Baffinland Iron Mines Corporation

Environmental Protection Plan

BAF-PH1-830-P16-0008

Rev 0

Prepared By: Andrew Vermeer
Department: Environment
Title: EHS Advisor
Date: July 15, 2014
Signature: For

Approved By: Jim Millard
Department: Environment
Title: Environmental Manager
Date: July 15, 2014
Signature:

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CONTENTS AND REVISION CONTROL

The Environmental Protection Plan (EPP) is a living document and is subject to on-going updates. The Contents and Revision Control Operational Standard presented, herein, outlines the contents of the EPP and provides a Contents List with the most recent revision date for each Operational Environment Standard (OES). The Contents List will be updated and re-issued when any OES is revised or added.

SECTION	OPERATIONAL ENVIRONMENT STANDARD (OES)	REV #	REVISION DATE
2.12	Caribou Protection Measures	E	July 15, 2014
2.13	Bird Protection Measures	F	July 15, 2014
2.14	Solid Waste Management	E	July 15, 2014
2.15	Wastewater Treatment	G	July 15, 2014
2.16	Hazardous Material & Hazardous Waste Management	E	July 15, 2014
2.17	Road Construction and Borrow Development	F	July 15, 2014
2.18	Tote Road Watercourse Crossing Installation	G	July 15, 2014
2.19	Road Traffic Management	F	July 15, 2014
2.20	Drilling, Blasting and Crushing	F	July 15, 2014
2.21	Exploration Drilling Operations	E	July 15, 2014
2.22	Water Sampling for On-Ice Drilling	D	July 15, 2014
2.23	Wildlife Log Instructions	B	July 15, 2014
2.24	Blasting in Water	C	July 15, 2014
2.25	Quarry and Barrow Pit Operation	C	July 15, 2014
2.26	Concrete Production	C	July 15, 2014
2.27	Excavations and Foundations	C	July 15, 2014
2.28	Air Quality, Noise and Vibration	B	July 15, 2014
2.29	Post-Construction Activities	B	July 15, 2014
2.30	Protection of the Marine Environment and Wildlife	B	July 15, 2014
2.31	Freshet Management	A	July 15, 2014
2.32	Compliance Inspections	A	July 15, 2014
2.33	Spill Control Measures and Reporting	A	July 15, 2014
SECTION 3			
3.0	Documentation Logs and Forms	D	July 15, 2014
3.1	Human Use Log	B	July 15, 2014
3.2	Wildlife Log	C	July 15, 2014
3.3	Drill Inspection Forms	B	June 19, 2009
3.4	Off-site Waste Disposal Log	C	July 15, 2014
3.5	Watercourse Crossing Data Monitoring Form	A	June 4, 2008
3.6	Turbidity Monitoring Data Form	A	June 4, 2008
3.7	Environmental Inspection Forms	A	July 15, 2014
3.8	Daily Tank Farm Inspection Checklist	A	July 15, 2014
3.9	Fuel Tank Dipping Form	A	July 15, 2014
3.10	Water Collection Log	A	July 15, 2014
3.11	Wastewater Log	A	July 15, 2014
3.12	NT-NU Spill Report Form	A	July 15, 2014
3.13	Cultural Heritage Change Find Discovery Form	B	July 15, 2014
SECTION 4			
4.0	Request for Revision to an Operational Standard	C	July 15, 2014

TABLE OF CONTENTS

List of Appendix

Abbreviations

Acronym	Description
AANDC	Aboriginal and Northern Affairs Canada
Baffinland	Baffinland Iron Mines Corporation
the Company	Baffinland Iron Mines Corporation
EPP	Environmental Protection Plan
GN	Government of Nunavut
NIRB	Nunavut Water Board
NRCAN	National Resources Canada
NWB	Nunavut Impact Review Board
OES	Operational Environment Standard
The Project	Mary River Project
Project Personnel	Includes all works onsite. Baffinland Employees, Contractors and Consultants

1 INTRODUCTION

1.1 PURPOSE OF THE ENVIRONMENTAL PROTECTION PLAN

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.1	Purpose of the Environmental Protection Plan	D	July 15, 2014

The Environmental Protection Plan (EPP) replaces the most recent version (April 2013) of the Construction Environmental Protection Plan (EPP) for the Mary River Project (the Project). The current version of the EPP, herein, is applicable to both the construction and operational phases of the Project. The EPP has been developed to ensure that a high level of importance is placed on the protection of the environment by Project Personnel during the life of the Project. This document includes Operational Environmental Standards (OESs) which identify and address environmental issues and concerns associated with the construction and operation of the Project and provide guidance and measures, which may be field fit, to ensure potential adverse environmental effects are avoided, minimized, or mitigated to the greatest extent practicable. The OESs are not comprehensive and provide critical cross-references to other relevant documents such as Environmental Management Plans (EMPs), Standard Operating Procedures, Environmental Permits, Licences, and Regulation, etc. The EPP will be updated as necessary based on management reviews, incident investigations, regulatory changes, or other Project-related changes. The EPP is part of the Environmental Management System implemented for the Project to allow for the integration of environmental issues and regulations into the design/engineering and operation of the Project through the implementation of the OESs presented in this document.

The EPP provides a practical way to facilitate field implementation of environmental regulations, practices, and measures required to eliminate or reduce potential adverse environmental effects. It is a working document for use by Project Personnel, as well as at the Baffinland corporate level for ensuring commitments made in policy statements are implemented and monitored. The EPP provides a quick reference for Project Personnel to monitor for compliance and to make suggestions for improvements. This EPP provides the general protection measures for routine and unplanned activities associated with the Project. The EPP is developed in recognition of applicable permits, authorizations, approvals and Inuit Knowledge. As well, the plan provides operational measures that comply with aforementioned permits, approvals, etc., and provides reference to other associated and relevant documents such as Environmental Management Plans and Standard Operating Procedures.

The specific purposes of the EPP are as follows:

- Provide a reference document to ensure that commitments to minimize adverse environmental effects will be met.
- Document and identify environmental concerns and ensure appropriate protection measures are implemented.

- Provide concise (short and clear) guidance to Project Personnel regarding the implementation of appropriate standards for protecting the environment and minimizing adverse environmental effects.
- Provide a reference and training document for Project Personnel when planning and/or conducting specific activities and working in specific areas.
- Communicate changes in the program through the revision process.
- Provide a reference to related applicable documents such as legislative requirements, guidelines, permits, Environmental Management Plans, Standard Operating Procedures, etc.

The EPP is an integral feature of the Environmental Management System implemented for the Project. It facilitates the integration of environmental issues and regulations into the design/engineering of the Project through the implementation of the environmental protection measures identified in the various Operational Environment Standards detailed throughout the document. The EPP provides documentation of environmental protection measures against which the environmental performance of Project Personnel can be readily measured and corrective actions developed and implemented where required. Project Personnel are expected to understand and implement the environmental protection measures provided within the EPP. If, at any time, Project Personnel do not understand or are unclear regarding how or when to implement an environmental protection measure the Environment Department must be contacted to obtain clarification.

1.2 ORGANIZATION OF THE ENVIRONMENTAL PROTECTION PLAN

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.2	Organization of the Construction Environmental Protection Plan	F	July 15, 2014

The EPP provides instructions to ensure Project Personnel understand and implement environmental protection standards for both routine activities and unplanned events associated with the construction and operation of the Project. The format of the EPP is intended to enable its practical use by Project Personnel, especially supervisors, in the workplace. It is a support document that helps to impart an understanding by Project Personnel of Baffinland's approach to environmental protection planning and the specific requirements in various permits, approvals, authorizations, Environmental Management Plans, etc., issued for specific project components and activities.

The EPP is comprised of the following sections:

- Section 0 is the Contents List and Revision Control, serving as a listing that shows the latest revisions for each Operational Environmental Standard (OES).
- Section 1 outlines the purpose and organization of the EPP, Baffinland's environmental commitment, corporate resources and regulatory requirements.
- Section 2 provides the Operational Environmental Standards (OES) for a broad range of specific activities anticipated to occur in relation to the Project. Each OES provides the followings:
  - An overview, environmental concerns and issues,
  - The general environmental protection measures associated with that activity, to meet regulatory requirements, corporate commitments and/or best management practices.
  - Reference to the related forms for record keeping associated with the activity.
  - Reference to associated Project documents such as permits, licences, environmental management plans, standard operating procedures, etc.
- OESs will be reviewed, expanded, created and/or omitted on a periodic basis to reflect all project activities associated with the current Project plans.
- Section 3 provides current forms used for record keeping used by Project Personnel to verify and document adherence and compliance to the OESs.
- Section 4 includes a Request for Revision, which allows for Project Personnel from all levels to recommend changes to OESs or development of additional OESs that will improve the document.
- It is expected that additional OESs will be added throughout the Project lifecycle, prior to new activities occurring.

1.3 ENVIRONMENTAL COMMITMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
1.3	Environmental Commitment	E	July 15, 2014

Baffinland is committed to conducting its work in a manner that minimizes potential impacts to the natural environment and contributes positive social and economic effects, particularly as they relate to communities in the North Baffin region. Baffinland seeks to ensure that its operational procedures and construction methods meet these commitments and regulatory requirements, and that, the commitments and requirements are understood, implemented and maintained by personnel at all levels involved with the Project.

Baffinland has developed the Environmental Protection Plan (EPP) to help ensure a high level of environmental protection throughout the Project lifecycle. It is the objective of Baffinland to apply appropriate and effective management practices to advance environmental management to all facets of its operations related to the Project. Officers, management, employees and contractors of Baffinland are all responsible for the incorporation of environmental protection measures into their work activities.

To this end, Baffinland has developed this EPP to demonstrate its commitment to environmental protection. In implementing the EPP, Baffinland is committed to continuous environmental improvement during the development and operation of Project. This is expressed in Baffinland's Sustainable Development Policy, provided below.

Baffinland

At Baffinland Iron Mines Corporation, we are committed to conducting all aspects of our business in accordance with the principles of sustainable corporate responsibility and always with the needs of future generations in mind. Everything we do is underpinned by our responsibility to protect the environment, to operate safely and fiscally responsibly and to create authentic relationships. We expect each and every employee, contractor, and visitor to demonstrate a personal commitment to this policy through their actions. We will communicate the Sustainable Corporate Policy to the public, all employees and contractors and it will be reviewed and revised as necessary on an annual basis.

These four pillars form the foundation of our corporate responsibility strategy:

Health and Safety.

Environment.

Investing in our Communities and People.

Transparent Governance.

HEALTH AND SAFETY

We strive to achieve the safest workplace for our employees and contractors; free from occupational injury and illness from the very earliest of planning stages. Why? Because our people are our greatest asset. Nothing is as important as their health and safety.

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 and awareness. We allow our workers and contractors the right to stop any work if and when they see something that is not safe.

ENVIRONMENT

We employ a balance of the best scientific and traditional Inuit knowledge to safeguard the environment.

We apply the principles of pollution prevention 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 pioneering new processes and more sustainable practices.

We understand the importance of closure planning. We ensure that an effective closure strategy is in place at all stages of Project development and that progressive reclamation is undertaken as early as possible to reduce potential long-term environmental and community impacts.

INVESTING IN OUR COMMUNITIES AND PEOPLE

We respect human rights and the dignity of others. We honour and respect the unique culture, values and traditions of the Inuit people.

We contribute to the social, cultural and economic development of sustainable communities adjacent to our operations.

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.

TRANSPARENT GOVERNANCE

We will take steps to understand, evaluate and manage risks on a continuing basis, including those that impact the environment, employees, contractors, local communities, customers and shareholders.

We 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 environmental, safety, health, socio-economic commitments and set annual targets and objectives.

We conduct all activities in compliance with the highest applicable legal requirements and internal standards.

We strive to employ our shareholder's capital effectively and efficiently. We demonstrate honesty and integrity by applying the highest standards of ethical conduct.

Tom Paddon
President and Chief Executive Officer
September 2011

1.4 ENVIRONMENT APPROVALS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
1.4	Environmental Approvals	G	July 15, 2014

Baffinland has been issued or applied for the environmental approvals found in Table 1.4-1: Environmental Approvals Issued to Baffinland, below.

TABLE 1.4-1: ENVIRONMENTAL APPROVALS ISSUED TO BAFFINLAND

Permit ID	Type of Permit	Regulatory Agency	Expiry
005	Project Certificate	NIRB	N/A
N/A	Inuit Impact Benefit Agreement	QIA	N/A
Q13C301	Commercial Lease	QIA	31-Dec-43
2AM-MRY1325	Type A Water License	NWB	10-Jun-25
2BE-MRY1421	Type B Water License - Exploration	NWB	16-Apr-21
8BC-MRY1314	Type B Water License - Construction	NWB	23-May-14
N2014C0013	Land Use Permit - Steensby and Milne	AANDC	30-Jun-16
N2014X0012	Land Use Permit - Milne Foreshore	AANDC	30-Jun-16
N2014Q0016	Land Use and Quarrying Permit - Tote Road	AANDC	30-Jun-16
N2014J0011	Land Use Permit - Bruce Head	AANDC	30-Jun-16
47H/16-1-2	Land Lease - Milne Foreshore	AANDC	30-Jun-35
14-HCAA-00525	Fisheries Authorization - Dock	DFO	31-Dec-20
NU-07-0050	Fisheries Authorization - Crossings	DFO	Until work completed
8200-09-10415 8200-09-10425 8200-09-10414 8200-09-10424	Navigable Waters - Bridge Crossings	TC	Until work completed
4306-2-6- P/B	Occasional-Use Marine Facility	TC	30-Jun-18
02 013 14R-M	Scientific Permit	GN	31-Dec-14
2014-06A	Archaeology Permit	GN	31-Jan-15
F76068	Factory Licence	NRCAN	30-Jun-15

The terms and conditions of these approvals are incorporated into the Operational Environment Standards. Project Personnel are directed to the applicable approvals. If there are any discrepancies between the Operational Environment Standards and the above approvals, the approvals govern. Official copies of the approvals are maintained on site by the Baffinland Document Controller.

1.5 RESPONSIBILITIES

SECTION	OPERATIONAL STANDARD	REVISION #	REVISION DATE
1.5	Responsibilities	E	July 15, 2014

Vice-President of Sustainable Development

- Provide corporate resources and overall direction to the implementation of the EPP.

Environmental Manager

- Provide technical guidance and final review and approval of revised versions of EPP.
- Ensure EPP is properly communicated to departmental Site Managers and ensure adequate training is in place for all site Supervisors.

Environmental Superintendents and Coordinators

- Conduct a review and revision of the EPP on an as needed basis to determine if updates are required, or at the request of the Environmental Manager.
- Review revisions to the EPP.
- Ensure revisions are distributed to managers and supervisors.
- Perform document controls.
- Ensure that managers, supervisors and their staff are familiar with the EPP and its protection measures.
- Obtain approvals from management.

Site Managers (including Contractors)

- Implement the EPP in daily operations.
- Maintain a current copy of each relevant Operational Environment Standard and the Content List (Section 0).
- Provide training and support to ensure successful implementation of the EPP.
- Initiate changes to improve and update the plan as needed.

Site Personnel

- Familiarization with the relevant sections of the EPP.
- Have knowledge of reporting procedures.

Environmental Consultants

- Provide technical support to EPP development and ongoing revisions.
- Provide audits of EPP implementation, as requested by the VP Sustainable Development.

