

**Ege Bay Exploration Program  
Type 'B' Water Licence Application**

**Attachment 12  
Environmental Inspection and Monitoring Plan**

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# Baffinland Iron Mines Corporation

**EQE BAY**

## ENVIRONMENTAL INSPECTION AND MONITORING PLAN

**BAF-XXX-XXX-XXX-XXXX**

**DRAFT**

**Prepared By:** Andrew Vermeer  
**Department:** Sustainable Development  
**Title:** Regulatory Reporting Specialist  
**Date:** December 7, 2018  
**Signature:**

**Approved By:** Thomas Iannelli  
**Department:** Exploration  
**Title:** Head of Exploration  
**Date:** December 7, 2018  
**Signature:**

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## DOCUMENT REVISION RECORD

Issue Date MM/DD/YY	Revision	Prepared By	Approved By	Issue Purpose
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### Index of Major Changes/Modifications in Revision

Item No.	Description of Change	Relevant Section

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# 1 INTRODUCTION

## 1.1 OVERVIEW

Baffinland Iron Mines Corporation (Baffinland) is planning to initiate a mineral exploration program at Eqe Bay in 2019. Eqe Bay is located on the west coast of Baffin Island, approximately 90 km south of Steensby Port, and 210 km east of both Igloolik and Hall Beach. As shown in Figures 1 and 2, the exploration area is located on Inuit Owned Land (IOL) Parcel IG-03, of which Inuit hold both surface rights and subsurface mineral rights. Baffinland holds a current exploration agreement with Nunavut Tunngavik Inc. (NTI) to explore the mineral potential in this area, and holds federal mineral claims covering adjacent Crown Lands and portions of IOL Parcel IG-02.

## 1.2 PURPOSE AND SCOPE

The purpose of this Plan is to outline and summarize the environmental inspection and monitoring activities that will be completed to support the Eqe Bay Exploration Program.

## 1.3 REGULATORY CONTEXT

Key regulatory approvals required for the Eqe Bay Exploration Program include the following:

- ) **Inuit Land Use Lease III** - Baffinland has applied to the Qikiqtani Inuit Association (QIA) for an Inuit Land Use Lease III to secure the surface land rights necessary to support exploration activities at Eqe Bay. Baffinland already holds an Exploration Agreement with Nunavut Tunngavik Inc..
- ) **Inuit Quarry Concession Agreement** – In the event that quarries and/or borrow sources are required to further advance the Eqe Bay Exploration Program, Baffinland will apply to the QIA to establish a Quarry Concession Agreement between parties.
- ) **Type ‘B’ Water Licence** – The Eqe Bay Exploration Program will involve water use and the generation and deposition of waste. As such, Baffinland has applied to the Nunavut Water Board (NWB) for a Type ‘B’ Water Licence.
- ) **DFO Letter(s) of Advice** - Baffinland will consult with Fisheries and Oceans Canada (DFO) regarding two (2) culverts that are planned to be installed within streams assumed to be fish habitat, as well as a proposed barge ramp; it is expected that formal approval will not be required and that DFO will issue a Letter of Advice (LOA) to Baffinland, or refer Baffinland to LOAs already issued to the Company.

The preparation of the Plan is based upon Baffinland’s judgement and experience with the regulatory requirements for similar activities in Nunavut. As approvals are received, Baffinland will update this Plan to reflect the terms and conditions set out in the approvals.

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#### 1.4 RELATIONSHIP TO OTHER MANAGEMENT PLANS

The following management plans have been developed specifically for the Eqe Bay Exploration Program and incorporate key mitigation and management strategies used at Baffinland's Mary River Project:

As such, this Plan must be viewed in context with the following plans:

- Eqe Bay – Environmental Protection Plan
- Eqe Bay – Closure and Reclamation Plan
- Eqe Bay – Spill Contingency Plan
- Eqe Bay – Waste Management Plan

In addition to implementing the management plans listed above, Baffinland will implement the mitigation measures and management practices outlined in the following management plans prepared for the Mary River Project:

- ) Cultural Heritage Resource Protection Plan (BAF-PH1-830-P16-0006)
- ) Sampling Program – Quality Assurance and Quality Control Plan (BAF-PH1-830-P16-0001)

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## 2 BAFFINLAND POLICIES

### 2.1 HEALTH, SAFETY AND ENVIRONMENT 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  
April 2018

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## 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.

