in concert with the following additional plans prepared for the pre-development works:

- Emergency Response Plan (BAF-PH1-830-P16-0007)
- Spill Contingency Plan (BAF-PH1-830-P16-0036)
- Surface Water and Aquatic Ecosystems Management Plan (BAF-PH1-830-P16-0026)
- Terrestrial Environment Mitigation and Monitoring Plan (BAF-PH1-830-P16-0027)
- Explosives Management Plan (Dyno Nobel, 2013)
- Waste Management Plan (BAF-PH1-830-P16-0028)
- Acid Rock Drainage Testing Protocol (refer to Borrow Pit and Quarry Management Plan, Annex C)
- Blasting Management Framework Protocol (refer to Borrow Pit and Quarry Management Plan, Annex B)
- Operations Blasting Procedure (BAF-PH1-340-PRO-0003)

6 CLOSURE AND RECLAMATION ACTIVITIES

The closure and reclamation of the QMR2 Quarry and access roads has been integrated into the Projects Interim Closure and Reclamation Plan (BAF-PH1-830-P16-0012). Specific activities required for closure and reclamation of QMR2 Quarry are described in the subsections below. Closure of the active quarry face will involve removing all materials, equipment and infrastructure and reclaiming the site to a self-sustaining productive ecosystem.

6.1 Closure of Active Quarry Face

The active quarry face will be terraced during operation to closely manage issues related to drainage and will not be altered for closure. The quarry development will minimize the creation of pits and depressions to the degree practicable to reduce the potential for standing water. The quarry pit floor will be left as free draining.

6.2 Waste Disposal

All site waste will be collected and placed in appropriate containers for removal. Pre and post waste removal inspections will be made to ensure the thoroughness of the program. Waste will include metallic waste, construction material waste and domestic waste.

At the current time, no washroom facilities for personnel are expected at the quarry site. Any requirement for such facilities will be met by easily removable portable toilets. These will be operated in a manner consistent with regulations, and disposal will be in accordance with Baffinland's Waste Management Plan (BAF-PH1-830-P16-0028).

6.3 Stockpile Removal

Quarrying activities will be closely managed to avoid the accumulation of unnecessary stockpiles of aggregate. Any stockpiles that do remain will be dealt with as follows:

- Large rock will be spread out on the landscape or used as rip-rap for erosion control
- Medium sized rock will be used to re-contour affected areas to re-establish a more natural appearance to the area
- Small crushed rock will be used to assist in drainage restoration, and spread on the landscape to re-establish more natural contours
- Any collected soils will be spread to allow for the re-establishment of vegetation. No vegetation planting or seeding operations will take be undertaken to avoid introducing invasive species and natural re-vegetation will be allowed to take place

6.4 Road Reclamation

The Mary River Mine Site Quarry (QMR2) access road is a relatively short aggregate structure. The entire road bed will be removed, and the material utilized in re-establishing natural contours throughout the area.

6.5 Soil Remediation for Contaminated Soils

A pre-closure inspection of the entire quarry site will be made. Any contaminated soils, snow or ice packs, or overburden will be flagged. The extent of the contamination will be determined, and the material removed. Hydrocarbon contaminated soils or overburden will be transported to the Milne Port Landfarm Facility for bio treatment. Other contamination, such as heavy metals or toxins, will require containerization for shipment off site to an appropriate facility (refer to Interim Closure and Reclamation Plan)

6.6 Permafrost and Ground Ice

Reclamation of uncovered permafrost and ground/ice will involve removing any ponding water and backfilling the impacted permafrost and/or ground ice with available material as described in Section 6.3 of this plan.

7 ENVIRONMENTAL RESPONSIBILITIES

7.1 ROLES AND RESPONSIBILITIES

The Baffinland environmental team is organised into two parts, on site as well as off site. The organisational structure for the Mary River Project in relation to the environment discipline is shown in the Table 5-1 below. Communication channels are described as liaisons in the tables outlining the responsibilities and accountabilities in the following sections.

7.1.1 ENVIRONMENTAL PROJECT TEAM

7.1.1.1 THE BAFFINLAND ENVIRONMENTAL TEAM

The Baffinland Environmental Team will oversee all environmental and community works on and off site. The Baffinland Corporate Environmental Team responsibilities are summarized in Table 5-1.