2 OPERATIONAL ENVIRONMENT STANDARDS

2.1 CULTURAL HERITAGE AND ARCHAEOLOGICAL RESOURCES

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.1	Cultural Heritage and Archaeological Resources	G	July 15, 2014

A number of cultural heritage and archaeological sites have been identified across the Project Area. The Environment Department will provide information regarding the location of these sites relative to potential work areas. The potential exists to encounter undiscovered cultural heritage or archaeological resources (Chance Finds) when conducting construction activities such as excavating and site clearing.

2.1.1 ENVIRONMENTAL CONCERN

The Mary River area has been occupied by humans for over 4000 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*. Stone tool making sites are also present. These types of archaeological sites and features are often difficult to recognize. All archaeological sites are valuable, non-renewable sources of information about local people's history and provide crucial data for scientists studying Northern ways of life throughout the past. It is against the law to disturb known or suspected archaeological sites, punishable by fine or imprisonment. Many areas of the Project have not been surveyed by a qualified archaeologist; therefore Project Personnel must obtain approval from the Environment Department before traveling off of existing roads or disturbing ground surfaces.

Milne Inlet, the Tote Road, Steensby Inlet, and the Mary River area have been rated as having high overall archaeological potential. All project areas have been assessed to some degree and a number of archaeological sites have already been identified near proposed areas of activity. Archaeological constraints have been identified and provided to Baffinland.

2.1.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures will be implemented to minimize the potential for impacting an archaeological site:

- Project Personnel shall not deviate from already disturbed areas or established routes (existing roads and camp areas).
- Cultural resources discovered during project activities (Chance Finds) shall be reported to the Environment Department who will develop a course of action in consultation with the Project Archaeologist

- Upon a discovery, a Cultural Heritage Chance Find Discovery Report (Section 3.13) must be completed and submitted to the Environment Department.
- Human remains and funerary objects shall be treated with dignity and respect at all times, regardless of ethnic origins, cultural backgrounds or religious affiliations.
- Artifacts shall be left where they are found. If artifacts are disturbed or removed, their location shall be reported to the Environment Department
- Archaeological site locations shall be kept confidential to prevent unauthorized collection or disturbance of artifacts.
- Known sites near Project activities will be marked by stakes, flagging and/or yellow rope at approximately 30 metres away from each site.
- All Project Personnel shall avoid and remain more than 30 m away from all known or suspected archaeological sites, staying well away from any temporary protection measures such as flagging, stakes and/or yellow rope fencing.
- Existing inukshuks shall not be modified or disturbed. New inukshuks or rock piles shall not be constructed since building new rock piles may clutter the archaeological record and/or result in unknowingly using rocks from existing archaeology sites.
- Known archaeological sites shall be avoided by re-routing roads and establishing borrow excavations at locations approved for use by the Project Archaeologist. Sites that can't be avoided will be mitigated by the archaeology team prior to construction activities.
- If suspected archaeological or human remains (structures, artifacts or bones) are unearthed during work operations, stop work immediately and notify the Environment Department. The Environment Department will in turn contact the Project Archaeologist and the appropriate lands inspector and the Government of Nunavut, as required by law. The Project Archaeologist shall complete an archaeological review of all proposed Project Areas as they are finalized to identify areas with possible conflicts and areas where Project activities may proceed.

2.1.3 FORMS

- Baffinland EPP - Cultural Heritage Chance Find Discovery Report (Section 3.13)

2.1.4 RELATED DOCUMENTS

- Baffinland – Cultural Heritage Resource Protection Plan (BAP-PH1-830-P16-0006)

2.2 AVOIDING DISTURBANCE TO LOCAL LAND USERS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.2	Avoiding Disturbance to Local Land Users	E	July 15, 2014

2.2.1 ENVIRONMENTAL CONCERN

Land and resource use in the Project Area includes hunting, fishing, trapping, and tourism. Potential impacts to existing land use will include the interruption of camping, hunting, tourism and marine activities in and around Milne Port, the Steensby Exploration Camp, the Tote Road and the Mary River Mine Site. During open water, some Pond Inlet residents boat to Milne Port where they camp along the east portion of the Milne Port beach, and either hunt marine mammals in Milne Port or travel inland by all-terrain vehicle to hunt caribou. During fall, winter and spring, hunters travel to various Project Areas to hunt seals on the sea ice and caribou inland. Baffinland is committed to minimize disturbance to other land users to the extent possible.

2.2.2 ENVIRONMENTAL PROTECTION PROCEDURE

Measures will be implemented to minimize disturbance to current land use patterns for the duration of the Project. These measures include:

- Advanced notification of shipping schedules to the community of Pond Inlet and to Nunavut Tourism. This will allow other land users (e.g. hunters, tourist operators) to re-schedule or modify travel plans, if preferred.
- Limit activities at Milne Port to the western portion of the beach near camp and do not operate equipment along the eastern half of the beach or off existing roads.
- Aircraft will fly in accordance with guidelines outlined in the Aircraft Flights Operational Environment Standard (Section 2.8).
- Road traffic will operate in accordance with guidelines outlined in the Road Traffic Management Operational Environment Standard (Section 2.19).
- Pilots and others will record the presence of other land users in the *Human Use Log* (see Section 3.1) posted at each site, and will notify the Environment Department of any sightings.
- Land users are encouraged to record their presence using the *Human Use Log* (see Section 3.1) posted at each Project Site.
- Any disruptions to land use will be documented so that this information can be considered in subsequent phases of project development.

2.2.3 FORMS

- Baffinland EPP - Human Use Log (Section 3.1)

2.2.4 RELATED DOCUMENTS

- Baffinland EPP - Aircraft Flights (Section 2.8)
- Baffinland EPP – Road Traffic Management (Section 2.19)

2.3 LAND DISTURBANCE

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.3	Ground Disturbance	E	July 15, 2014

Many aspects of the Project's construction activities involve potential ground disturbances, including camp and road construction, quarrying and mobile vehicle operation.

2.3.1 ENVIRONMENTAL CONCERN

The Arctic is a fragile environment where the recovery of vegetation within this region is slow. Ground disturbance shall be minimized to protect archaeological resources, wildlife habitats, sensitive landforms, such as ice-rich permafrost features, and prevent erosion and the movement of sediment into watercourses and water bodies. Various permits, licences and approvals issued to Baffinland are specific in regards to ground disturbances and outline the necessary protection measures that need to be taken to minimize this aspect of the Project.

2.3.2 ENVIRONMENTAL PROTECTION PROCEDURE

The following measures shall be implemented to minimize potential ground disturbances:

- Project Personnel and equipment shall remain on only existing roads and trails.
- Modifications to any design/engineering drawings must be approved by the Environment Department before any Work on the modification may be started.
- Rutting (furrow creation) shall be minimized on ground surfaces when possible.
- All camps and equipment storage areas shall be located on gravel, sand and/or other durable land.
- No materials shall be stored on the surface ice of streams.
- No material shall be removed from below the ordinary High Water Mark of any stream or water body.
- Greywater sumps must be located at distance of at least 31 metres above the ordinary High Water Mark of any water body.
- Equipment and supplies brought to Project sites shall be clean and free of soils that could contain plant seeds not naturally occurring in the area. Vehicle tires and treads in particular must be inspected prior to initial use in Project Areas.
- Prior to the start of construction, a site drainage drawing must be submitted to the Environment Department for approval.
- The limits for all clearing, grubbing and topsoil overburden removal shall be identified on the "Issued for Construction" drawings and staked in the field prior to the commencement of any Work.

- Areas to be cleared shall have sediment and erosion control measures implemented prior to the initiation of any clearing activities. The sediment and erosion control measures shall be adapted to suit the field conditions associated with the specific construction activities as construction proceeds.
- No debris or any other construction material shall be allowed to enter any water body.
- New equipment entering the site will be examined for invasive species.

2.3.3 FORMS

In development

2.3.4 RELATED DOCUMENTS

- Baffinland EPP – Archaeological Resources (Section 2.1)
- Baffinland EPP – Sediment and Erosion Control (Section 2.9)
- Baffinland EPP – Road Construction and Borrow Development (Section 2.17)
- Baffinland EPP – Quarry and Borrow Pit Operation (Section 2.25)
- Baffinland EPP – Excavation and Foundations (Section 2.27)
- Baffinland – Roads Management Plan (BAF-PH1-830-P16-0023)
- Baffinland – Borrow Pit and Quarry Management Plan (BAF-PH1-830-P16-0004)

2.4 WATER USE

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.4	Water Use	F	July 15, 2014

2.4.1 ENVIRONMENTAL CONCERN

Water is an important resource that must be protected. The use of water by Baffinland for the Project is currently governed by one Type A Water Licence (2AM-MRY1325) and two Type B Water Licences (2BE-MRY1421 and 8BC-MRY1314) issued to the Company by the Nunavut Water Board (NWB). In addition to regulating water usage, Baffinland's water licences regulate many aspects of the Company's waste management practices, construction and operation activities, aquatic effects monitoring, emergency response planning and the abandonment, reclamation and closure of the Project.

This Operational Environment Standard highlights the key terms and conditions of Baffinland's water licences and other approvals with respect to water use.

2.4.2 ENVIRONMENTAL PROTECTION MEASURES

CAMP WATER SUPPLY

- Only approved water sources shall be used for project activities.
- The Mary River Mine Site will obtain water from Camp Lake.
- The Milne Port Camp will obtain water from Phillips Creek during the summer (open water) and km 32 lake or another approved source during the winter.
- When in operation, water for the Mid-Rail Exploration Camp will be obtained from an unnamed lake near the camp. When in operation, water for the Steensby Exploration Camp is provided from 3 km Lake located east of the camp.
- Water supply facilities are to be maintained to the satisfaction of the AANDC Inspector.
- Total volumes of water withdrawn from any water body by Baffinland will be recorded and provided to the Environment Department upon request using the Water Collection Log (Section 3.10).
- Daily water usages volumes for Project Sites shall not exceed volumes outlined in Baffinland's Type A Water Licence (2AM-MRY1325), as shown below in TABLE 2.4- 1

TABLE 2.4- 1: WATER USE FOR DOMESTIC AND INDUSTRIAL PURPOSES DURING THE CONSTRUCTION PHASE

Project Site	Maximum Daily Water Usage (m^3 per day)
Mine Site (Mary River)	657.5
Milne Port	68.5
Steensby Exploration Camp	435.8
Mid-Rail Exploration Camp	79.5

- Streams cannot be used as a water source unless authorized and approved by the Nunavut Water Board.
- If water is required from a source that may be drawn down (small lake or stream), Baffinland shall submit a request for approval to the Board 15 days prior to withdrawing the water.
- Work shall be performed in such a way as to ensure that materials such as sediment, fuel or any other hazardous material do not enter watercourses and waterbodies through the implementation of sediment control measures and proper hazardous materials management practices. In the event of a release to the environment, a spills contingency plan shall be implemented.
- All water intake hoses shall be equipped with a screen of an appropriate mesh size (as approved by the DFO) to ensure that fish are not entrained. Additionally, operators will ensure the water intake hoses withdraw water at such a rate that fish do not become impinged on the screen.
- Measures shall be provided to prevent and control erosion on banks of any body of water.
- Equipment shall not be washed in any watercourse or waterbody.
- No fuelling and/or servicing of equipment shall occur within 31 metres of any water body.

For water use associated with drilling programs, see Operational Environment Standards: Geotechnical Drilling Operations (Section 2.5) and Exploration Drilling Operations (Section 2.21).

2.4.3 FORMS

- Baffinland EPP – Water Collection Log (Section 3.10)

2.4.4 RELATED DOCUMENTS

- Baffinland EPP – Sediment and Erosion Control (Section 2.9)
- NWB - Type A Water Licence (2AM-MRY1325)
- NWB - Type B Water Licence (2BE-MRY1421)
- NWB - Type B Water Licence (8BC-MRY1314)
- Baffinland – Freshwater Supply, Sewage and Wastewater Management Plan (BAF-PH1-830-P16-0026)

2.5 GEOTECHNICAL DRILLING OPERATIONS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.5	Geotechnical Drilling Operations	F	July 15, 2014

Geotechnical drilling may be required to obtain soil and rock samples necessary for engineering and designing the Project facilities and infrastructure.

2.5.1 ENVIRONMENTAL CONCERN

Environmental concerns associated with drilling include surface disturbances, drilling fluid and cutting disposal, impacts on dust, noise, water quality, and habitat encroachment. The use of water for drilling purposes is subject to the conditions outlined in Baffinland's Type B Water Licence (2BE-MRY1421).

2.5.2 ENVIRONMENTAL PROTECTION MEASURES

The following protection measures for geotechnical drilling management shall be implemented:

- Pre-Drilling Preparation and Acceptable Drill Locations
  - A Pre-Drilling Inspection Report (see Section 3.3) shall be completed by the acting supervisor before drilling activities commence.
  - Additional geotechnical investigations shall be undertaken to identify sensitive landforms, modify engineering design for Project infrastructure, develop and implement preventative and/or mitigation and monitoring measures to minimize the impacts of the Project's activities and infrastructure on sensitive landforms.
  - Geotechnical drilling activities may be carried out within 31 metres of the ordinary High Water Mark of waterbodies as long as the drilling location has been approved by the Nunavut Water Board. Please confirm all geotechnical drill locations with the Environment Department before drill mobilization.
  - Archaeology clearance shall be obtained from the Environmental Department for all geotechnical drill locations (see Section 2.1).
  - Conduct a wildlife inspection immediately prior to movement of the drill, involving aerial and ground survey of the new site. For details on drilling restrictions associated with wildlife interactions, see Operational Environment Standards: Polar Bear Encounters (Section 2.10), Fox and Wolf Encounters (Section 2.11), Caribou Protection Measures (Section 2.12) and Bird Protection Measures (Section 2.13).
  - Implement sediment and erosion control measures prior to drilling operations and maintain these during the operation to minimize transport of sediment into adjacent water bodies. Prior to the commencement of drilling for each hole, establish a dedicated sump location where collected "dirty" drill water and cuttings are to be disposed. The location shall be a minimum of 31 metres from surface water bodies and located such that any flow toward a surface water body is minimized (sump shall be in a bowl, depression or be on a flat surface).

- Drill Operation and Movements
  - Material shall not be stored on the surface of frozen streams or lakes, including immediate banks, except materials that are for immediate use.
  - All drill waste, including water, chips, muds and salts ($CaCl_2$) from land based drilling shall be disposed in a properly constructed sump or natural depression located at least 31 metres above the High Water Mark of any water body.
  - All activities, including the overland transport of workers, shall be conducted in such a way to minimize ground disturbance.
  - All waste, such as food and packaging, shall be collected for disposal at the camp.
  - Feeding of all wildlife is prohibited.
  - Equipment or vehicles shall not be moved unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging.
  - Daily inspections for fuel/hydraulic leaks, equipment condition, sediment and erosion control, and water intakes shall be conducted prior to commencing Work activities at the start and end of each work shift/day. All leaks shall be immediately repaired.
  - All drill rigs shall be equipped with spill kits in the event of leaks and spills. All operators should be trained in spill response and be familiar the use of spill kits.
  - In case the bottom of the permafrost is broken through by the drill, the depth of the bottom and location shall be reported immediately to the Environment Department who shall in turn report to the Nunavut Water Board.
  - Equipment shall not obstruct any stream.
  - Equipment storage holding areas will be located on gravel, sand or other durable land 31 metres above the ordinary High Water Mark of any waterbody in order to minimize impacts on surface drainage and water quality.
  - Establish water quality conditions prior to and upon completion of any on-ice drilling program See Operational Environment Standard: Water Sampling for On-Ice Drilling (Section 2.22) for more details.
  - Contain and re-circulate drill water to the fullest extent possible in order to reduce water usage. Utilize silt fences and natural depressions to prevent water from running into nearby watercourses and water bodies.
  - Separate clean water from “dirty” water streams whenever possible, (by means of hose extensions and snow berms or other means that direct and keep discharge away from the immediate area of the drill hole) to prevent migration and expansion of a “dirty” water plume.
  - Work shall be performed in such a way as to ensure that materials such as sediment, fuel and/or any other hazardous material does not enter watercourses and waterbodies through the implementation of sediment control measures and proper hazardous materials management practices. In the event of a release to the environment, the approved Spills Contingency Plan shall be implemented.