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- ) 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.

#### 4.1 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

If you have questions about Baffinland's commitment to upholding human rights, please direct them to [contact@baffinland.com](mailto:contact@baffinland.com).



Brian Penney  
 Chief Executive Officer  
 March 2016

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### 3 INSPECTION PLAN

Baffinland will conduct regular inspections of its facilities and operations to ensure adherence to internal procedures, approvals and applicable legislation. The following documents provide activity-specific instructions or procedures and/or guidance on recommended inspections:

- ) Eqe Bay EPP – The EPP contains Operational Environment Standards (OES) that provide procedures and other guidance, inspection checklists and inspection forms.
- ) Eqe Bay Waste Management Plan – The Waste Management Plan contains instructions, guidance and procedures for waste management activities.
- ) Vendor/manufacture guidance – OEM manuals will be used to operate and maintain waste and water management system (i.e. sewage treatment plant, etc.)

Table 3-1 identifies the facilities and activities that will be inspected, the associated procedures, EPP OESs, guidance and documentation for each facility/activity, and the proposed inspection frequency by the Environmental Representative. Inspections conducted by the Environmental Representative will be documented using the Environmental Inspections Forms (Eqe Bay EPP - Section 3.13) and photographs.

**TABLE 3-1 - PROPOSED INSPECTION SCHEDULE**

Facility/Activity	Inspection Details	Guidance/Reference Documents	Frequency
Earthworks (i.e., quarrying, road and airstrip construction)	Inspect earthworks operations for compliance with applicable approvals and management practices outlined in the EPP.	OES 3.8 - Active Migratory Bird Nest Search Form OES 2.3 - Land Disturbance OES 2.9 - Sediment and Erosion Control OES 2.17 - Road Construction	Prior to ground disturbance activities (nest survey) and following as per AMBNS protocol; weekly.
Quarries	Inspect quarry operations for compliance with applicable approvals and management practices outlined in the EPP and site-specific management plans (to be developed).	Earthworks OESs listed above.  OES 2.21 - Quarry and Borrow Source Development Site-specific management plans (to be developed)	Weekly.
Fuel storage and handling	Inspect for damage, leaks, spill and appropriate storage.	OES 2.7 - Fuel Storage and Handling	Weekly.
Waste management	Confirm proper waste management practices.	OES 2.14 Solid Waste Management OES 2.16 Hazardous Materials and Hazardous Waste Management OES 3.9 Off-site Waste Disposal Log Eqe Bay Waste Management Plan	Weekly.  Immediately prior to backhaul sealift.

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Facility/Activity	Inspection Details	Guidance/Reference Documents	Frequency
Incinerator	Confirm operating properly: system temperature, capacity (waste inflow type and quantity), or as recommended by vendor.	OES 2.14 Solid Waste Management Eqe Bay Waste Management Plan Vendor Operation and Maintenance Manual (forthcoming)	Weekly.
Hazardous materials containment area	Conduct a visual inspection of containment areas.	OES 2.16 Hazardous Material and Hazardous Waste Management Eqe Bay Waste Management Plan	Weekly.
Sewage treatment plant	Confirm operating properly.	OES 2.15 Wastewater Treatment Eqe Bay Waste Management Plan Vendor Operation and Maintenance Manual (forthcoming)	Weekly.
Water treatment plant	Confirm operating properly.	Eqe Bay Waste Management Plan Vendor Operation and Maintenance Manual (forthcoming)	Weekly.
Greywater sump	Inspect greywater sump is working properly	Eqe Bay Waste Management Plan OES 2.3 Ground Disturbance	Weekly.
Exploration drilling	Confirm proper drill operational practices including cuttings disposal, water use and hazardous materials management.	OES 2.4 Water Use OES 2.21 Exploration Drilling Operations OES 3.5 Drill Inspection Forms	Weekly.
Polar bear protection	Confirm protection measures (bear monitors and/or electric fence) are in place.	OES 2.10 Polar Bear Encounters OES 3.6 Polar Bear Readiness Audit Form	Before camp occupancy; weekly.