TABLE 7-1: BAFFINLAND IRON MINES CORPORATION SENIOR MANAGEMENT

Baffinland Senior Management	
Position	**Responsibilities and Accountabilities**
Chief Operating Officer	- Reports to Baffinland's CEO - Overall accountability for the operation of the Project - Allocation of resources (human and financial) for the implementation of Baffinland's commitments and objectives related to health, safety and environment during operation - Accountable for on-site environmental, health and safety performance during operation
VP Sustainable Development	- Reports to Baffinland's CEO - Establish corporate environmental policies and objectives - Monitors and reports on Baffinland's performance related to environmental policies and objectives - Liaise with regulatory authorities - Obtains necessary permits and authorizations - Monitors compliance with terms and conditions of permits and licences
Chief Procurement Officer	- Reports to Baffinland's CEO - Accountable for procurement and purchasing - Ensure that environmental commitments, policies and objectives are included in all contract documents

Baffinland Senior Management	
Position	**Responsibilities and Accountabilities**
Director Inuit, Government and Stakeholder Relations	- Reports to VP Sustainable Development - Accountable for external communication (Governments, media, NGO, others) related to Baffinland's press release and overall communication of site incidents/events - Community liaisons report to position
Director of Sustainable Development	- Reports directly to VP Sustainable Development and indirect reporting and coordination with Chief of Operations - Liaises with the senior management, regulators and stakeholders - Ensures effective monitoring and auditing of environmental performance of departments and contractors on site and identifies opportunities for improvement - Monitors compliance with permits, licenses and authorizations - Ensures all regulatory environmental monitoring and reporting requirements (monthly, annual) are met - Leads and coordinates site permitting requirements. - Initiates and oversees environmental studies

The Baffinland Environmental Team will oversee all environmental activities on site. These responsibilities on-site are outlined in 5-2.

TABLE 7-2: BAFFINLAND IRON MINES CORPORATION ON-SITE ENVIRONMENTAL TEAM

Baffinland Project Environmental Department (Onsite)	
Position	**Responsibilities and Accountabilities**
Environmental Superintendent	- Reports to Director of Sustainable Development and indirect reporting and coordination with Chief of Operations - Overall accountability for environmental staff and performance at site - Coordinates implementation and monitors the performance of the Environmental Management System at site - Serves as the liaison for regulators during onsite inspections and visits - Provides ongoing environmental education and environmental awareness training to all employees and contract workers - Oversees investigations and reporting of environmental incidents to regulatory bodies, stakeholders and senior management - Reviews updates for management plans
Environmental Coordinator	- Reports to the Environmental Superintendent - Specific accountabilities for environmental monitoring and reporting - Provides day to day direction to Environmental staff onsite - Serves as a liaison for regulators during onsite inspections and visits. - Provides ongoing environmental education and environmental awareness training to all employees and contract workers - Assists with environmental database management

Baffinland Project Environmental Department (Onsite)	
Position	**Responsibilities and Accountabilities**
	- Prepare updates for management plans - Assist with monitoring and sampling activities as per the project's management plans
Environmental Monitor and Technician	- Reports to the Environmental Superintendent or designate - Assists with environmental database management - Assists with monitoring and sampling activities as per the Project's management plans
QIA Monitor	- Works alongside the Baffinland Environment Department to ensure the proper implementation of all environmental management and monitoring plans - Acts as the QIA liaison for onsite environmental matters
Environmental Support Groups (Consultants, etc.)	- Assists with sampling, monitoring and reporting activities as required by permits, licenses and environmental management plans - Provides technical expertise to various environmental studies

8 REFERENCES

Dyno Nobel. 2013. Baffinland Iron Mines: Mary River Project – Explosives Management Plan