- To maximize drill return water recirculation, casing is to be frozen into the ground to a depth of 3 to 6 m below grade. The specific depth of casing to be frozen into each hole and length of time to allow for freezing will be specified by the acting Supervisor.
- The drill water and cuttings spillage footprint shall be minimized through the use of berms, silt fences and/or other means of containment.
- Dispose of drill water into a properly constructed sump, or a naturally occurring contained depression. Drill water shall not be released directly to a nearby water course or to the ground.
- Use portable containment sumps (bins), for drill water and cuttings where containment in the ground is impractical. The bins shall not overflow and shall be dumped by means of helicopter or pump, to the location identified for disposal of dirty drill water and cuttings.
- Drilling waste must not be allowed to spread to the surrounding land or water bodies; the footprint of any spillage must be minimized to the greatest degree practicable.
- In case of an artesian flow occurrence, drill holes shall be immediately plugged and permanently sealed to prevent induced contamination of groundwater or salinization of surface waters. Report the artesian flow occurrence as soon as possible to the Environment Department who in turn will report the occurrence to the Nunavut Water Board.
- For on-ice drilling, returned water released must be nontoxic, and not result in an increase in Total Suspended Solids (TSS) in the immediate receiving water above the CCME guidelines for the protection of Fresh Water Aquatic Life (i.e. .10 mg/L for lakes with background levels under 100 mg/L or 10% for those above 100 mg/L).

- Drill Hole Abandonment
- Materials such as debris and/or drill cuttings shall not be left on the ice when there is potential for that material to enter a water body.
- Restore, contour and stabilize constructed drill sumps, and other disturbed areas, to the pre-disturbed state immediately upon completion of drilling.
- Return all combustible waste and petroleum products to camp for proper management and disposal.
- Plug all drill holes upon completion, and where possible return drills cuttings at the surface to the drill hole at all land-based drilling locations.
- Contour and stabilize all other disturbed areas upon completion of work and restore these areas to a pre-disturbed state.
- Upon completion of a hole in rock, the casing will be removed. If the casing cannot be removed it will be cut off to be flush with surface and backfilled.
- Remove all non-combustible garbage and debris from the land use area to an approved disposal site.

- A Post-Drilling Inspection Report (see Section 3.3 – Drill Inspection Forms - Pre-Drilling, Daily and Post Drillings) will be filled out at the completion of each drill hole.
- Ensure a copy of all Pre-Drilling, Post-Drilling and Daily Drill Inspection Reports for all drill holes are submitted to the Environment Department at the completion of each drilling program.

2.5.3 FORMS

- Baffinland EPP – Drill Inspection Forms: Pre-Drilling, Daily and Post Drilling (Section 3.3)

2.5.4 RELATED DOCUMENTS

- Baffinland EPP – Sediment and Erosion Control (Section 2.9)
- Baffinland EPP - Polar Bear Encounters (Section 2.10)
- Baffinland EPP - Fox and Wolf Encounters (Section 2.11),
- Baffinland EPP - Caribou Protection Measures (Section 2.12)
- Baffinland EPP - Bird Protection Measures (Section 2.13)
- Baffinland EPP – Exploration Drilling Operations (Section 2.21)
- Baffinland EPP – Water Sampling for On-Ice Drilling (Section 2.22)
- Baffinland – Freshwater Supply, Sewage and Wastewater Management Plan (BAF-PH1-830-P16-0010)
- Baffinland – Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)
- NWB - Type B Water Licence – 2BE-MRY1421
- Exploration Spill Contingency Plan (BAF-PH1-830-P16-0037)
- Emergency Response Plan (BAF-PH1-830-P16-0007)

2.6 EQUIPMENT OPERATION AND MOBILIZATION

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.6	Equipment Operations & Mobilization	E	July 15, 2014

2.6.1 ENVIRONMENTAL CONCERNS

Mobile equipment emits noise and air emissions, are potential sources of leaks and spills and can cause rutting and land disturbances, as well as disturbance of archaeological sites if necessary clearances have not been obtained.

Noise associated with equipment use and mobilization may negatively affect neighbours. Air emissions may have air quality implications. Accidental leaks or spills of fuel or other hazardous materials may affect soils, water quality, fish and fish habitat, and wildlife.

2.6.2 ENVIRONMENTAL PROTECTION MEASURES

- Damage to archaeology sites will be avoided by following the protection measures outlined in the Operational Environment Standard: Archaeology Resources (Section 2.1).
- Rutting and land disturbance will be minimized by following the protection measures outlined in the Operational Environment Standard: Ground Disturbance (Section 2.3).
- All equipment will be equipped with properly functioning mufflers.
- All spills involving equipment shall be reported to the Environment Department immediately and documented by submitting the necessary documentation within 12 hours of the spill using the Baffinland Incident Investigation Form and NT-NU Spill Report Form. See Operational Environment Standard: Spill Control Measures and Reporting (Section 2.33) for more details on spill reporting.
- Daily pre-operation inspections will be made on all equipment using the Pre-Op Inspection Form. Pre-Op Inspection Forms should be given to the Maintenance Department at the end of day. If problems are identified the Maintenance Department should be notified and the equipment will be taken out of service and repaired.
- Equipment operators will be trained and licenced to operate their particular equipment; training will be provided for operators before operating any new equipment.
- Equipment and vehicles that will remain parked for extended periods of time or that are prone to leaks will have spill trays placed underneath them to contain any fluid leaks.

2.6.3 FORMS

- Baffinland – Baffinland Incident Investigation Form
- Baffinland – NT-NU Spill Report Form (Section 3.12)
- Baffinland – Pre-op Inspection Form

2.6.4 RELATED DOCUMENTS

- Baffinland EPP – Archaeology Resources (Section 2.1)
- Baffinland EPP – Ground Disturbance (Section 2.3)
- Baffinland EPP – Spill Control Measures and Reporting (Section 2.33)
- Baffinland – 2014 - Air Quality and Noise Abatement Management Plan (BAF-PH1-830-P16-0002)

2.7 FUEL STORAGE AND HANDLING

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.7	Fuel Storage and Handling	F	July 15, 2014

Permanent and temporary fuel storage facilities have been constructed at all active Project Sites. At Milne Port and the Mary River Mine Site, fuel is stored in bulk storage facilities consisting of steel fuel tanks and bladders located within lined containment berms. Small quantities of fuel are being stored in barrels and double walled ISO tanks within containment berms at the Steensby and Mid-Rail Exploration Camps.

2.7.1 ENVIRONMENTAL CONCERNS

Accidental and uncontrolled leaks, releases and spills of fuel may occur due to improper storage, poor handling procedures or equipment malfunction. Fuel releases to the environment have the potential to negatively affect worker health and safety as well as soil quality, aquatic life and wildlife. The potential for fuel spills is addressed through the Company's Emergency Response and Spill Contingency Management Plans

2.7.2 ENVIRONMENTAL PROTECTION MEASURES

- The following environmental protection measures shall be used for all storage and handling of fuels at the Project:
- Project personnel refuelling equipment or vehicles will supervise re-fuelling at all times and will not leave fuel transfer operations unattended.
- Avoiding ship-to-shore transfer of fuel during freeze-up or break-up periods.
- Undertake fuel transfer from vessels to shore under good weather conditions.
- Transfer of fuel to storage tanks or to vehicles shall be conducted by a fully-trained and qualified person.
- Exposed pipelines shall be protected from damage by vehicular collision through the installation of guard rails or barriers.
- Hoses and pipes used for fuel transfer shall be equipped with properly functioning and approved check valves that are spaced to prevent backflow of fuel in the case of failures.
- All spills shall be reported to the Environment Department immediately and documented by submitting the necessary documentation within 12 hours of the spill to using the Baffinland Incident Investigation Form and NT-NU Spill Report Form (Section 3.12). See Operational Environment Standard: Spill Control Measures and Reporting (Section 2.33) for more details on spill reporting.

- All fuel storage tanks will be inspected on a regular basis and will be in accordance with the requirements outlined in the Environmental Code of Practice for Aboveground Storage Tank Systems Containing Petroleum Products, issued by the Canadian Council of Ministers of the Environment.
- Daily inspections of the permanent fuel storage and dispensing facilities, located at Milne Port and the Mary River Mine Site, will be conducted by the Site Services Department using the Daily Tank Farm Inspection Checklist (Section 3.8).
- Fuel tanks at the permanent fuel storage and dispensing facilities, located at Milne Port and the Mary River Mine Site, will be dipped every 3 days by the Port & Logistics Department to confirm fuel levels and total fuel inventory using the Fuel Tank Dipping Form (Section 3.9).
- Fuel storage containers will be stored in secondary containment and shall not be placed within 31 metres of ordinary High Water Mark of any water body.
- All mobile equipment will be serviced and fuelled on land at least 31 metres above the ordinary High Water Mark of any water body No petroleum or chemical product will be allowed to spread to surrounding lands or into water bodies.
- All fuel containers shall be sealed and labelled with the name Baffinland Iron Mines Corporation.
- Waste oils, lubricants, and other used oil shall be placed in drums, labeled as waste materials, and stored in a contained area until removed from site for disposal at an approved, licenced waste management facility (see Section 2.16 - Hazardous Material & Hazardous Waste).
- All fuel storage areas shall be inspected on a regular basis. See Operational Environment Standard: Environmental Inspection Forms (Section 2.32). Examine all fuel storage containers in your work area for leaks at least once per day.
- Repair all leaks immediately.

2.7.3 FORMS

- Baffinland – Daily Tank Farm Inspection Checklist (Section 3.8)
- Baffinland – Fuel Tank Dipping Form (Section 3.9)
- Baffinland – Environmental Inspection Forms (Section 3.7)
- Baffinland – Baffinland Incident Investigation Form
- Baffinland – NT-NU Spill Report (Section 3.12)

2.7.4 RELATED DOCUMENTS

- Baffinland EPP – Hazardous Material & Hazardous Waste Management (Section 2.16)
- Baffinland EPP – Spill Control Measures and Reporting (Section 2.33)

- Baffinland – Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)
- Baffinland – Emergency Response Plan (BAF-PH1-830-P16-0007)
- Baffinland – Spill Contingency Plan (BAF-PH1-830-P16-0036)
- Baffinland - Exploration Spill Contingency Plan (BAF-PH1-830-P16-0037)
- Baffinland – Steensby Oil Pollution Emergency Plan
- Baffinland – Milne Port Oil Pollution Emergency Plan
- Baffinland – Mobile Fueling Protocol (in development)
- NWB – Type A Water Licence (2AM-MRY1325)

2.8 AIRCRAFT FLIGHTS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.8	Aircraft Flights	F	July 15, 2014

The construction and operation phases of the Project involve air traffic; this will consist of flights made by helicopters, smaller twin-engine fixed wing aircraft and chartered flights by commercial jets. The high level of aircraft use requires pilots, and Project Personnel directing pilots, to be aware of the potential disturbances to wildlife and the requirements of the various permits and licences issued to Baffinland. In addition, Inuit hunters may be moving through the Project Area at any time of the year, and Baffinland has committed to minimizing disturbance of local users to the extent possible. All Project Personnel are responsible for operating in accordance with the legal requirements and commitments outlined in this Operational Environment Standard. However, that being said, safety is the most critical aspect of aircraft operations and safety considerations supersede other concerns.

2.8.1 CONCERNS REGARDING WILDLIFE

Aircraft can cause disturbance to wildlife by interrupting their activities (i.e. feeding, calving, migration, etc.) and possibly causing the animals to leave the area and important habitats. Caribou, important to Inuit culture and diet, can be sensitive to aircraft noise. Disturbance of caribou has the greatest effect prior to, during and following calving (approximately mid-May to mid-July).

2.8.2 CONCERNS REGARDING INUIT LAND USE

Aircraft can disturb hunters or other land users (i.e. tourists) during low level flights that disturb the people and/or the wildlife they may be pursuing. Land users travel over land and ice from roughly November through late June/early July. August is particularly important for boats due to the short duration of open water. Land users may travel by boat and camp at Milne Port, and may travel inland hunting caribou by walking or using all-terrain vehicles. Remember that local land users were here first.

2.8.3 ENVIRONMENTAL PROTECTION MEASURES

- Minimize the number of flights to the extent possible.
- Subject to safety requirements, aircraft will maintain a cruising altitude of at least:
  - 650 metres above ground level minimum, and;
  - 1,100 metres vertical and 1,500 metres horizontal from observed concentrations of migratory birds. If altitude is not possible, maintain a lateral distance of at least 1,500 metres.
- Ensure that certification of noise compliance is current, where compliance is applicable.
- Employees are responsible for reporting to the appropriate supervisor any improper flight practices.
- Avoid caribou calving sites between May 15 and July 15, as identified by Project biologists or observed by aircraft pilots.

- Pilots shall report to the Environment Department caribou movements and locations during calving and post-calving periods, so that these areas can be avoided.
- Avoid large concentrations of wildlife, (i.e. Migratory Bird Sanctuaries, breeding colonies and caribou calving grounds), and take alternate routes.
- Plan routes that are likely to have least occurrences of wildlife.
- Hovering or circling may greatly increase disturbances and must be avoided when practical.
- Flights between Pond Inlet and Mary River will be routed so as to minimize interruption with community activities within the fiords between the site and the community.
- The Environment Department will inform pilots of wildlife sensitive area.
- For details on reporting wildlife sightings, refer to Operational Standard: Wildlife Log Instructions (Section 2.23)

2.8.4 EXCEPTIONS

- Low-level flights are required during slinging operations in the vicinity of the Mary River Mine Site Area and the Steensby and Mid-Rail Exploration Camps, Milne Port and on occasion at other locations, where short distances are involved.
- Low-level flights are permitted during wildlife surveys, as directed by the Project biologists in accordance with wildlife research permits.

2.8.5 FORMS

None

2.8.6 RELATED DOCUMENTS

- Baffinland EPP - Polar Bear Encounters (Section 2.10)
- Baffinland EPP - Fox and Wolf Encounters (Section 2.11)
- Baffinland EPP - Caribou Protection Measures (Section 2.12)
- Baffinland EPP - Bird Protection Measures (Section 2.13)
- Baffinland –Air Quality and Noise Abatement Management Plan (BAF-PH1-830-P16-0002)

2.9 SEDIMENT AND EROSION CONTROL

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.9	Sediment and Erosion Control	E	July 15, 2014

Land disturbances during road construction and operation, culvert installation and excavation of borrow locations and quarries have the potential to cause erosion and release sediment-laden runoff into nearby watercourses. Sediment and erosion control measures may include, but are not limited to, silt fencing, erosion control mats (fascines), sedimentation ponds, erosion blankets/geotextile lining, sand bags, terraces, benching, and riprap structures. Project Personnel are responsible for the implementation of erosion and sedimentation control measures prior to the initiation of construction activities (i.e., clearing, grubbing, development of facilities, etc.) in each specific Work area.