Site personnel will be responsible for conducting daily checks of their work areas to ensure compliance with the established environmental, health, safety and operational management practices for the Eqe Bay Exploration Program. Operators (i.e. incinerator, sewage treatment plant, water treatment plant, etc.) will conduct routine checks and maintenance activities on waste and water managements systems in accordance with manufacturer guidance.

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## 4 MONITORING PLAN

### 4.1 PROJECT ACTIVITIES

Baffinland will conduct monitoring of the following facilities and activities as required by the Type 'B' Water Licence, Inuit Land Use Lease III, and other applicable approvals and legislation. Monitoring requirements for the Eqe Bay Exploration Program are summarized in Table 4-1 below.

**TABLE 4-1 – FACILITIES AND ACTIVITIES REQUIRING ENVIRONMENTAL MONITORING**

Facility/Activity	Proposed Monitoring	Guidance <sup>1</sup>
Camp Water Supply	Record daily volumes of water extracted.	OES 2.4 Water Use
Exploration Drilling	Record daily volumes of water extracted.	OES 2.4 Water Use OES 2.19 Exploration Drilling Operations
Sewage Treatment Plant	Effluent volume and quality. Record daily volumes of sewage discharged.	OES 2.15 Wastewater Treatment OES 3.10 Wastewater Log Eqe Bay Waste Management Plan
Incinerator	Monitor operational parameters including temperature and opacity. Conduct stack emissions testing during commissioning of incinerator to ensure compliance with applicable air quality standards. Record daily volumes of waste incinerated.	Eqe Bay Waste Management Plan
Open Burn Area	Record approximate daily waste volumes open-burned.	Eqe Bay Waste Management Plan
Containment Water	Monitor containment water quality to ensure compliance with Type 'B' Water Licence prior to discharge.	OES 2.7 Fuel Storage and Handling OES 2.15 Wastewater Treatment OES 2.16 Hazardous Materials and Hazardous Waste Management Eqe Bay Waste Management Plan Eqe Bay Spill Contingency Plan
Quarries	Conduct geochemical monitoring prior to and during development, as required. Monitor water quality of runoff during quarry development to ensure compliance with Type 'B' Water Licence. Conduct surveys to quantify volumes extracted, as per the Quarry Concession Agreement with the QIA.	Site-Specific Quarry Management Plans (to be developed)  Quarry Concession Agreement (to be obtained if required)

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Facility/Activity	Proposed Monitoring	Guidance <sup>1</sup>
Culvert installations	Environmental monitoring during construction to ensure conformance with culvert design and any applicable Letter of Advice (LOA) from Fisheries and Oceans Canada (DFO); water quality monitoring for turbidity levels upstream and downstream of the crossings under construction.	Culvert Design Memo (Knight Piesold, 2018) OES 2.18 Watercourse Crossing Installation OES 3.11 Watercourse Crossing Data Monitoring Form OES 3.12 Turbidity Monitoring Data Form Future DFO Letter of Advices
Spills	Spills will be reported, documented and monitored in accordance with the Eqe Bay Spill Contingency Plan.	OES 2.23 Spill Control Measures and Reporting OES 3.5 NT-NU Spill Report Form Baffinland Incident Investigation Form Eqe Bay Spill Contingency Plan
Wildlife	Wildlife sightings will be recorded on the Wildlife Log.	OES 2.20 Wildlife Log Instructions OES 3.7 Wildlife Log
Visitors	Visitors will be asked to sign-in upon arrival at site. Observed land users will be recorded in the Visitor / Human Use Log.	OES 3.2 Human Use Log
Waste Shipments Offsite	Waste shipping manifests and documentation detailing volumes, waste types, names/addresses of disposal facilities and disposal certificates.	Eqe Bay Waste Management Plan OES 3.9 Off-site Waste Disposal Log

#### **Notes:**

<sup>1</sup>Guidance containing 'OES' refers to OESs and associated forms and logs included in the Eqe Bay Environmental Protection Plan.