APPENDIX A

QMR2 Quarry Mine Site Drainage Drawings and Updated Quarry Design

Baffinland

N

E

QMR2 Quarry Permit Limits

Updated Design Footprint

559800 E

560000 E

560200 E

560400 E

7914400 N

7914200 N

7914000 N

559400 E

559600 E

559800 E

560000 E

560200 E

1 : 3000

0 50 100 150 200 250 300 350 400

Legend

- As Built Crest
- As Built Toe
- Road
- Contour Int. 1 m

PROJECT:	QUARRY QMR2
DESIGN DATE:	2017/06/14
DESIGNED BY:	CDT
DATE:	2017/07/26
ADDITIONAL VOLUME:	800K m^3

DWG. NO. H349000-4000-00-015-0008

N 7,915,000

E 558 000

E 559 000

PLANT NORTH

CAMP LAKE

FLOW PATH TO CAMP LAKE

TOTE ROAD ALIGNMENT

TOTE ROAD ALIGNMENT DURING CONSTRUCTION

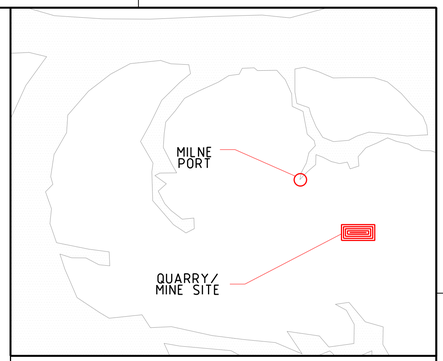
CONSTRUCTION QUARRY CRUSHER PAD #2

NEW AERODROME APRON

N 7,914,000

MATCHLINE SEE H349000-4000-00-015-0009

0 30 60 90 120 150
SCALE IN METRES



KEY PLAN

LEGEND

- PROPOSED FOOTPRINT FOR CONSTRUCTION QUARRY PADS
- EXISTING WATERBODY
- WASTE ROCK DUMP BOUNDARY AT END OF OPERATION
- POTENTIAL DEVELOPMENT AREA
- EXISTING STREAM
- SURFACE DRAINAGE DIVERSION
- OVERLAND FLOW PATH
- RIDGE LINE (HIGH POINT)
- PROPOSED CULVERT
- EXISTING CULVERT (LOCATION APPROXIMATE)
- PROPOSED ROAD
- TOTE ROAD ALIGNMENT DURING CONSTRUCTION
- EXISTING ROAD

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 2.0m.

APPROVED FOR USE

REFERENCE DRAWINGS	
DRAWING NO.	DRAWING TITLE
H349000-4000-00-015-0009	MINE SITE – QUARRY QMR2 – DRAINAGE PLAN

REVISIONS					
NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE

ISSUE AUTHORIZATION			
REV.	ISSUE FOR	AUTH. BY	DATE
A	FOR USE	T.M. T.T.	2013-05-15

HATCH™

DESIGNED BY	DRAWN BY C LEISTNER
DATE	DATE 2013-05-15
CHECKED BY	DISCIP. ENGR.
DATE	DATE
PROJ. DES. COORD. T. THERTELL	PROJ. ENGR. J. CLELAND
DATE 2013-05-15	DATE 2013-05-15
PROJ. MGR. S. PERRY	
DATE 2013-05-15	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

MINE SITE
QUARRY QMR2
DRAINAGE PLAN

SCALE	DWG. NO.	REV.
1:3000 OR AS NOTED	H349000-4000-00-015-0008	A

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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5/15/2013 11:30:11 AM
lesc59970