2.9.1 ENVIRONMENTAL CONCERN

The potential exists for the movement of soil (wind erosion), the unplanned release of sediment to watercourses/waterbodies and the slumping or change in landscape form associated with changes in the permafrost profile. Stormwater, which may include any surface runoff and flows resulting from precipitation, drainage or other sources, may contain suspended sediments, metals, petroleum hydrocarbons, and other substances. These materials may affect water clarity and, subsequently, aquatic life by reducing feeding success, fish egg and larval survival and fish habitat. Rapid runoff can degrade the quality of the receiving water by eroding stream beds and banks. Wind erosion is a key issue for the Project. The arid climate allows the wind to transport unprotected/disturbed soils from current locations. Improved road surfaces will increase the potential runoff in downstream areas throughout the Project Area.

2.9.2 ENVIRONMENTAL PROTECTION MEASURES

Project Personnel may be requested to implement additional sediment and erosion control measures by the Project's Environment Department if they deem the measures are necessary to ensure protection of the environment.

The following environmental protection procedures/measures will be taken to prevent or mitigate erosion and sediment-laden runoff impacts:

- The Surface Water and Aquatic Ecosystem Management Plan will be adopted to prevent and/or mitigate sediment loading into surface water within the Project Area.
- The size of the disturbed area and duration of soil exposure shall be limited as specified in the construction schedule and "Issued for Construction" drawings.
- Road embankments, watercourse crossing installations and borrow areas shall be constructed in accordance with approved plans and procedures.

- Temporary and permanent drainage installations shall be designed, constructed, and maintained to an appropriate standard.
- The topsoil/overburden stockpiles shall be contoured, where possible, with established drainage routes around the stockpiles, as specified by the Environment Department.
- Stream bank sections and slopes that contain loose or erodible materials shall be stabilized through the application of filter fabrics or geotextile in conjunction with riprap. Sediment control measures will be installed prior to watercourse crossing installations (see Section 2.18 - Tote Road Watercourse Crossing Installation).
- Appropriate sediment and erosion control measures will include a combination of silt fences, silt (turbidity) curtains, sediment traps, settling ponds and gravel berms.
- Access and haul roads shall be constructed with gradients or surface treatment and drainage systems to limit the potential for run-off and erosion (see Section 2.17 – Road Construction and Borrow Development).
- Borrow activities will be concentrated to the maximum extent possible to limit the area of disturbance.
- At borrow areas, drainage patterns will be re-established to near natural conditions.
- Turbidity monitoring will be conducted at watercourses by Environmental Monitors during and after construction activities when necessary.
- Project Personnel shall maintain, as required, all sediment and erosion control measures following rain or storm events to minimize further environmental damage. All repairs shall be undertaken under the direction and to the satisfaction of the Environment Department.

2.9.3 FORMS

None

2.9.4 RELATED DOCUMENTS

- Baffinland EPP – Road Construction and Borrow Development (Section 2.17)
- Baffinland EPP - Tote Road Watercourse Crossing Installation (Section 2.18)
- Baffinland - 2014 – Surface Water and Aquatic Ecosystem Management Plan

2.10 POLAR BEAR ENCOUNTERS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.10	Polar Bear Encounters	E	July 15, 2014

2.10.1 ENVIRONMENTAL CONCERN

The potential to encounter a polar bear is greatest at the coast, however, polar bears may be found anywhere on Baffin Island. Polar bear encounters have occurred at all of the Project Sites in the past, however the encounters are predominantly more frequent at Milne Port and the Steensby Exploration Camp respectively, and have resulted in one bear fatality as a result of a defensive kill at Milne Port in October 2013. Polar bears are dangerous animals and measures must be taken to reduce the risk of an encounter as much as possible. Project Personnel should be familiar with the Polar Bear Safety Plan in order to be prepared if an encounter does occur.

2.10.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures must be implemented to minimize the potential for bear-human encounters:

- Site and working areas will be kept clean of food scraps and garbage at all times. Effective waste management is paramount to reducing the likelihood of encounters.
- Do not attempt to chase, catch or follow polar bears under any circumstance.
- Polar bears that attempt to approach work sites or personnel must be actively deterred by shouting or use of noise makers such as bear bangers whenever possible.
- All polar bear sightings must be reported immediately to the Environmental Superintendent or his designate, regardless of the time of day.
- Bear monitors will be posted at coastal locations and will accompany remote field crews that do not have full-time air support.
- The Environmental Superintendent or his designate will authorize and coordinate the use of deterrent measures. A defence kill is to be used as an absolute last resort only when there is an imminent risk to human safety.
- Helicopters may be used to haze/deter polar bears away from camps only under the authorization and direction of the Environmental Superintendent or his designate.

- Any defensive kills must be reported immediately to the Environmental Superintendent or his designate, who will notify the Qikiqtani Inuit Association (QIA), Hunters and Trappers Organization (HTO), wildlife officer and other stakeholders as required. The Inuit Impact Benefit Agreement (IIBA) outlines the protocol to be followed in the event of a defensive kill. The meat must not be allowed to spoil and the animal will need to be dressed immediately and the meat and pelt appropriately stored until transportation is available to the designated affected community, in accordance with the IIBA.
- Polar bear safety is a part of the Site Orientation Program
- Please refer to the Polar Bear Safety Plan that has been developed for more information on mitigation measures and safety measures pertaining to polar bear encounters.

2.10.3 FORMS

None

2.10.4 RELATED DOCUMENTS

- Baffinland - Polar Bear Safety Plan
- Inuit Impact Benefit Agreement

2.11 FOX AND WOLF ENCOUNTERS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.11	Fox and Wolf Encounters	D	July 15, 2014

2.11.1 ENVIRONMENTAL CONCERN

Foxes and wolves can become habituated to sites where they can access food and food waste. This situation can arise due to intentional feeding by Project Personnel or improper waste management practices. Once such food conditioning has occurred, these animals lose their fear of humans and may approach Project Personnel in an aggressive fashion. Rabies is usually endemic in fox populations. Habituated foxes that act aggressively need to be dealt with immediately.

2.11.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures will be implemented to minimize potential impacts to foxes and wolves and the associated risk to the health and safety of Project Personnel:

- Site and working areas will be kept clean of food scraps and garbage. All waste will be disposed of in accordance to the Baffinland Waste Management Plan.
- Wildlife will not be intentionally fed under any circumstances and the consequences of such actions will lead to major disciplinary action.
- Solid carnivore proof skirting shall be installed on all kitchen and accommodation buildings to prevent foxes from venturing under buildings.
- Fox and wolf sightings should be recorded in the Wildlife Log (see Section 3.2) at camp. Wolf sightings should be reported to the Environment Department immediately.
- Wildlife attempting to approach personnel will be deterred by shouting, chasing and using noise makers, such as bear bangers. Should those deterrents not work, the site Environmental and Health & Safety Supervisors will be notified immediately for their assessment. Typically wolves can be readily deterred by the above methods. Based on site experience, foxes are less responsive to deterrence. Due to the high incidence of rabies in foxes on Baffin Island, foxes that exhibit aggressive behaviour to humans, regardless of deterrence measures, are presumed to be rabid. The Environmental and Health & Safety Supervisors will assess the situation and make the recommendation for or against dispatching a likely rabid fox by lethal shot.
- In the rare situation where a lethal shot is necessary, approval to proceed will be provided by the Environment Supervisor for the location. Only personnel authorized and trained in the use of firearms will be used. This task will be executed so that Project Personnel, equipment and infrastructure are not endangered. If rabies is suspected, a body shot will be taken, and the carcass will be handled to avoid direct physical contact. The carcass will be incinerated immediately.

- Fox and wolf interactions with Project activities will be documented and included in the Wildlife Logs (see Section 3.2) and annual reports.
- No drilling activity should take place within 2 km of an active wolf den between mid-May and mid-August if direct line of sight and disturbance is noted. Contact on-site Environment staff to determine if a den is in the vicinity of operations.
- Qualified biologists will survey for carnivore (wolf and fox) dens, and an avoidance zone will be identified in consultation with the Project biologist. Den locations will be identified and Project Personnel advised accordingly. All Project personnel will adhere to wildlife and den avoidance guidelines during the denning season.

2.11.3 FORMS

- Baffinland EPP – Wildlife Log (Section 3.2)

2.11.4 RELATED DOCUMENTS

- Baffinland EPP – Wildlife Log Instructions (Section 2.23)
- Baffinland – 2014 – Terrestrial Environment Monitoring and Management Plan
- Baffinland - 2014 – Waste Management Plan

2.12 CARIBOU PROTECTION MEASURES

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.12	Caribou Protection Measures	E	July 15, 2014

2.12.1 ENVIRONMENTAL CONCERN

Caribou are currently present in relatively low numbers in the Project Area, but their numbers and encounter rates are expected to increase through the life of the Project. Caribou harvesting is important to local communities, so there is added importance to ensuring that the Project operates with minimal potential effects on caribou. The potential effects on caribou include those from disturbance, primarily due to noise and other sensory disturbances from project activities. The primary mitigation for caribou is avoidance followed by monitoring.

A Zone of Influence (ZOI) of 3 km from project activities has been defined for stationary activities such as camps, mining and drilling during the pre- to post-calving time period of May 15 to July 15. At other times of the year the caribou are less sensitive and a ZOI of greater than 3 km has been defined.

2.12.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures will be implemented to minimize disturbance to caribou:

- Employees that are not Nunavut Land Claim beneficiaries will not be permitted to hunt or fish on any land accessed from the Project. All personnel shall return home between shift rotations and shall not be permitted to stay in the area to hunt or fish as part of their shift rotations.
- Mobile equipment and vehicles shall yield the right-of-way to wildlife.
- Traffic is to slow down and keep distance from the animals as much as possible. If necessary, traffic will stop to enable crossings of groups or to allow groups of caribou paralleling the road to move into adjacent habitat. Caribou occurrence in the vicinity of the road and their responses to traffic will be monitored by on the ground behavioral observations, to determine if it is apparent that caribou are being disturbed or displaced by construction or traffic. Specific guidance is provided in the Caribou Encounter Decision Tree located in Appendix A.
- All caribou sightings will be reported to the Environment Department and they will keep geo-referenced records of caribou sightings. This will enable Project biologists to monitor caribou activity in relation to the Project.
- Active caribou calving sites (as identified by Project biologists or observed by aircraft pilots) will be avoided between May 15 and July 15, and where possible, there will be no increase in mine construction or operational activity within 3 km of the calving sites during this time period.

- If any females (one or more) are observed within 3 km of a planned project activity such as drilling or road construction from May 15 through to July 15, then the activity location will either be moved or the activity deferred as appropriate and if possible, until a later date when caribou are not present.
- Should a female caribou or a female with calves approach within 3 km of project activities (between May 15 and July 15), the animals will be observed on the ground. If it is obvious they are being disturbed, the activity will cease until they have moved at least 3 km away.
- If caribou approach a project activity site before work commences, the Environment Department shall be notified immediately and will determine the necessary measures that need to be taken to protect caribou activity.
- If caribou approach a project site while work is in progress, caribou will be observed for signs of disturbance.
- If the caribou are disturbed, the activity will be modified or cease until the caribou have moved away or they are guided away from the worksite.
- If caribou are observed within 3 km of the proposed new drill site and disturbance is noted, the drill should be moved to an alternative location and activity at the site deferred until after the caribou leave the area. If the drill is already in place and operating, and caribou move into the area, the animals should be monitored by the Project biologist or on-site Environmental personnel. If the caribou show no obvious signs of disturbance, drilling activities can continue. If the animals appear agitated, then activities must cease until the caribou leave.
- A wildlife monitor will be periodically present on site during the calving season to detect calving activities near the Tote Road, monitor cow/calf behavior in relation to traffic, designate a temporary no-stopping zone, guide traffic and document measures taken to reduce sensory disturbance to calving caribou.
- Monitoring and Mitigation measures will be implemented at points where the railway, roads, trails a flight paths pass through caribou calving areas, particularly during caribou calving times.
- Protocols will be implemented for documentation and reporting of all caribou collisions and mortalities as well as mechanisms for adaptive management responses designed to prevent further interactions.

2.12.3 FORMS

- Baffinland EPP – Wildlife Log (Section 3.2)

2.12.4 RELATED DOCUMENTS

- Baffinland – 2014 – Terrestrial Environment Monitoring and Management Plan
- Baffinland - 2014 – Hunting and Fishing (Harvesting) Policy

2.13 BIRD PROTECTION MEASURES

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.13	Bird Protection Measures	F	July 15, 2014

2.13.1 ENVIRONMENTAL CONCERN

Birds are generally widespread and often encountered in the Baffin region. Virtually all of these birds are migratory. The main concern with birds is that, the potential exists that some aspects of the project may disrupt nesting and migratory patterns. Birds are an important part of the food chain in the Arctic ecosystem and changes in their numbers and distribution will directly affect predators like raptors and foxes that rely on them as a readily available source of food. It is against the law to disturb or destroy a bird nest (Migratory Bird Convention Act and regulations).

2.13.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures will be implemented to minimize disturbance to birds and bird nests:

- Project Personnel are not permitted to hunt birds.
- Inspections of each work area for nests will be conducted prior to commencement of project activity.
- On-ground inspections will be conducted for bird nest and eggs of each area prior to equipment placement or project activity. Active nest sites will be identified through observation of high densities of birds, nests, or birds exhibiting territorial behaviour indicating a nearby nest. Active nests must not be destroyed.
- The inspections will be conducted based on method described in Appendix B of the EPP - Mary River Active Migratory Bird Surveys Protocol.
- Select new equipment placement location, at least 500 m from identified active nest sites.
- Precaution will be taken to avoid disrupting nest sites, if these are discovered.
- Songbirds, shorebirds, loons and waterfowl - If nests of these birds are found then drills, pumps and waterlines should be placed at least 500 metres from these nest sites and precaution should be taken to avoid disrupting them.
- Shoreline and waterline routes will be inspected for breeding birds, nests, and post-hatch young, before waterlines for drills are placed. Project Personnel should remain more than 100 m from these nest sites at all times and time spent on the hose alignment should be minimized to reduce disturbances in areas between water source and project activities.

- Active raptor (falcons, hawks and owls) nests will be avoided by relocation of project activities, if possible. Where possible or practical, Project activities will be relocated at least 500 m from known active raptor nests during the breeding season, or the activity will be rescheduled to outside the breeding season (mid-April to mid-August). An individual nest protection plan will be produced by an avian biologist to direct activities within 500 m of the nest if it is not possible to relocate or delay the project activities.
- Bird sightings, particularly raptors or large concentrations of birds, should be recorded in the Wildlife Log (see Section 3.2) at camp and reported to project biologists.
- If Species at Risk or their nests and eggs are encountered during Project activities, the primary mitigation will be avoidance. Project shall establish clear zones of avoidance on the basis of the species-specific nest setback distances outlined in the Terrestrial Environment Management and Monitoring Plan.
- Flashing red, red strobe or white strobe lights and guy-wire deterrents will be used on communication towers established for the Project. Consideration will be given to reducing lighting when possible in areas where it may serve as an attractant to birds or other wildlife.
- Inspections of each work area for nests will be conducted prior to commencement of Project activity during the nesting season. Any nests found (or indicated nests) will be protected with a buffer zone determined by the setback distances outlined in the Terrestrial Environment Monitoring and Management Plan until the young have fledged. If it is determined that observance of these setbacks is not feasible, nest-specific guidelines and procedures shall be developed to ensure the nests and their young are protected.
- Nesting deterrents (e.g. flagging) to discourage birds from nesting in areas likely to be disturbed by construction and clearing activities taking place during nesting season shall be installed prior to bird migrations and commencement of nesting.
- Drills, pumps and waterlines should be placed at least 500 m from active bird nests and every precaution should be taken to avoid disrupting the nests. All Project Personnel must avoid active nest sites. Time spent on the hose alignment should be minimized to reduce disturbances in areas between the water source and Project activities. Active nests must not be destroyed.
- No drilling activity should take place within 500 m of an active raptor nest site during the breeding season (approximately mid-May to August); unless an individual nest protection plan has been prepared by an avian biologist in conjunction with the Baffinland Environment Department. Report all active nest sites to the Environmental Department.
- Whenever practical and not causing a human safety issue, a stop work policy shall be implemented when wildlife in the area may be endangered (at risk of immediate injury or death) by work being conducted.