## **4.2 WATER VOLUME MONITORING**

Baffinland will record daily water use and effluent discharge volumes as outlined in Table 4-2.

**TABLE 4-2 - WATER USE MONITORING**

Station Identification	Station Name / Location	Frequency	Parameters
Eqe-LakeEB-1	Water Supply Lake EB-1	Daily	Volume (m <sup>3</sup> )
Eqe-LakeEB-2 <sup>1</sup>	Water Supply Lake EB-2		
Eqe-Pond-1 <sup>1</sup>	Water Supply Pond 1		
Eqe-Pond-2 <sup>1</sup>	Water Supply Pond 2		
Eqe-STP-1	Sewage Treatment Plant – Effluent Discharge		
Eqe-CA-X <sup>2</sup>	Containment Areas – Effluent Discharge		

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**Notes:**

<sup>1</sup>Water consumption will be recorded by drill rig water supply pump; but will be collated by source.

<sup>2</sup>"X" in the sampling station identification refers to possible multiple sampling stations.

Water use will be recorded using in-line flow meters. In the absence of in-line flow meters, the maximum pumping rate will be assumed.

#### 4.3 WATER QUALITY MONITORING

Baffinland will undertake a water quality monitoring program to ensure effluents generated by the Eqe Bay Exploration Program are in compliance with the water quality criteria stipulated in the Type 'B' Water Licence. Table 4-3 details the proposed locations and frequency of water quality monitoring, as well as the parameters that will be analyzed.

Exact locations of the monitoring locations will be established following the establishment of the Eqe Bay exploration camp and will be approved by the Water Licence Inspector (Crown-Indigenous Relations and Northern Affairs Canada; CIRNAC).

Results of the monitoring program will be provided to CIRNAC, QIA, and the NWB in monthly and annual reports.

**TABLE 4-3 – PROPOSED WATER QUALITY MONITORING PROGRAM**

Station Identification	Station Name / Location	Parameters	Frequency
Eqe-STP-1	Sewage Treatment Plant – Final Effluent Discharge	Volume of effluent discharged.	Daily when operational.
		Biological Oxygen Demand (BOD <sub>5</sub> ) pH Total Suspended Solids (TSS) Faecal Coliforms Oil and Grease Ammonia-Nitrogen Total Phosphorous	Monthly when operational.
		Acute lethality to Rainbow Trout; Acute lethality to <i>Daphnia magna</i> <sup>2</sup>	Annually

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Station Identification	Station Name / Location	Parameters	Frequency
Eqe-Q-X <sup>1</sup>	Runoff from quarries.	TSS Oil and Grease Ammonia Nitrate pH Conductivity Acute lethality to Rainbow Trout <sup>2</sup> Acute lethality to <i>Daphnia magna</i> <sup>2</sup>	Monthly during periods of flow.
EQE-CA-X <sup>1</sup>	Precipitation within fuel and hazardous waste containment areas.	Benzene Toluene Ethylbenzene Oil and Grease Lead (only applicable for hazardous waste containment areas)	Prior to discharge.

#### **Notes:**

<sup>1</sup>"X" in the sampling station identification refers to possible multiple sampling stations.

<sup>2</sup>Acute lethality determined by reference methods published by Environment Canada (2016a,b)

In addition to the monitoring program summarized in Table 4-3, following the commissioning of the water treatment plant, Baffinland will sample the influent (raw) water from Eqe Lake EB 1 to characterize the water quality of the exploration camp's drinking water source. Operational drinking water quality testing will continue to be conducted throughout the operation of the Eqe Bay exploration camp in accordance with the applicable drinking water legislation.