DWG. NO. H349000-4000-00-015-0009

PLANT NORTH

MQ-C-A

BH-QMR2

QUARRY QMR2

E 560,000

E 561,000

MQ-C-D

FISH BEARING CULVERT

N 7,914,000

EXISTING TOTE ROAD

MQ-C-B

NON-FISH BEARING CULVERT

PROBABLE FISH BEARING CULVERT

ALTERNATE ACCESS TO QMR 2

SERVICE BERM FOR WATER & POWER

NON-FISH BEARING CULVERT

EXISTING FISH BEARING CULVERT

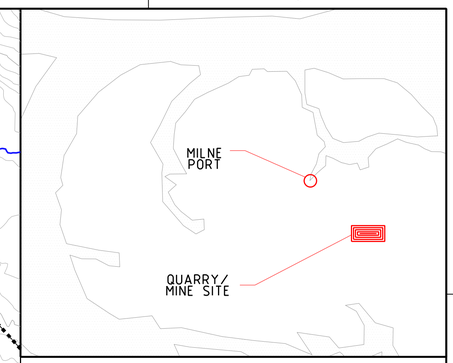
CONSTRUCTION QUARRY CRUSHER PAD #1

EXISTING CRUSHING PAD

SHEARDOWN LAKE NW

MATCHLINE SEE H349000-4000-00-015-0008

0 30 60 90 120 150
SCALE IN METRES



KEY PLAN

LEGEND

- PROPOSED FOOTPRINT FOR QUARRY QMR2
- PROPOSED FOOTPRINT FOR CONSTRUCTION QUARRY PADS
- EXISTING WATERBODY
- POTENTIAL DEVELOPMENT AREA
- EXISTING STREAM
- INTERNAL SURFACE DRAINAGE
- SURFACE DRAINAGE DIVERSION
- OVERLAND FLOW PATH
- RIDGE LINE (HIGH POINT)
- PROPOSED CULVERT
- EXISTING CULVERT (LOCATION APPROXIMATE)
- PROPOSED ROAD
- TOTE ROAD ALIGNMENT DURING CONSTRUCTION
- EXISTING ROAD
- PROPOSED WATER QUALITY MONITORING LOCATION (MQ-C-)
- EXISTING BOREHOLE
- SITE PREPARATION WORKS (MAY TO JULY 2013)

NOTES:

1. TOPOGRAPHY PROVIDED BY TERRAPOINT CANADA INC.
2. COORDINATE GRID IS SHOWN IN UTM (NAD83) ZONE 17 AND IS IN METRES.
3. CONTOURS ARE IN METRES. CONTOUR INTERVAL IS 2.0m.

APPROVED FOR USE

H349000-4000-00-015-0008	MINE SITE – QUARRY QMR2 – DRAINAGE PLAN				
DRAWING NO.	DRAWING TITLE				
REFERENCE DRAWINGS					

NO.	DESCRIPTION	BY	CHK'D	APP'D	DATE
REVISIONS					

REV.	ISSUE FOR	AUTH. BY	DATE
A	FOR USE	T.M.	T.T. 2013-05-15
ISSUE AUTHORIZATION			

HATCH™

DESIGNED BY	DRAWN BY C LEISTNER
DATE	DATE 2013-05-15
CHECKED BY	DISCIP. ENGR.
DATE	DATE
PROJ. DES. COORD. T. THERTELL	PROJ. ENGR. J. CLELAND
DATE 2013-05-15	DATE 2013-05-15
PROJ. MGR. S. PERRY	
DATE 2013-05-15	

Baffinland Iron Mines Corporation

MARY RIVER PROJECT

MINE SITE
QUARRY QMR2
DRAINAGE PLAN

SCALE	DWG. NO.	REV.
1:3000 OR AS NOTED	H349000-4000-00-015-0009	A

ORIGINAL SHEET SIZE: ISO A1 (841 x 594)

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es59970
2013-05-15 2:04:49 PM

APPENDIX B

Analytical Certificates – ABA Results, Metal Results, NAG Leachate Results and Borehole Log

SGS Canada Inc.
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Lakefield - Ontario - K0L 2H0
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Baffinland Iron Mines Corp
Attn : Jim Millard

1016-120 Adelaide Street West
Toronto, ON, M5H 1T1
Canada

Phone: 416-364-8820
Fax:pdf

Modified ABA (Price 1997)