2.13.3 FORMS

- Baffinland EPP – Wildlife Log (Section 3.2)

2.13.4 RELATED DOCUMENTS

- Baffinland – 2014 – Terrestrial Environment Monitoring and Management Plan
- See Appendix B - Mary River Active Migratory Bird Surveys Protocol

2.14 SOLID WASTE MANAGEMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.14	Solid Waste Management	E	July 15, 2014

2.14.1 ENVIRONMENTAL CONCERN

Solid wastes are non-liquid, non-soluble materials including domestic garbage, food wastes, construction debris, commercial refuse, non-combustible and non-hazardous materials. Solid waste materials at site will be re-used and recycled wherever possible and feasible. Where it is not possible or feasible, the two main methods of solid waste treatment and/or disposal for the Project lifecycle will be incineration and landfilling. Solid waste, if not properly disposed of, may cause health and safety concerns to Project Personnel, attract wildlife, and could impair the aesthetics of the Project Areas. If unapproved wastes (i.e. hazardous or organic wastes) are placed in the landfill, poor quality landfill leachate may be generated and potentially affect nearby watercourses. This could also lead to attracting wildlife and increase wildlife interactions.

2.14.2 INCINERATION

Domestic wastes, including food scraps, oily rags, paper and small plastics, that cannot feasibly be re-used or recycled, will be incinerated on site. Any Incinerator ash generated will be analyzed and placed in the Mine Site Landfill after ensuring the ash meets regulatory requirements[1]. Waste oil and waste fuel may be burned when possible in the incinerator as a secondary source of fuel.

2.14.3 OPEN BURNING

Untreated, clean wood waste products including lumber, timber, and pallets as well as paper and cardboard packaging that cannot feasibly be re-used or recycled will be burned onsite at an approved open-burn location at either Milne Port or the Mary River Mine Site. Any treated and/or painted waste wood products, including plywood or particle board, will not be permitted for opening burning. Open burning shall strictly be operated in an open top sea container at an approved open-burning location. Ash generated from open-burning will be analyzed and placed in the Mine Site Landfill after ensuring the ash meets regulatory requirements.

[1] Outlined in the Environmental Guidelines for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities provided by the Department of Environment of the Government of Nunavut.

2.14.4 INERT WASTE LANDFILL

The Mine Site Landfill will be used for disposal of inert, non-hazardous, bulky waste with little to no salvage value. This will include scrap metal, ash, rubber, concrete, plastics, and treated wood (including manufactured wood such as particle board and plywood). Existing bulky wastes from the 1960s, as well as equipment and materials associated with Project activities, will also be placed in the landfill. No organic or hazardous wastes will be disposed of in the landfill. Drums or barrels that have been crushed will not be placed in the landfill as per the North Baffin Land Use Plan. This material will be shipped to an approved facility for recycling.

2.14.5 ENVIRONMENTAL PROTECTION MEASURES

- Solid waste generated onsite will be segregated following Baffinland's Waste Management Plan and disposed of either on-site at the incinerator, Mine Site Landfill, or open-burn location, or backhauled offsite for proper disposal at a licenced waste facility (see Section 2.16 – Hazardous Material & Hazardous Waste Management). Inert wastes such as scrap metal, discarded machinery parts, kegs, concrete, building materials, wood, rubber, and bulky plastics will be landfilled.
- Food wastes, packaging and paper will be incinerated on site. Kitchen grease will be shipped south for disposal.
- Untreated, clean wood waste products including lumber, timber, and pallets as well as paper and cardboard packaging that cannot feasibly be re-used or recycled will be burned onsite at an approved open-burn location at either Milne Port or the Mary River Mine Site.
- All wildlife attracting waste (e.g. food scraps, human waste) will be stored in sealed animal proof containers and incinerated as soon as practicable.
- All waste backhauled offsite will be manifested using the Off-Site Waste Disposal Log (Section 3.4) for tracking purposes (see Section 2.16 – Hazardous Material & Hazardous Waste Management)
- Sewage sludge generated at the sewage treatment plants will be dewatered and incinerated onsite.
- Waste accumulated on site prior to disposal will be confined so that it does not pose health or environmental hazards.
- Time lapse between collection and disposal shall be minimized to the extent practical.
- All combustible waste and debris will be stored and covered until disposal.
- Additional training will be provided to the kitchen and accommodations staff on sorting camp domestic wastes.
- All Project Personnel are responsible for daily clean-up of the area in which their work activities are being conducted.

2.14.6 FORMS

- Baffinland EPP - Offsite Waste Disposal Log (Section 3.4)

2.14.7 RELATED DOCUMENTS

- Baffinland EPP – Hazardous Material and Hazardous Waste Management (Section 2.16)
- Baffinland – Waste Management Plan (BAF-PH1-830-P16-0028)
- Baffinland – Environmental Standard – Waste Sorting Guidelines
- GN - Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities

2.15 WASTEWATER TREATMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.15	Sewage Treatment	G	July 15, 2014

2.15.1 ENVIRONMENTAL CONCERN

Wastewater, such as sewage, grey water, and oily (contaminated) water will be generated during the life of the Project's construction and operation.

The quantity of treated effluent discharged from the Project's Sewage Treatment Plants (STPs) and Oily Water Treatments Systems (OWTS) will be monitored and recorded using inline flow monitors. The quality of he treated effluent from the Project's Sewage Treatment Plants located at Milne Port and Mary River Mine Site will be monitored on a weekly basis by an accredited laboratory to confirm that effluent quality meets the requirements outlined in Baffinland's Type A Water Licence (2AM-MRY1325) and is acceptable for release into the receiving environment. Similarly, treated effluent from the Project's Oily Water Treatment Systems will be adequately monitored when in operation using an accredited laboratory and by Baffinland's Internal Environment Laboratory.

Uncontrolled or untreated releases of wastewater to the environment may impact drinking water, aquatic resources, wildlife and human health and should be reported immediately to the Environment Department (see Section 2.31 - Spill Control Measures and Reporting).

2.15.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures will be implemented to minimize the potential for accidental releases of wastewater on site:

- Operation of the Project's Sewage Treatment Plants (STPs) and Oily Water Treatment Systems (OWTSs) will be in accordance with Baffinland's Type A Licence, issued to the Company by the Nunavut Water Board, as well as Baffinland's Freshwater Supply, Sewage and Wastewater Management Plan.
- Raw wastewater and final effluent quality will be sampled and tested according to the requirements of Baffinland's Type A Water Licence, outlined in the Freshwater Supply, Sewage and Waste Water Management Plan)
- Any problems with the operation of Wastewater Treatment facilities (STP or OWTS), including improper operation, pipeline rupture, or system breakdown, etc., shall be immediately reported to the Site Services and Environment Department.

- In the event of an accidental release of wastewater into the environment (e.g., pipeline rupture, etc.) immediate action will be taken to ensure that the release is contained and prevented from reaching any water body. Refer to the Emergency Response Plan and Spill Contingency Plan. All sewage spills must be reported immediately to the Environment Department. For more information on spill reporting, see Operational Environment Standard: Spill Control Measures and Reporting (Section 2.33).
- Quantity of sewage treated will be documented continuously using in-line flow or vacuum truck counts. Vacuum truck counts will be tracked using the Wastewater Log (Section 3.11).
- Quantity of sludge generated by the Projects STPs will be recorded daily by the STP operators.
- Data will be reported as required by Baffinland's Water Type A Licence and other relevant approvals.
- The sludge generated by the Projects STPs will be dewatered using a filter press and incinerated on site. Sludge will be stored in an animal proof secure area until picked up for disposal.
- Conserve water use to reduce the amount of wastewater generated.
- Treated wastewater will only be released into the receiving environment at approved locations at both the Milne Port and the Mary River Mine Site. All wastewater discharges will be monitored to ensure all discharged effluent meets the regulatory requirements outlined in Baffinland's Type A Water Licence.

2.15.3 FORMS

- Baffinland – Wastewater Log (Section 3.11)

2.15.4 RELATED DOCUMENTS

- Baffinland EPP – Spill Control Measures and Reporting (Section 2.33)
- Baffinland – Fresh Water Supply, Sewage and Wastewater Management Plan (BAF-PH1-830-P16-0010)
- NWB – Type A Water Licence (2AM-MRY1325)

2.16 HAZARDOUS MATERIAL AND HAZARDOUS WASTE MANAGEMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.16	Hazardous Material & Hazardous Waste Management	E	July 15, 2014

2.16.1 ENVIRONMENTAL CONCERN

Hazardous materials (other than fuels) that will be used during the life of the Project will include oils, greases, antifreeze, calcium chloride salt, ammonium nitrate, lead acid batteries, cleaners and other chemicals. If the generation of the hazardous waste cannot be prevented, its management will focus on preventing the waste from causing harm to the health and safety of Project Personnel and the environment, according to the protection measures outlined below.

Exposure to hazardous materials resulting from spills, leaks or releases can cause human safety and health concerns. For more information refer to Baffinland's Hazardous Materials and Hazardous Waste Management Plan.

2.16.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures will implemented to ensure Hazardous materials and hazardous wastes are properly managed in order to minimize the potential for accidental releases to the environment:

- Hazardous materials and hazardous waste will be handled in accordance with Baffinland's Hazardous Materials and Hazardous Waste Management Plan EPP and will be stored within designated lined and contained areas or within shipping containers at the laydown area.
- Storage containers will be leak-proof and have content names and labels clearly visible.
- All drums shall be marked with the name Baffinland Iron Mines Corporation.
- Hazardous materials arriving by sealift will be temporarily stored in their original sea containers at laydown locations at Milne Port until transported to their final destination.
- Lubricating oils and antifreeze will be dispensed from drums or cubes using either fitted taps or pumps and will employ drip trays.
- Regular visual inspection for leaks, drips or indications of loss will be conducted at all storage areas for evidence of accidental releases and verification that wastes are properly labelled and stored.
- Waste storage sites will be monitored and sampled in accordance with Baffinland's Water Licences.
- Chemical spills will be reported immediately to the Environment Department and the Emergency Response Plan and Spill Contingency Plan will be implemented.
- Cleaning materials (rags, gloves, etc.) will be properly wrapped in sealed plastic bags and will be directed to disposal by incineration.

- All hazardous waste shall be clearly labelled and will not be combined with other solid non-hazardous waste.
- There shall be no smoking within 10 metres of any hazardous waste storage location.
- Baffinland shall itemize and maintain a tracking manifest for all hazardous materials to be used on-site. Environmental personnel shall conduct periodic inspections and audits to confirm the tracking manifest is up to date and accurate. Baffinland Departments and Contractors are responsible for maintaining the current Material Safety Data Sheets (MSDS) on-site for all hazardous materials pertaining to their activities.
- All hazardous material spills shall be reported to the Environment Department immediately and documented by submitting the necessary documentation within 12 hours of the spill using the Baffinland Incident Investigation Form and the NT-NU Spill Report Form (Section 3.12). All biological hazardous wastes generated at the medical clinic and first aid stations will be packaged, labeled and transported offsite for disposal at an appropriate licenced facility..
- Transportation and packaging of hazardous waste offsite shall be coordinated and supervised by fully-trained and qualified Project personnel or an appropriately licenced Contractor.

2.16.3 FORMS

- Baffinland – NT-NU Spill Report Form (Section 3.12)
- Baffinland – Baffinland Incident Investigation Form

2.16.4 RELATED DOCUMENTS

- Baffinland – Waste Management Plan (BAF-PH1-830-P16-0028)
- Baffinland – Hazardous Materials and Hazardous Waste Management Plan (BAF-PH1-830-P16-0011)
- Baffinland – Waste Sorting Guidelines
- Baffinland - Spill Contingency Plan (BAF-PH1-830-P16-0036)
- Baffinland - Exploration Spill Contingency Plan (BAF-PH1-830-P16-0037)
- Baffinland - Emergency Response Plan (BAF-PH1-830-P16-0007)

2.17 ROAD CONSTRUCTION AND BORROW DEVELOPMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.17	Road Construction and Borrow Development	F	July 15, 2014

2.17.1 ENVIRONMENTAL CONCERN

Excavations disturb the ground surface and any vegetative cover that stabilizes the ground and reduces the potential for erosion. The excavation of sand and gravel from borrow areas, as well as the cut and fill technique that will occur during road construction throughout the Project tends to expose soil that is more prone to erosion.

These activities will result in a change in the thermal regime of the ground, as a new active layer is created. Modification to the thermal regime may induce melting of any ground ice present, resulting in thaw settlement and depressions caused by these settlements leading to erosion and possibly ponding of water.

2.17.2 ENVIRONMENTAL PROTECTION MEASURES

The ground surface will re-establish thermal equilibrium and will be suitable for re-colonization by natural vegetation over time.

The following measures will be implemented to enhance this re-establishment of thermal equilibrium and minimize the effects of erosion, sedimentation and water ponding:

- Cut and fill areas will be stabilized by constructing gentle slopes less prone to erosion.
- Cut and fill areas are expected to be relatively small in horizontal and vertical extent. The side slopes of the borrow pits will be between 1H: 1V to 2H: 1V, slightly gentler than the slopes in the natural condition to reduce erosion.
- At low lying areas where roadbed fill is in the order of 1 m and the permafrost can be expected to rise to a meaningful degree, swales or culverts will be installed as part of road maintenance to prevent the ponding of water.
- At closure, swales will be left in place, or alternatively, the road bed will be breached to allow drainage.
- Borrow activities will occur only at approved locations and will be concentrated to limit the area of disturbance. Borrow pits will be located 31 metres away from the High Water Mark of the nearest water body or stream.
- Thawed layer removal will be done sequentially.

- Areas of unexpected settlement will be filled to re-establish the natural contours and eliminate ponding of water.
- Regular inspection of borrow locations will be completed and unstable slopes re-graded to eliminate depressions and re-establish natural drainage patterns.

2.17.3 FORMS

None

2.17.4 RELATED DOCUMENTS

- Baffinland EPP - Sediment and Erosion Control (Section 2.9)
- Baffinland EPP – Excavations and Foundations (Section 2.27)
- Baffinland – Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)
- Baffinland – Roads Management Plan (BAF-PH1-830-P16-0023)

2.18 TOTE ROAD WATERCOURSE CROSSINGS INSTALLATION

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.18	Tote Road Watercourse Crossings	G	July 15, 2014

Three major crossing types have been historically developed on the Tote Road as follows:

- Conventional single or multiple culverts crossings designed to pass select design flows.
- Culvert crossings (single or multiple) with an additional swale to accommodate increased flows during flood conditions
- Steel frame bridges (which may include culverts and/or swales).