#### **4.3.1 WATER SAMPLING PROCEDURES**

Water samples will be taken in accordance with the protocols and QA/QC practices outlined in the Mary River Project's Surface Water Sampling Program – Quality Assurance and Quality Control Plan (Sampling QA/QC Plan; BAF-PH1-830-P16-0001). The Sampling QA/QC Plan provides guidance and protocols on:

- ) Water sampling and QA/QC protocols;
- ) Handling, storage and shipment of samples;
- ) Analytical methods, method detection limits and laboratory QA/QC procedures; and,
- ) Data management and reporting.

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#### 4.3.2 LABORATORY ANALYSIS

Water samples collected during the Eqe Bay Exploration Program will be submitted to the ALS Environmental Laboratory in Waterloo, Ontario for analysis, via aircraft servicing the Mary River Project.

Details on the lab's accreditation are available in Appendix C of the Sampling QA/QC Plan.

ALS also operates an accredited analytical laboratory at the Mary River Project's Mine Site. The Mine Site laboratory conducts analyses of a basic set of analytical parameters such as pH, total suspended solids, turbidity, etc.) and may be used to analyze Eqe Bay water samples requiring quick turnaround.

#### 4.4 WASTE MONITORING

As detailed in the Eqe Bay Waste Management Plan, Baffinland will monitor and report the following information to the applicable regulators in the annual report prescribed by the Type 'B' Water Licence.

- ) Quantities of waste incinerated onsite;
- ) Quantities of waste open burned onsite;
- ) Quantities of waste and contaminated materials transported offsite for disposal;
- ) Waste shipping manifests and documentation detailing volumes, waste types, names/addresses of disposal facilities and disposal certificates.

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## 5 ROLES AND RESPONSIBILITIES

### 5.1 CAMP MANAGER

- ) Provide oversight and allocation of the necessary resources for the operation, maintenance and management of the Eqe Bay Exploration Program.

### 5.2 WATER AND WASTE SYSTEM OPERATORS

- ) Familiarization with the relevant sections of this Plan (i.e., trained operators will operate and monitor the incinerator, sewage treatment plant and waste management area).
- ) Complete the necessary operational and monitoring tasks.

### 5.3 QUARRY OPERATORS

- ) Collect and submit geochemical rock samples for analysis from operational quarries.
- ) Conduct surveys of quarries to quantify volumes of materials extracted.

### 5.4 EQE BAY EXPLORATION PROGRAM PERSONNEL (INCLUDING CONTRACTORS)

- ) Conduct daily checks of work areas and address deficiencies promptly to ensure compliance with the Eqe Bay Exploration Program's environmental, health, safety and operational protocols and management practices.

### 5.5 ENVIRONMENTAL REPRESENTATIVE

- ) Conduct routine inspections to ensure compliance with this Plan, Eqe Bay management plans, regulations and approvals.
- ) Conduct water quality monitoring as required by the Type 'B' Water Licence.
- ) Submit waste and water data to regulators and stakeholders, as required by approvals.

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## 6 REFERENCES

Environment Canada, 2016a. *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Rainbow Trout. Report EPS/1/RM/13, 2<sup>nd</sup> Ed., December 2000 with May 2007 and February 2016 amendments.* Method Development and Applications Section, Environmental Technology Centre, Ottawa.

Environment Canada, 2016b. *Biological Test Method: Reference Method for Determining Acute Lethality of Effluents to Daphnia magna. Report EPS/1/RM/14, 2<sup>nd</sup> Ed., December 2000 with February 2016 amendment.* Method Development and Applications Section, Environmental Technology Centre, Ottawa.

Knight Piésold Ltd., 2018. *Ege Bay Exploration Program – Access Road Culvert Design.* Prepared for Thomas Iannelli of Baffinland Iron Mines Corporation. Ref. No. NB18-00241, April 25.

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## FIGURES

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