Wednesday, November 02, 2011

Date Rec. : 25 October 2011
LR Report: CA10403-OCT11
Reference: PO13013

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	15: QTR13	16: QS3A	17: Q50+000	18: Q138+000	19: Q25+500	20: QMR2	21: Q53+700	22: Q82+700	23: Q0+500	24: Q14+600	25: Q42+000	26: Q44+000	27: Q56+750
Paste pH [units]	9.67	9.85	9.87	9.61	9.84	9.95	9.88	9.53	8.68	10.02	9.48	9.63	9.91
Fizz Rate [---]	1	1	1	1	1	1	1	1	1	1	1	1	1
Sample weight [g]	2.02	2.02	2.01	1.99	1.96	2.04	1.98	2.02	1.95	1.98	2.01	2.04	2.00
HCl added [mL]	20.00	24.30	20.00	20.00	20.00	20.00	20.00	20.00	37.60	20.00	20.00	20.00	20.00
HCl [Normality]	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH [Normality]	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
NaOH to [pH=8.3 mL]	17.80	18.30	15.67	15.31	17.33	17.99	15.89	18.10	22.09	15.79	16.44	18.21	16.95
Final pH [units]	1.12	1.61	1.20	1.26	1.17	1.13	1.37	1.07	1.73	1.24	1.32	1.12	1.16
NP [t CaCO3/1000 t]	5.4	14.9	10.8	11.8	6.8	4.9	10.4	4.7	39.8	10.6	8.9	4.4	7.6
AP [t CaCO3/1000 t]	0.31	5.22	0.31	0.31	0.31	0.31	2.81	0.31	0.31	0.31	38.0	0.31	0.31
Net NP [t CaCO3/1000 t]	5.1	9.7	10.5	11.5	6.5	4.6	7.6	4.4	39.5	10.3	-29.1	4.1	7.3
NP/AP [ratio]	17.4	2.9	34.8	38.1	21.9	15.8	3.7	15.2	128	34.2	0.23	14.2	24.5
Sulphur (total) [%]	< 0.005	0.222	0.026	0.034	< 0.005	0.020	0.141	< 0.005	< 0.005	< 0.005	1.44	< 0.005	< 0.005
Acid Leachable SO4-S [%]	<0.01	0.06	0.03	0.03	<0.01	0.02	0.05	<0.01	<0.01	<0.01	0.22	<0.01	<0.01
Sulphide [%]	< 0.01	0.17	< 0.01	< 0.01	< 0.01	< 0.01	0.09	< 0.01	< 0.01	< 0.01	1.22	< 0.01	< 0.01
Carbon (total) [%]	0.031	0.030	0.038	0.061	0.030	0.016	0.030	0.007	0.039	0.024	0.022	< 0.005	0.017
Carbonate [%]	0.025	0.028	0.039	0.099	0.021	< 0.005	0.031	< 0.005	0.092	0.005	< 0.005	< 0.005	< 0.005

OnLine LIMS

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*NP (Neutralization Potential)

$$= \frac{50 \times (N \text{ of HCL} \times \text{Total HCL added} - N \text{ NaOH} \times \text{NaOH added})}{\text{Weight of Sample}}$$

*AP (Acid Potential) = % Sulphide Sulphur x 31.25
*Net NP (Net Neutralization Potential) = NP-AP
NP/AP Ratio = NP/AP
*Results expressed as tonnes CaCO3 equivalent/1000 tonnes of material
Samples with a % Sulphide value of <0.01 will be calculated using a 0.01 value.

Sulphur analysis performed following BC ARD Guidelines (Price 1997)

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

OnLine LIMS

SGS Canada Inc.
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Phone: 705-652-2000 FAX: 705-652-6365