2.18.1 ENVIRONMENTAL CONCERNS

Watercourse crossing installation has the potential to impact fisheries resources through the:

- Alteration of fish habitat or blockage of fish passage.
- Accidental releases of deleterious substances (i.e., fuel spills, sediment).

The construction of watercourse crossings has the potential to negatively affect fish and fish habitat from the construction of the crossing structures or the post-construction influence of the completed structures on fish habitat. Elevated levels of suspended sediment are the primary change in water quality that could result from work on or around water. Construction activities typically result in short-term effects, while long term effects can arise through erosion of ditches and slopes if not mitigated. Sediment sources related to construction activities include equipment crossings, excavation, blasting, and installation of bank protection measures (riprap), erosion from ditches and steep slopes, erosion from exposed areas on the right-of-way, and increased bed scour or bank erosion due to changes in downstream flow patterns.

There are four main groups of crossings with respect to fish habitat and the environmental protection measures required:

- Crossings with no fish habitat Small crossings with fish habitat, subject to the conditions of a DFO Letter of Advice (listed in Table 2.18-1).
- Crossings with fish habitat, subject to an authorization under Section 35(2) of the Fisheries Act (listed in Table 2.18-2).
- Fish habitat compensation sites – crossings where remedial work has be carried out to improve conditions for fish and expand potential fish habitat, as agreed upon as a condition of the above fisheries authorization

There are basic environmental protection measures that apply to all groups of crossings, and additional measures that apply to the crossings subject to the fisheries authorization.

2.18.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures will be implemented to minimize the potential impacts of stream crossing and installations:

- Culverts will be installed in accordance with approved plans.
- Work should be conducted during low flow conditions – avoid conducting work during large precipitation/runoff events.
- Sediment and erosion control measures shall be implemented prior to work and shall be left in place and maintained until all disturbed areas have been stabilized. For more information on sediment and erosion control measures see Operational Environment Standard: Sediment and Erosion Control (Section 2.9)
- Any stockpiled materials shall be stored and stabilized 31 metres away from the High Water Mark of any water body, unless for immediate use.
- All materials and equipment shall be operated and stored in a manner that prevents any deleterious substance (e.g. petroleum products, silt, debris, etc.) from entering the water. This includes checking that equipment is free of fluid leaks, and that grease and other debris is wiped or washed clean from the equipment, before entering the water.
- Re-fuelling and equipment maintenance is to be conducted 31 metres away from the High Water Mark of any water body.
- Install crossings at right angles to the watercourse so that the original direction of stream flow is not significantly altered.
- Minimize in-water work (get-in and get-out quickly).
- Water crossings will be backfilled with substrate (fill) material that is clean, competent, and consistent with the existing substrate size and texture found within the watercourse and will remain in/under the crossing.

2.18.3 ADDITIONAL ENVIRONMENTAL PROTECTION MEASURES - CROSSINGS SUBJECT TO "LETTER OF ADVICE" (TABLE 2.18-1)

- Water depth within the water crossing should be not be less than 20 cm or the same depth as the natural channel, especially during low flows.
- All disturbed areas shall be stabilized immediately upon completion of work and restored to a pre-disturbed state or better.

2.18.4 ADDITIONAL ENVIRONMENTAL PROTECTION MEASURES - CROSSINGS SUBJECT TO FISHERIES AUTHORIZATION (TABLE 2.18-2) AND FISH HABITAT COMPENSATION SITES

- An environmental inspector shall be on on-site to assess the crossings prior to the onset of construction to confirm the absence or presence of spawning sites at least 20 metres upstream or downstream of the crossing location, and whether spawning Arctic char are present in the vicinity (only applies to Table 2.18-2 crossings)
- For all crossings where fish may be present (Table 2.18-1, Table 2.18-2 and compensation sites), an environmental inspector shall be present to monitor construction activities and document turbidity levels upstream and downstream of the crossing under construction using the Turbidity Monitoring Data Form (Section 3.6) and the Watercourse Crossing Data Monitoring Form (Section 3.5).A qualified biologist or environmental inspector shall be on-site during all in-water construction, compensation and restoration works to ensure implementation of the designs, as intended in the Plan, and conditions of the fisheries authorization are being met.
- Construct new crossings at the existing crossing sites whenever practicable.
- If machinery is required to bring material or equipment to the opposite side of the watercourse, then it shall be restricted to a onetime event (over and back) and only if no other existing crossing can be used. If the stream bed and banks are highly erodible (e.g., dominated by organic materials and silts) and erosion and degradation is likely to occur as a result of equipment crossing, then a temporary crossing structure or other practices shall be used to protect these areas.
- Machinery fording shall occur at least 20 metres upstream or downstream of location where fish and/or spawning sites are noted.

TABLE 2.18-1: CROSSING SUBJECT TO DFO LETTER OF ADVICE

Location Code	Road Chainage (km)	Easting (NAD 83)	Northing (NAD 83)	Catchment Area Size Reference
BG27	86.606	547,876	7,919,342	Small
BG29	84.805	546,229	7,919,877	Small
CV001	94.728	553,782	7,914,922	Small
CV030	77.503	540,123	7,921,310	Small
CV046	66.489	531,686	7,924,265	Small
CV057	60.714	528,379	7,928,657	Small
CV058	60.523	528,322	7,928,839	Small
CV059	59.960	528,102	7,929,356	Small
CV076	53.028	526,617	7,935,335	Small
CV082	49.656	525,254	7,938,131	Small
CV086	46.300	523,746	7,940,983	Small
CV102	36.029	521,934	7,950,591	Small

Location Code	Road Chainage (km)	Easting (NAD 83)	Northing (NAD 83)	Catchment Area Size Reference
CV106	33.170	521,663	7,953,392	Small
CV112	31.446	521,033	7,954,935	Small
CV113	30.656	520,747	7,955,659	Small
CV115	27.686	519,222	7,958,135	Small
CV119	24.264	517,762	7,961,153	Small
CV120	23.510	517,294	7,961,707	Small
CV125	20.448	515,296	7,963,841	Small
CV151	10.460	508,341	7,969,584	Small
CV152	10.282	508,201	7,969,684	Small
CV153	10.219	508,152	7,969,718	Small
CV154	9.570	507,620	7,970,076	Small
CV157	8.960	507,374	7,970,538	Small
CV166	6.055	505,538	7,972,370	Small
CV170	5.268	505,015	7,972,923	Small
CV176	2.637	503,834	7,975,057	Small
CV186	102.812	560,705	7,913,498	Small
CV187	103.078	560,957	7,913,414	Small
CV202	32.825	521,603	7,953,731	Small
CV203	34.150	521,782	7,952,435	Small
CV159	8.407	506,909	7,970,830	Extra Small
CV167	5.960	505,519	7,972,462	Extra Small
CV173	4.425	504,465	7,973,535	Extra Small

TABLE 2.18-2: CROSSING SUBJECT TO DFO FISHERIES AUTHORIZATION

Location Code	Road Chainage (km)	Easting (NAD 83)	Northing (NAD 83)
BG50	62.836	529,334	7,926,846
CV128	17.683	513,545	7,965,895
CV217	79.824	542,219	7,922,158
CV223	97.230	555,818	7,914,691
BG17	90.168	550,703	7,917,643
BG32	78.163	540,706	7,921,622
CV040	72.263	535,175	7,920,305
CV048	64.312	530,415	7,925,875
CV049	63.303	529,677	7,926,542
CV072	53.878	526,897	7,934,576
CV078	51.172	525,852	7,936,787
CV079	50.599	525,562	7,937,276

Location Code	Road Chainage (km)	Easting (NAD 83)	Northing (NAD 83)
CV094	41.613	522,805	7,945,397
CV099	37.840	521,811	7,948,820
CV129	15.651	512,381	7,966,783
CV216	80.647	542,774	7,921,700
CV225	99.033	557,407	7,915,138
BG01	99.676	557,991	7,914,919
BG04	94.148	553,250	7,915,113
BG24	87.710	548,766	7,918,878
CV060	58.853	527,622	7,930,342
CV104	33.794	521,732	7,952,788
CV111	31.991	521,355	7,954,524
CV114	29.648	520,278	7,956,528
CV224	97.758	556,238	7,915,044

2.18.5 FORMS

- Baffinland EPP - Turbidity Monitoring Data Form (Section 3.6)
- Baffinland EPP - Watercourse Crossing Data Monitoring Form (Section 3.5)

2.18.6 RELATED DOCUMENTS

- DFO Authorizations
- Transport Canada Navigable Waters Authorizations
- Baffinland EPP - Sediment and Erosion Control (Section 2.9)
- Baffinland EPP – Excavations and Foundations (Section 2.27)
- Baffinland – Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)
- Baffinland – Roads Management Plan (BAF-PH1-830-P16-0023)

2.19 ROAD TRAFFIC MANAGEMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.19	Road Traffic Management	F	July 15, 2014

Project-related traffic will be managed to:

- Ensure smooth flow of road traffic during the Project's construction and operation.
- Ensure that adequate information is given to drivers and pedestrians in a timely manner to avoid accidents and holdups.
- Ensure assessment, monitoring and improvement of the existing road traffic site plans.

Over the life of the Project, there will be different levels of traffic flow. The peak flow periods of vehicles and equipment, and construction workers are expected to be during the day. Low flow periods will be during the night.

Traffic during construction and operation, if not properly managed, may cause disruption, accidents and interference in local community lifestyle.

2.19.1 ENVIRONMENTAL PROTECTION MEASURES

- The Tote Road has an established right to public access, and therefore project-related traffic must share the road and be respectful of other users.
- Traffic will be restricted to 50 km/hr. Traffic speed will be monitored by tracking the arrival times of trucks at the final destination, as well as by radar gun if necessary.
- Signposts will be established at every kilometre along road corridors.
- Radio towers will be established as required and with approval of the landowner. All vehicles will call out on the radio at designated areas (blinds corners, steep hills, etc.), their location, direction and type of vehicle for all other road users to hear along the Project's roadways (example: ore truck, loaded, kilometre 34, northbound).
- Community members will be encouraged not to discharge firearms within 1 km of Project roads, for the duration of the Project.
- Wildlife has the right-of-way. See Section 2.12 (Caribou) for a description of what truck operators are to do when caribou are encountered within sight of the road.

2.19.2 FORMS

- Baffinland EPP – Wildlife Log (Section 3.2)

2.19.3 RELATED DOCUMENTS

- Baffinland EPP – Wildlife Log Instructions (Section 2.23)
- Baffinland - Roads Management Plan (BAF-PH1-830-P16-0023)Baffinland - Air Quality and Noise Abatement Management Plan (BAF-PH1-830-P16-0002)
- QIA Commercial Lease
- AANDC Quarry and Land Use Permits

2.20 DRILLING, BLASTING AND CRUSHING

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.20	Drilling, Blasting and Crushing	F	July 15, 2014

Drilling and blasting will be conducted at all stages of the Project's lifecycle. Drilling and blasting activities will occur primarily at Deposit 1 at the Mary River Mine Site and rock quarries located throughout the Project Area. Throughout that life of the Project various blasting methods will be utilized. This will include the use of: high explosives, pre-packaged emulsions, ANFO, and emulsion produced on site. Although all of these explosives contain ammonium nitrate (AN) the chance of AN escaping and contaminating the surrounding area is extremely low when using emulsions or high explosives. Ammonia is toxic to aquatic life at certain concentrations; therefore, the proper handling of explosives during blasting operations is crucial in preventing spills from having an impact to nearby watercourses.

Crushing will occur at both the Mary River Mine Site and Milne Port and will generate air and noise emissions (see Section 2.28 – Air Quality, Noise and Vibration). Air quality and noise levels will be monitored by the Environment and Health & Safety Departments.

2.20.1 ENVIRONMENTAL PROTECTION MEASURES

- Explosives use at the site, and worker safety around mining and crushing activities, is governed by Natural Resources Canada, and is detailed in the Company's Explosives Management Plan. Project Personnel using explosives shall have all required certifications including the blasters' certificates.
- All necessary precautions shall be taken to safely handle the explosives and to minimize spillage during blasting operations.
- All spills shall be reported to the Environment Department immediately and documented by submitting a report within 12 hours of the spill to the Environment Department using the Baffinland Incident Investigation Form and NT-NU Spill Report Form (Section 3.12).
- All drilling and blasting activities will be in accordance with the Company's site specific Quarry Management Plans (see Section 2.25 – Quarry and Borrow Pit Operation), the Blasting Management Plan and the Explosives Management Plan.
- Environmental personnel will monitor water bodies and watercourses adjacent to blasting activities to ensure operational activities are not causing deleterious effects on aquatic resources, as stipulated in Baffinland's Type A Water Licence.

2.20.2 FORMS

- Baffinland - Baffinland Incident Investigation Form
- Baffinland EPP – NT-NU Spill Report Form (Section 3.12)

2.20.3 RELATED DOCUMENTS

- QIA Commercial Lease
- AANDC Quarry and Land Use Permits
- Baffinland – Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)
- Baffinland – Site Specific Quarry Management Plans
- Baffinland – Explosives Management Plan
- Baffinland – Blasting Management Plan
- Baffinland – Borrow Pit and Quarry Management Plan (BAF-PH1-830-P16-0004)
- Baffinland – Roads Management Plan (BAF-PH1-830-P16-0023)
- NWB – Type A Water Licence (2AM-MRY1325)

2.21 EXPLORATION DRILLING OPERATIONS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.21	Exploration Drilling Operations	E	July 15, 2014

Exploration drilling will be required to confirm, characterize and quantify new and already known deposits during the life of the Project.

2.21.1 ENVIRONMENTAL CONCERN

Environmental concerns with drilling include surface disturbances, drilling fluid and cutting disposal, impacts on dust, noise and water quality, and habitat encroachment.

All drilling muds and other additives must be approved by the Environment Department prior to being transported and used on site for any exploration drilling program. Data on drilling muds and other additives must be included as part of the Emergency Response and Spill Contingency Management Plans.

Use of water for drilling for the Project is subject to the conditions outlined in the Baffinland's Type B Water Licence (2BE-MRY1421).

2.21.2 ENVIRONMENTAL PROTECTION MEASURES

2.21.2.1 Pre-drilling Preparation and Acceptable Drill Locations

- Prior to drill placement, investigate site drainage to determine the proper downstream placement of the collection/settling sump(s), if warranted. Note that in most situations, sumps will be required; however, in some circumstances sumps may not be practical. In these cases, approval must be obtained by the Environmental Department.
- Ensure sumps are of sufficient capacity based on a combination of proposed drill hole length, water usage, and the potential residence time of the sumps.
- Do not construct drill sites or drill sumps within 31 metres of the Normal High Water Mark of a water body unless specific approval is obtained by Baffinland from the Nunavut Water Board.
- Ensure that the Pre-drilling Inspection Report (see Section 3.3) is completed prior to finalizing the drill site, sump locations, and silt fence locations.
- Silt fences shall be placed immediately down-gradient of drill set-ups/sumps and up-gradient of any water body or stream. The selection of silt fence locations will be based on minimizing the transport distance of drill cuttings/mud and placing silt fences in optimal locations that will be functionally effective.
- Archaeology clearance shall be obtained from the Environment Department for all exploration drill locations (see Section 2.1 – Archaeological Resources).

- Conduct a wildlife inspection immediately prior to movement of the drill, involving aerial and ground survey of the new drill site. For details on drilling restrictions associated with wildlife interactions, see Operational Environment Standards: Polar Bear Encounters (Section 2.10), Fox and Wolf Encounters (Section 2.11), Caribou Protection Measures (Section 2.12) and Bird Protection Measures (Section 2.13).