Tuesday, November 01, 2011

Baffinland Iron Mines Corp
Attn : Jim Millard

1016-120 Adelaide Street West
Toronto, ON, M5H 1T1
Canada

Phone: 416-364-8820
Fax:pdf

Date Rec. : 25 October 2011
LR Report: CA10404-OCT11
Reference: PO13013

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Sample ID	Sample weight g	Vol H2O2 mL	Final pH units	NaOH Normality	Vol NaOH to PH 4.5 mL	Vol NaOH to PH 7.0 mL	NAG (pH 4.5) kg H2SO4/tonne	NAG (pH 7.0) kg H2SO4/tonne
3: Analysis Approval Date	01-Nov-11	01-Nov-11	01-Nov-11	01-Nov-11	01-Nov-11	01-Nov-11	01-Nov-11	01-Nov-11
4: Analysis Approval Time	13:07	13:07	13:07	13:07	13:07	13:07	13:07	13:07
5: Q131+100	1.5	150	6.79	0.10	0.00	0.12	0.0	0.4
6: Q7+500-P	1.5	150	7.07	0.10	0.00	0.00	0.0	0.0
7: Q4+100	1.5	150	6.87	0.10	0.00	0.12	0.0	0.4
8: QTR-9	1.5	150	3.25	0.10	1.20	2.50	4.0	8.3
9: Q45+000	1.5	150	7.42	0.10	0.00	0.00	0.0	0.0
10: Q10+250	1.5	150	6.68	0.10	0.00	0.43	0.0	1.4
11: Q44+300	1.5	150	7.19	0.10	0.00	0.00	0.0	0.0
12: Q38+700	1.5	150	4.02	0.10	0.21	0.54	0.7	1.8
13: Q88+800	1.5	150	6.68	0.10	0.00	0.41	0.0	1.4
14: Q52	1.5	150	7.02	0.10	0.00	0.00	0.0	0.0
15: QTR13	1.5	150	7.08	0.10	0.00	0.00	0.0	0.0
16: QS3A	1.5	150	5.00	0.10	0.00	0.30	0.0	1.0
17: Q50+000	1.5	150	7.47	0.10	0.00	0.00	0.0	0.0
18: Q138+000	1.5	150	7.71	0.10	0.00	0.00	0.0	0.0
19: Q25+500	1.5	150	7.20	0.10	0.00	0.00	0.0	0.0
20: QMR2	1.5	150	6.77	0.10	0.00	0.23	0.0	0.8
21: Q53+700	1.5	150	5.49	0.10	0.00	0.25	0.0	0.8
22: Q82+700	1.5	150	6.55	0.10	0.00	0.45	0.0	1.5
23: Q0+500	1.5	150	7.66	0.10	0.00	0.00	0.0	0.0
24: Q14+600	1.5	150	7.23	0.10	0.00	0.00	0.0	0.0
25: Q42+000	1.5	150	2.56	0.10	6.26	8.49	21.0	28.5
26: Q44+000	1.5	150	6.48	0.10	0.00	0.78	0.0	2.5
27: Q56+750	1.5	150	7.01	0.10	0.00	0.00	0.0	0.0
28: Q14+500-1	1.4	150	6.66	0.10	0.00	0.62	0.0	2.1
29: Q18+100	1.5	150	5.80	0.10	0.00	1.62	0.0	5.4
30: Q51	1.5	150	8.61	0.10	0.00	0.00	0.0	0.0
31: Q116+800	1.5	150	6.54	0.10	0.00	0.16	0.0	0.5
32: Q35+500	1.5	150	8.55	0.10	0.00	0.00	0.0	0.0
33: QTR-12	1.5	150	2.95	0.10	2.45	4.13	8.0	13.5
34: Q22+500	1.5	150	7.25	0.10	0.00	0.00	0.0	0.0
35: QTR-4	1.5	150	6.84	0.10	0.00	0.19	0.0	0.6
36: NTUN-DH-01	1.5	150	6.75	0.10	0.00	0.23	0.0	0.7

OnLine LIMS

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Lakefield - Ontario - K0L 2H0
Phone: 705-652-2000 FAX: 705-652-6365

NAG Test

LR Report : **CA10404-OCT11**

Sample ID	Sample weight g	Vol H2O2 mL	Final pH units	NaOH Normality	Vol NaOH to PH 4.5 mL	Vol NaOH to PH 7.0 mL	NAG (pH 4.5) kg H2SO4/tonne	NAG (pH 7.0) kg H2SO4/tonne
37: NTUN-DH-03	1.5	150	6.99	0.10	0.00	0.09	0.0	0.3
38: STUN-03	1.5	150	6.78	0.10	0.00	0.20	0.0	0.7
39: SI-OLD-005	1.5	150	6.80	0.10	0.00	0.24	0.0	0.8
40: SI-OLD-007	1.5	150	6.83	0.10	0.00	0.20	0.0	0.6

NAG = (49 x Vol. of base x N of base)/sample weight
kg H2SO4/tonne

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

OnLine LIMS

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Baffinland Iron Mines Corp
Attn : Jim Millard

1016-120 Adelaide Street West
Toronto, ON, M5H 1T1
Canada

Phone: 416-364-8820
Fax:pdf

Tuesday, November 01, 2011

Date Rec. : 25 October 2011
LR Report: CA10405-OCT11
Reference: PO13013

Copy: #1

CERTIFICATE OF ANALYSIS
Final Report

Analysis	15: QTR13	16: QS3A	17: Q50+000	18: Q138+000	19: Q25+500	20: QMR2	21: Q53+700	22: Q82+700	23: Q0+500	24: Q14+600	25: Q42+000	26: Q44+000	27: Q56+750
Mercury [µg/g]	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Gold [µg/g]	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	0.03	< 0.02	< 0.02
Silver [µg/g]	0.06	0.15	0.08	0.10	0.05	0.13	0.08	0.11	0.09	0.03	0.33	0.02	0.03
Aluminum [µg/g]	3400	18000	9100	9300	6700	6000	21000	4900	55000	6800	12000	4100	10000
Arsenic [µg/g]	< 0.5	0.7	0.6	< 0.5	< 0.5	0.8	< 0.5	0.6	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Barium [µg/g]	12	170	75	120	58	8.1	95	19	52	8.2	45	14	35
Beryllium [µg/g]	0.06	0.17	0.14	0.28	0.22	0.35	0.16	0.23	1.6	0.12	0.26	0.27	0.15
Bismuth [µg/g]	< 0.09	0.41	< 0.09	< 0.09	< 0.09	0.13	< 0.09	< 0.09	< 0.09	< 0.09	0.14	< 0.09	< 0.09
Calcium [µg/g]	940	1350	4400	4800	1900	370	1400	310	33000	7800	3200	340	1800
Cadmium [µg/g]	< 0.02	0.03	0.02	< 0.02	< 0.02	0.06	0.03	0.02	0.24	< 0.02	< 0.02	< 0.02	< 0.02
Cobalt [µg/g]	0.63	21	5.6	7.7	2.7	1.7	15	1.9	36	6.1	25	1.4	5.5
Chromium [µg/g]	40	210	69	64	39	60	120	64	100	140	53	28	59
Copper [µg/g]	3.6	73	17	14	5.4	13	39	33	68	4.0	580	4.8	4.6
Iron [µg/g]	8300	42000	15000	26000	11000	7800	52000	8000	84000	10000	48000	10000	20000
Potassium [µg/g]	2400	13000	8000	8300	4900	5200	20000	2400	11000	1600	7400	2100	8200
Lithium [µg/g]	5	24	17	29	26	9	23	9	38	5	19	5	21
Magnesium [µg/g]	340	16000	6500	7100	3900	3600	14000	2200	59000	8400	8100	2200	5800
Manganese [µg/g]	89	130	290	180	200	180	480	65	610	150	320	74	260
Molybdenum [µg/g]	1.1	2.2	0.6	1.0	0.7	1.0	1.2	0.9	0.3	0.4	0.7	0.6	0.7

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Analysis	15: QTR13	16: QS3A	17: Q50+000	18: Q138+000	19: Q25+500	20: QMR2	21: Q53+700	22: Q82+700	23: Q0+500	24: Q14+600	25: Q42+000	26: Q44+000	27: Q56+750
Sodium [µg/g]	980	1300	1200	1200	1200	690	1000	750	290	1200	1200	700	990
Nickel [µg/g]	3.6	83	25	9.7	6.7	2.5	43	2.6	73	41	86	3.9	6.8
Phosphorus [µg/g]	11	75	890	1000	180	62	66	56	15000	67	160	61	240
Lead [µg/g]	3.7	6.6	8.3	5.3	6.9	14	22	8.2	3.2	0.66	4.1	2.0	6.1
Antimony [µg/g]	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8
Selenium [µg/g]	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	1.5	< 0.7	< 0.7
Tin [µg/g]	< 0.5	1.3	0.8	0.9	< 0.5	< 0.5	1.9	< 0.5	2.1	< 0.5	0.8	< 0.5	0.8
Strontium [µg/g]	2.83	3.18	20	14	10.00	1.94	4.20	2.57	15	6.19	4.62	2.73	5.97
Titanium [µg/g]	47	4200	1100	1700	590	410	3400	140	4200	380	1900	56	1600
Thallium [µg/g]	0.02	0.81	0.35	0.34	0.33	0.32	1.00	0.04	0.49	0.06	0.50	0.03	0.46
Uranium [µg/g]	5.6	1.5	0.46	1.1	0.46	8.2	1.3	1.9	11	0.41	0.64	1.5	7.7
Vanadium [µg/g]	< 1	140	18	40	12	< 1	80	2	180	20	41	5	22
Yttrium [µg/g]	1.7	1.3	16	5.8	3.6	6.6	2.9	3.6	15	1.3	3.5	4.9	5.7
Zinc [µg/g]	9.5	75	31	38	30	24	75	11	59	15	42	12	41
Weight [g]	697	704	614	556	603	621	625	567	545	623	539	559	643