2.21.2.2 Drill Operations and Movements

- Material shall not be stored on the surface of frozen streams or lakes, including immediate banks, except materials that are for immediate use.
- Ensure that the drilling area is kept clean and tidy at all times. No littering is permitted - collect and package all waste for disposal at camp.
- Feeding of all wildlife is prohibited.
- All activities shall be conducted to minimize surface disturbance.
- Minimize overland transportation for transport of workers off of approved roads and trails to reduce the potential for ground disturbance.
- Do not use surface vehicles to move drill rigs or other equipment, without prior authorization by the Environment Department. The use of any vehicles off approved routes is prohibited.
- Do not move equipment or vehicles unless the ground surface is in a state capable of fully supporting the equipment or vehicles without rutting or gouging.
- Daily checks of active sumps will be conducted to ensure that any sump water spill-over occurs in a controlled manner. Sumps are to be constructed so that there is an overflow notch cut into the sump embankment to allow the sump water to decant from the sump in a controlled fashion.
- Silt fences will be placed downstream of the sumps as described previously and will be checked daily.
- Daily inspections for fuel/hydraulic leaks, equipment condition, sediment and erosion control, and water intakes shall be conducted prior to commencing work activities at the start and end of each work shift/day. All leaks shall be immediately repaired.
- A Daily Drill Inspection Report (see Section 3.4) will be filled out by the acting Supervisor for every day of drill operation.
- All drill rigs shall be equipped with spill kits in the event of leaks and spill. All operators should be trained in spill response and be familiar the use of spill kits.
- If the bottom of the permafrost is broken through by the drill, the depth of the bottom of the permafrost and location shall be reported immediately to the Environment Department who shall in turn report the incident to the Nunavut Water Board.

- Equipment or material shall not obstruct any stream.
- Equipment storage holding areas will be located on gravel, sand or other durable land 31 metres above the ordinary High Water Mark of any water body in order to minimize impacts on surface drainage and water quality.

2.21.2.3 Water Use, Brine and DRILL Water runoff

- Brine (calcium chloride salt mixed with water) used in exploration drilling is to be controlled to the maximum extent practicable. Drilling muds contained in drilling fluids must be settled out in sumps or by silt fences prior to entering any downstream water bodies or streams.
- Salt and water use for each drill is to be controlled by the use of brine mixing stations. The brine station operator will inspect his/her station daily and will be in continuous communication with each exploration drill. Brine conservation measures will be adopted which will include: shutting off the flow of brine to drills when brine is not required (i.e., when drills are temporarily shut down), eliminating all spillage in the vicinity of the brine stations, and minimizing to the greatest extent practicable the brine's salt concentrations.
- All water intake hoses shall be equipped with a screen of an appropriate mesh size (as approved by the DFO) to ensure that fish are not entrained. Additionally, operators will ensure the water intake hoses withdraw water at such a rate that fish do not become impinged on the screen.
- Measures shall be provided to prevent and control erosion on banks of any body of water.
- Streams cannot be used as a water source unless authorized and approved by the Nunavut Water Board.
- If water is required from a source that may be drawn down (small lake or stream), Baffinland shall submit a request for approval to the Board at least 15 days prior to withdrawing the water.
- Drill water shall be obtained from water sources(s) proximal to the drilling targets and shall not exceed a total of 250 cubic metres per day for all drilling activities on the Project.
- Water use will be tracked using inline water metres on intake lines and recorded on the Daily Drilling Inspection Reports (see Section 3.3).
- No material shall be removed from below the ordinary High Water Mark of any water body unless authorized.
- Contain and re-circulate drill water to the fullest extent possible in order to reduce water usage. Utilize silt fences and natural depressions to divert water from running into nearby watercourses and water bodies.
- Separate clean water from "dirty" water streams whenever possible, (by means of hose extensions and snow berms or other means that direct and keep discharge away from the immediate area of the drillhole) to prevent migration and expansion of a "dirty" water plume.

- Work shall be performed in such a way as to ensure that materials such as sediment, fuel and/or any other hazardous material does not enter watercourses and waterbodies through the implementation of sediment control measures and proper hazardous materials management practices . In the event of a release to the environment, a spills contingency plan shall be implemented.
- The drill water supply temperature should be monitored during drilling and kept to a temperature as low as possible (but not so low as to cause an imminent risk of frozen water lines).
- To maximize drill return water recirculation, casing is to be frozen into the ground to a depth of 3 to 6 m below grade. The specific depth of casing to be frozen into each hole and length of time to allow for freezing will be specified by the acting Supervisor.
- The drill water and cuttings spillage footprint shall be minimized through the use of berms, silt fences and/or other means of containment.
- Dispose of drill water into a properly constructed sump, or a naturally occurring contained depression. Drill water shall not be released directly to a nearby water course or to the ground.
- Use portable containment sumps (bins), for drill water and cuttings where containment in the ground is impractical. The bins shall not overflow and shall be dumped by means of helicopter or pump, to the location identified for disposal of dirty drill water and cuttings.
- Drilling waste must not be allowed to spread to the surrounding land or water bodies; the footprint of any spillage must be minimized to the greatest degree practicable.
- In case of an artesian flow occurrence, drill holes shall be immediately plugged and permanently sealed to prevent induced contamination of groundwater or salinization of surface waters. Report the artesian flow occurrence within 48 hrs to the Environment Department who in turn will report the occurrence to the Nunavut Water Board.
- For on-ice drilling, returned water released must be nontoxic, and not result in an increase in Total Suspended Solids (TSS) in the immediate receiving water above the CCME guidelines for the protection of Fresh Water Aquatic Life (i.e. .10 mg/L for lakes with background levels under 100 mg/L or 10% for those above 100 mg/L).

2.21.2.4 Drill Hole Abandonment

- Materials such as debris and/or drill cuttings shall not be left on the ice when there is potential for that material to enter a waterbody.
- Restore, contour and stabilize al; constructed drill sumps, and other disturbed areas, to the pre-disturbed state immediately upon completion of drilling.
- Return all combustible waste and petroleum products to camp for proper management and disposal.

- Plug all drillholes upon completion, and where possible return drill cuttings at surface to the drillhole at all land-based drilling locations.
- Contour and stabilize all other disturbed areas upon completion of work and restore these areas to a pre-disturbed state.
- Upon completion of a hole in rock, the casing will be removed. If the casing cannot be removed it will be cut off to be flush with surface and backfilled.
- Remove all non-combustible garbage and debris from the land use area to an approved disposal site.
- Return all combustible waste and petroleum products to camp for proper management.
- Ensure that a Post-Drilling Inspection Report (see Section 3.4 – Drill Inspection Forms - Pre-Drilling, Daily and Post Drillings) is filled out at the completion of each drill hole.
- Copies of all Pre-Drilling, Post-Drilling and Daily Drill Inspection Reports for all drill holes will be submitted to the Environment Department at the completion of each drilling program.

2.21.3 FORMS

- Baffinland EPP – Drill Inspection Forms: Pre-Drilling, Daily and Post Drilling (Section 3.3)

2.21.4 RELATED DOCUMENTS

- Baffinland EPP – Sediment and Erosion Control (Section 2.9)
- Baffinland EPP - Polar Bear Encounters (Section 2.10)
- Baffinland EPP - Fox and Wolf Encounters (Section 2.11)
- Baffinland EPP - Caribou Protection Measures (Section 2.12)
- Baffinland EPP - Bird Protection Measures (Section 2.13)
- Baffinland EPP – Geotechnical Drilling Operation (Section 2.21)
- Baffinland EPP – Water Sampling for On-Ice Drilling (Section 2.22)
- Baffinland – Freshwater Supply, Sewage and Wastewater Management Plan (BAF-PH1-830-P16-0010)
- Baffinland – Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)
- NWB - Type B Water Licence (2BE-MRY1421)

2.22 WATER SAMPLING FOR ON ICE DRILLING

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.22	Water Sampling for On-Ice Drilling	D	July 15, 2014

2.22.1 ENVIRONMENTAL CONCERNS

On-ice drilling is critical for geotechnical investigations so that information for ports, bridges and other Project infrastructure may be collected for use in the infrastructure's design and engineering. Marine and lake environments are sensitive to disturbances, such as on-ice drilling. As such, overall water quality, including occurrence and concentrations of suspended solids and trace metals, must be monitored and protected. Water samples should be taken prior to on-ice drilling and after on-ice drilling to ensure appropriate water quality standards are maintained. Water sampling, for the purposes of water monitoring and detection of exceedances will ensure that the water quality is not compromised in the water bodies where on-ice drilling occurs.

2.22.2 ENVIRONMENTAL PROTECTION MEASURES

The following Measures will be followed to ensure that on-ice drilling (for both inland and marine environments) will not compromise the water quality of the underlying water body:

- A location not more than 30 m downstream (if applicable) from the proposed drill hole location will be selected for pre-drilling and post-drilling water samples.
- The pre-drilling water sample will be taken no more than four hours prior to drilling commencing at that location.
- The post-drilling water sample will be taken within four hours of the rods and casing being removed from the hole and the drill being decommissioned.
- The following methodology will be used to collect the water samples:
    1. A hole will be augured through the ice and ice cuttings will be cleared from the hole.
    2. A bailer will be used to obtain a representative water sample from the water column below the bottom of the ice.
    3. The water sample will be transferred to sample bottles.
    4. The same hole will be used to collect the pre-drilling and post-drilling water samples.
- Water samples will be tested to ensure that the total suspended solids (TSS) concentration does not increase by more than 10 mg/L for water bodies with background levels under 100 mg/L, or by more than 10% of the background level for water bodies with background levels above 100 mg/L.
- Before and after water samples will be tested in the field for TSS, pH and electrical conductivity.

- Before and after water samples will be submitted for laboratory testing to monitor total trace metals as determined by a standard ICP scan (to include at a minimum, the following elements: Al, Sb, Ba, Be, Cd, Cr, Co, Cu, Fe, Pb, Li, Mn, Mo, Ni, Se, Sn, Sr, Tl, Ti, U, V, Zn), total arsenic and mercury.
- Drill water and cuttings reporting to surface from on-ice drilling will be discharged into a portable containment sump and removed from the ice. Water and cuttings will be stored in a pit at least 31 m above the High Water Mark of any water body, as specified by Baffinland.
- Operational Environment Standard protection measures outlined in the Operational Environment Standard: Geotechnical Drilling Operation (Section 2.5) will also be followed in conjunction with the protection measures listed above.

2.22.3 FORMS

None

2.22.4 RELATED DOCUMENTS

- Type B Water Licence – 2BE-MRY1421
- Baffinland EPP – Geotechnical Drilling Operation (Section 2.5)

2.23 WILDLIFE LOG INSTRUCTIONS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.23	Wildlife Log Instructions	B	July 15, 2014

Baffinland is required to keep a log of all wildlife sightings at the Project Sites as a requirement of its land use permits. A system of tracked wildlife log sheets has been set up by the Environment Department to monitor wildlife sightings.

Wildlife logs will be posted at all of the Project's operating camps. The information from these sheets will be regularly collected. Completed log forms are to be returned to the Environment Department for tracking wildlife log data.

Wildlife species potentially in the Project Area include caribou, wolf, wolverine, fox, arctic hare, lemmings, polar bear, walrus, seals, whales, raptors, loons, ducks, geese, songbirds and shorebirds. All on-site Project Personnel are required to record wildlife sightings on the posted wildlife logs with the exception of caribou sightings, which should be reported to the Environment Department directly due to sensitive nature of these sightings. Identify the animal to the best of your knowledge. If you do not know the species, record a general group name, such as 'duck' or 'small bird'. If you are unsure, indicate this, such as 'fox or wolf?' Record tracks only if they are fresh.

All polar bear and wolf sightings should be reported to the Environment Department immediately. See Operational Environment Standards: Polar Bear Encounters (Section 2.10) and Fox and Wolf Encounters (Section 2.11) for more details on addressing polar bear and wolf sightings.

2.23.1 WILDLIFE LOG INSTRUCTIONS

- Record your name and the date of the observation.
- Briefly describe the location, noting any significant landmarks, road kilometre marks, water bodies or other features. This is particularly important if you are not equipped with a GPS.
- Record the GPS coordinates if possible. Ensure coordinates are recorded in latitude/longitude or UTM NAD83.
- Record the type of animal. Identify the species, if possible, or the general type or group.
- Record the number of animals observed and the life stage (juvenile or adult), if known.
- Record observations on the behaviour of the animal. What was it doing at the time you observed it? Was it making any sound? How did it react to your presence? How far away was it? Were you walking/driving/flying?

2.23.2 FORMS

- Baffinland EPP – Wildlife Log (Section 3.2)

2.23.3 RELATED DOCUMENTS

- Baffinland EPP – Polar Bear Encounters (Section 2.10)
- Baffinland EPP – Fox and Wolf Encounters (Section 2.11)
- Baffinland EPP – Caribou Protection Measures (Section 2.12)
- Baffinland EPP – Bird Protection Measures (Section 2.13)
- Baffinland – Terrestrial Environment Monitoring and Management Plan

2.24 BLASTING IN WATER

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.24	Blasting in Water	C	July 15, 2014

2.24.1 ENVIRONMENTAL CONCERN

Throughout the life of the Project various blasting methods will be utilized, including the use of high explosives and pre-packaged emulsions. Although these explosives contain ammonium nitrate (AN) the chance of AN escaping and contaminating the water is low. Ammonia is toxic to aquatic life at certain concentrations, therefore the proper handling and use of explosives during blasting operations is important to minimize potential impacts on the environment.

Blasting in or near water produces shock waves and vibrations that may have a potential impact on fish and marine mammals. Because of this, it is important that the appropriate and safe vibration limits are implemented to minimize the impact to the surrounding environment.

Potential silt and sediment production resulting from blasting activities may also have negative effects on fish and fish habitat. Silt and sediment can be transported in the water which may cause turbidity and a variety of other harmful effects on fish. Some of these negative effects include; clogging and abrasion of the gills of fish and other aquatic organisms, behavioral changes such as movement and migration, decreased resistance to disease, impairment of feeding, for example, turbidity interferes with feeding for visual feeders and poor egg and fry development. These are just a few of the potential harmful effects that silt, sediment and turbidity can have on the surrounding marine and freshwater environment so ensuring that the appropriate precautions are put in place when blasting is essential.

2.24.2 ENVIRONMENTAL PROTECTION MEASURES

- Explosives use at the site, and worker safety is governed by the NWT/Nunavut Occupational Health and Safety Act and Regulations.
- Project Personnel using explosives shall have all the required certifications including the blasters' certificates.
- Modern explosive materials and blasting will reduce the risk of ammonia contaminating the water.
- Best Management Practices will be used to ensure that blasting operations in water stay within 100kPa IPC threshold set forth by the DFO Guidelines for Use of Explosives In or Near Canadian Fisheries Waters.
- The production of silt in the water from the use of explosives will be minimized using Best Management Practices, including the installation of silt fences and turbidity curtains
- All necessary precautions shall be taken to safely handle the explosives and to minimize spillage during blasting operations.