Brian Graham B.Sc.
Project Specialist
Environmental Services, Analytical

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RECORD OF BOREHOLE QMR-2

PROJECT : Mary River Project
LOCATION : Mary River - Quarry
STARTED : August 7, 2011
COMPLETED : August 7, 2011

DRILLER: BOART LONGYEAR, LM-55
N 7 914 203 E 560 128

Project No. 19-1605-126
SHEET 1 OF 2
DATUM: CGVD28

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (50 100 150 200 250)	EXCESS ICE CONTENT, PERCENT (ice; 10 20 30 40) / WATER CONTENT, PERCENT (wp w wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	THERMISTER/ GROUND COND.
		GROUND SURFACE		0.00								
		COBBLES (< 100mm), granitic, fines washed out										
				0.90	1	RUN			TCR=70% SCR=70% RQD=70%		FI	FROZEN
1		**GRANITIC GNEISS**, grey, slightly weathered to fresh, very strong, quartz-rich									1	UNFROZEN
											1	UNCERTAIN
2											1	
					2	RUN			TCR=100% SCR=100% RQD=95%		1	
3											1	
											1	
4											1	
											1	
5											1	
					3	RUN			TCR=100% SCR=100% RQD=100%		1	
6											1	
7											2	
											3	
8											1	
					4	RUN			TCR=100% SCR=100% RQD=90%		1	
9											1	
											1	
10											1	
					5	RUN			TCR=100% SCR=100% RQD=99%		1	
11											1	
											1	
12											1	
											1	
13											1	
		some quartz veins (100mm)			6	RUN			TCR=100% SCR=100% RQD=94%		1	
14											1	
											1	
15											1	
											2	
16											2	
		large plagioclase crystal at 17.0m to 17.69m									2	
17											2	
					7	RUN			TCR=97% SCR=97% RQD=93%		2	
18												
19												

GROUNDWATER ELEVATIONS

▽ SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date)

▼ DEEP/DUAL INSTALLATION
WATER LEVEL (date)

PRELIMINARY

LOGGED : Boucher/Clarke
CHECKED :

THURBER

THURBER2S(5126) 5126.GPJ 9/30/11

RECORD OF BOREHOLE QMR-2

PROJECT : Mary River Project
LOCATION : Mary River - Quarry
STARTED : August 7, 2011
COMPLETED : August 7, 2011

DRILLER: BOART LONGYEAR, LM-55
N 7 914 203 E 560 128

Project No. 19-1605-126
SHEET 2 OF 2
DATUM: CGVD28

DEPTH SCALE (metres)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.3m	RECOVERY %	COMMENTS: DYNAMIC CONE PENETRATION RESISTANCE PLOT (50 100 150 200 250)	EXCESS ICE CONTENT, PERCENT (ice) (10 20 30 40) / WATER CONTENT, PERCENT (wp w wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	THERMISTER/ GROUND COND.
21												FROZEN
22					8	RUN			TCR=100% SCR=100% RQD=100%			UNFROZEN
23											1	UNCERTAIN
24											6	
25					9	RUN			TCR=100% SCR=100% RQD=94%			
26		END OF BOREHOLE AT 26.00m.		26.00								
27												
28												
29												
30												
31												
32												
33												
34												
35												
36												
37												
38												
39												

GROUNDWATER ELEVATIONS

SHALLOW/SINGLE INSTALLATION
WATER LEVEL (date)

PRELIMINARY

DEEP/DUAL INSTALLATION
WATER LEVEL (date)

LOGGED : Boucher/Clarke
CHECKED :

THURBER

THURBER25(5126) 5126.GPJ 9/30/11