- Adaptive Management will be implemented in all phases of the Project in order to ensure that all the precautionary measures are in place to reduce the environmental impact of the associated activities.
- Fisheries and Oceans Canada (DFO) has produced Guidelines for the Use of Explosives in or Near Canadian Fisheries Waters to protect marine wildlife, including fish and marine mammals from underwater vibrations (DFO, 1998). Highlights of the guideline include the following:
  - No explosive is to be knowingly detonated within 500 m of any marine mammal (or no visual contact from an observer using 7 x 35 power binocular).
  - No explosive is to be detonated in or near fish habitat that produces, or is likely to produce, an instantaneous pressure change (i.e. overpressure) greater than 100 kPa in the swim bladder of a fish.
  - No explosive is to be detonated that produces, or is likely to produce, a peak particle velocity greater than 13 mm/s in a spawning bed during the period of egg incubation.
  - The guideline also presents tables of weight of explosive charge versus distance and other estimation methods to determine the potential impacts.
  - This guideline is relevant mostly for the Construction Phase of the Project with regards to port and river crossing construction.

2.24.3 FORMS

None

2.24.4 RELATED DOCUMENTS

- DFO – Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters
- DFO Fisheries Authorizations
- Baffinland – Explosives Management Plan
- Baffinland – Blasting Management Plan

2.25 QUARRY AND BORROW PIT MANAGEMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.25	Quarry and Borrow Pit Management	C	July 15, 2014

A number of rock quarries and borrow pits will be required throughout the Project's life cycle. The excavated aggregate and rock from borrow pits and quarries will be stockpiled until required for further processing or construction activities. During quarry development, overburden and soil will be removed and stockpiled to expose the bedrock. Waste rock from the Mine Area will also need to be handled and stockpiled separately in accordance with Baffinland's Waste Rock Management Plan.

2.25.1 ENVIRONMENTAL CONCERN

Quarrying and borrow pit operation may be responsible for a number of environmental impacts throughout the life of the Project. Potential impacts include: soil erosion, habitat loss, dust generation, permafrost degradation and water ponding. The water quality of waterbodies adjacent to these activities may also be impacted by means of sedimentation, fuel contamination and ammonia contamination from explosives residue.

2.25.2 ENVIRONMENTAL PROTECTION MEASURES

The following environmental protections measures for rock and aggregate excavation and management shall be implemented when developing all borrow pits and quarries:

- All Project Personnel involved in quarry and/or borrow pit development will be familiar with the conditions and environmental protection measures outlined in the Company's Borrow Pit and Quarry Management Plan as well as site specific Quarry Management Plans.
- The limits of the area to be excavated and the aggregate stockpile areas shall be clearly flagged/staked in the field prior to conducting any construction activities in the field.
- The borrow pits shall be designed to drain away from the face of the borrow pit to prevent water from ponding in borrow pits.
- A site specific Quarry Management Plan shall be developed for each of the Project's quarries.
- All quarry materials used shall be non-acid generating and non-metal leaching in chemical characteristics.
- When explosives are utilized Environmental personnel shall monitor the effects of explosives residue and related by-products from project-related blasting activities. In the event water licence criteria or other criteria established in the quarry or waste rock management plans are exceeded or close to being exceeded, Mine Operations personnel will work with Environment to develop and implement effective preventative and/or mitigation measures, including treatment, if necessary, to ensure that the effects associated with the manufacturing, storage, transportation and use of explosives do not negatively impact the Project and surrounding areas.

- Retain as much vegetation as practicable to the maintain slope stability.
- The side slopes of the borrow pits will be 1H:1V to 2H:1V, slightly gentler than natural slopes to reduce erosion.
- Maintain natural drainage patterns to the extent practicable.
- Maintain vegetation buffer zones to protect water bodies.
- Sources of in-pit water will be diverted away from the development area by constructing ditches and berms using rip-rap, geotextile and other sedimentation control measures. Ditching will be minimized to reduce land disturbance and will be approved by the Environment Department prior to construction.
- Organics and topsoil will be salvaged and stored for use in reclamation. Overburden material may be stored for reclamation or if the material is of acceptable quality, be used for construction.
- All material stockpiles, including aggregate, rock, waste rock and overburden, will be located at least 31 metres above the ordinary High Water Mark of any water body, unless for immediate use.
- Use rip-rap to reinforce drainage channel corners and water discharge points.
- Promote natural Revegetation where required to stabilize slopes.
- Adequate sediment and erosion control measures, including silt fences, turbidity curtains, settling ponds and gravel berms, will be installed around the development area to protect adjacent watercourses and waterbodies from adverse impacts such as sedimentation and elevated turbidity levels (see Section 2.9 – Sediment and Erosion Control).
- Use proper fuel containment and handling techniques, and have spill kits accessible.
- Use proper explosives handling techniques to minimize waste.
- Ice-rich material will be stockpiled 31 metres above the ordinary High Water Mark of any water body and in a location where melt water will not re-enter the pit or have adverse impacts on adjacent aquatic resources.
- Dust shall be controlled as per the Air Quality and Noise Abatement Management Plan

2.25.3 FORMS

None

2.25.4 RELATED DOCUMENTS

- QIA Commercial Lease
- AANDC Quarry and Land Use Permits
- Baffinland EPP – Ground Disturbance (Section 2.3)

- Baffinland EPP – Sediment and Erosion Control (Section 2.9)
- Baffinland EPP – Road Construction and Borrow Pit Development (Section 2.17)
- Baffinland EPP – Drilling, Blasting and Crushing (Section 2.20)
- Baffinland – Life of Mine Waste Rock Management Plan (BAF-PH1-830-P16-0029)
- Baffinland – Borrow Pit and Quarry Management Plan (BAF-PH1-830-P16-0004)
- Baffinland – Site Specific Quarry Management Plans

2.26 CONCRETE PRODUCTION

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.26	Concrete Production	C	July 15, 2014

2.26.1 ENVIRONMENTAL CONCERN

During construction, concrete will be provided from batching plants located at the construction laydown areas. Cement will be shipped to via sea lift and mixed with water and aggregate to make the concrete. Waste concrete will arise from off-spec mixes, residual concrete at the end of pours, and from wash down of the equipment. It is important to ensure that there are no spills of waste cement or cement wash water runoff onsite as concrete is corrosive and waste runoff can impact the surrounding environment.

Another major concern is dust formation from the production of concrete. Dust will have a significant impact on the air quality on site so it is important that all precautionary measures, as outlined in the Air Quality and Noise Abatement Management Plan, are taken to contain and reduce the potential impact of dust generation.

2.26.2 ENVIRONMENTAL PROTECTION MEASURES

- To the greatest extent practicable, concrete production shall occur within the batch plant in order to ensure the dust is contained and Best Management Practices will be implemented to minimize the production and effects of dust onsite.
- Shipping of cement to site will be done using tote bags stored in sealed sea can containers which will reduce the likelihood of any spills occurring onsite.
- A purpose built concrete wash water pond shall be used to receive all wash water from concrete related activities in order to allow for the settling of solids, decant analysis and pH adjustment as required. Wash water will be recycled back into concrete production to the fullest extent possible in order to reduce water use and the quantity of wastewater generated by concrete production. All concrete product waste shall be disposed in the concrete wash pond or at other agreed to appropriate locations that pose not risk to the receiving environment.
- Lined containment areas will be used to wash concrete delivery trucks' drums and chutes on-site in order to minimize runoff of waste wash water.
- Waste hardened concrete will be used as either fill, or disposed of at the Mary River Mine Site Landfill.

2.26.3 FORMS

None

2.26.4 RELATED DOCUMENTS

- Baffinland – Air Quality and Noise Abatement Management Plan (BAF-PH1-830-P16-0002)
- Baffinland - Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)
- Baffinland – Fresh Water Supply, Sewage and Wastewater Management Plan (BAF-PH1-830-P16-0010)

2.27 EXCAVATIONS AND FOUNDATIONS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.27	Excavation and Foundations	C	July 15, 2014

2.27.1 ENVIRONMENTAL CONCERN

Various activities requiring excavations and foundations will be undertaken throughout the life of the Project. Such activities include: driving pile foundations for buildings, excavating foundations for buildings and excavating abutments for bridges.

Excavations and foundations on site may have several environmental impacts that could potentially occur throughout the life of the Project. Possible environmental impacts that may occur include: loss of vegetation and wildlife habitat, effects on the stability and profile of permafrost, erosion, sedimentation, and the ponding of water.

2.27.2 ENVIRONMENTAL PROTECTION PROCEDURE

Measures that will be implemented to minimize the environmental impact of excavations and foundations throughout the Project include:

- Minimize vegetation disturbance as much as possible to enhance soil stability (see Section 2.3 – Ground Disturbance).
- Ensure adequate drainage and maintain natural drainage patterns.
- Locate the development in a well-drained area whenever feasible.
- Ensure excavations are properly drained and that surface water drainage is diverted away from development areas whenever feasible.
- Adequate sediment and erosion control measures, including silt fences, turbidity curtains, settling ponds and gravel berms, will be installed around the development area to protect adjacent watercourses and waterbodies from adverse impacts such as sedimentation and elevated turbidity levels (see Section 2.9 – Sediment and Erosion Control).
- For more details on work activities related to water crossings (culverts, bridges), see Operational Environment Standard: Tote Road Watercourse Crossing Installation (Section 2.18).

2.27.3 FORMS

None

2.27.4 RELATED DOCUMENTS

- Baffinland EPP – Ground Disturbance (Section 2.3)
- Baffinland EPP – Sediment and Erosion Control (Section 2.9)
- Baffinland EPP – Tote Road Watercourse Crossing Installation (Section 2.18)
- Baffinland – Borrow Pit and Quarry Management Plan (BAF-PH1-830-P16-0004)

2.28 AIR QUALITY, AND NOISE AND VIBRATION

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.28	Air Quality, Noise and Vibration	B	July 15, 2014

2.28.1 ENVIRONMENTAL CONCERN

Project related sources that may affect air quality include exhaust emissions from vehicles, aircraft, and other equipment, emissions from incinerators, and fugitive dust emissions from mining activities, borrow sources, road traffic and construction activities. Construction activities have the potential to generate emissions of airborne particulates that may result in short-lived periods of elevated particulate matter (PM10 and PM2.5) concentrations. Significant quantities of particulate matter during these periods may be transported by weather conditions to accommodation areas of the Project, resulting in potential health and safety issues for Project Personnel. Dust generated from vehicles and construction activities may potentially affect the health of vegetation, wildlife, Project Personnel and local communities as well as the safety of personnel and local residents around the site.

Noise and vibration is generated from construction activities such as the use of machinery, diesel generators, vehicles, drilling, excavation, crushing of aggregate, blasting, etc. When no control measures have been put in place, Project Personnel working with or near noisy equipment or processes may be affected by high direct or ambient noise which could potentially result in noise induced hearing loss. Noise and vibration may also affect wildlife in areas surrounding construction activities.

Please refer to the existing Air Quality and Noise Abatement Management Plan for more information on how to address any air quality and noise abatement concerns.

2.28.2 FORMS

None

2.28.3 RELATED DOCUMENTS

- Baffinland EPP – Blasting in Water (Section 2.24)
- Baffinland - Air Quality and Noise Abatement Management Plan (Rev. 4 - BAF-PH1-830-P16-0002)

2.29 POST-CONSTRUCTION ACTIVITIES

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.29	Post-Construction Activities	B	May 31 , 2014

2.29.1 ENVIRONMENTAL CONCERN

Post-construction activities may include the re-contouring stockpiled soil and overburden, natural re-vegetation, restoring natural drainage patterns, equipment and waste removal etc., as required within the Project footprint in order to prepare for the Reclamation Phase of the Project and minimize environmental impacts.

The loss of terrestrial and aquatic habitat, erosion and slope failure, and the disturbance and/or destruction of historic resources are environmental concerns associated with the potential activities related to construction. With the proper post-construction activities in place, the physical environment shall be more readily restored and remediated to mitigate the potential impacts listed above.

This section is currently under development. Please refer to the Preliminary Mine Closure and Reclamation Plan (FEIS, Appendix 10G) for more information on Post-Construction Activities and progressive reclamation.

2.29.2 FORMS

None

2.29.3 RELATED DOCUMENTS

- Baffinland – Final Environmental Impact Statement – Appendix 10G
- Baffinland – Interim Abandonment and Reclamation Plan (BAF-PH1-830-P16-0012)

2.30 PROTECTION OF THE MARINE ENVIRONMENT AND WILDLIFE

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.30	Protection of the Marine Environment and Wildlife	B	July 15, 2014

2.30.1 ENVIRONMENTAL CONCERN

Potential environmental impacts have been identified such as underwater and airborne noise, release of sediment into the water, and accidental introduction of hydrocarbons or other deleterious substances/materials into the marine environment. These potential impacts could affect the marine habitat and wildlife and the appropriate protection and mitigation measures need to be implemented.

This section is currently under development with input from the Marine Working Group and will be implemented once finalized.

2.30.2 FORMS

None

2.30.3 RELATED DOCUMENTS

- Refer to Contractors EPP for Ore Dock Construction

2.31 FRESHET MANAGEMENT

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.31	Freshet Management	A	July 15, 2014

2.31.1 ENVIRONMENTAL CONCERN

The effective management of freshet is imperative to maintaining the usability of the Tote Road and stability of camp pad and associated infrastructure. Improper or mismanaged preparation activities can result in significant washouts of the road which will in turn directly impact Project scheduling as well as incur disruptions to the movement of essential freight and supplies from Milne Port to the Mine Site and vice versa. Also, the failure to properly prepare for and manage freshet along the Tote road is a major risk to the Company that can potentially result in major damage to the road, loss of material and personnel movement between sites, major setbacks to schedule, and significant loss of reputation/regulatory enforcement.

2.31.2 ENVIRONMENTAL PROTECTION MEASURES

The following measures must be implemented to minimize the potential risks associated with freshet:

- Culvert ends must be dug out using an excavator prior to the commencement of the melt to allow access to the ends. When digging out the culverts using the excavator, it is very important not to damage the culvert ends. The culvert ends should have rebar markers; however this activity should be undertaken with the use of a spotter. Also, if the rebar is no longer in place on one end, a metal detector should be used to locate the culvert end by the spotter.
- Culverts which are found to be substantially or completely blocked will need to be opened using a portable steam generator or steaming truck in order to allow for the passage of the initial melt water. It is important to monitor initial days of runoff as if the weather gets cold once melt begins then the possibility of refreezing of the culverts.
- Once the flows begin, a dedicated monitor is required to watch for potential problem areas including upstream build-up of water, high flows, and upstream and downstream erosion and sedimentation. Should any of the above conditions be observed various measures can be adopted including the use of pumps, berms, the installation of additional overflow culverts, and the installation of riprap or geotextile. Under certain circumstances, a controlled breach of the road may also be necessary to allow upstream flows to subside and to minimize overall the damage to the road.
- Should a washout or erosion occur, all reasonable efforts need to be made to prevent the siltation of downstream water bodies. Methods of controlling the migration of deleterious materials include silt fences, silt curtains, sumps and check dams, settling ponds, riprap and armoring as well as the use of flocculants.

- Preparation and management activities should follow the Tote Road Freshet management Procedure, however in the event of significant erosion or siltation, please refer to the Aquatic Ecosystem and Surface Water Management Plan.

2.31.3 FORMS

None

2.31.4 RELATED DOCUMENTS

- Baffinland EPP – Sediment and Erosion Control (Section 2.9)
- Baffinland – Surface Water and Aquatic Ecosystem Management Plan (BAF-PH1-830-P16-0026)

2.32 COMPLIANCE INSPECTIONS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.32	Compliance Inspections	A	July 15, 2014

Individual departments are responsible for maintaining a clean, safe and environmentally acceptable work area. Departments are expected to conduct and document regular inspections of their work areas and facilities to ensure the Company's commitments and expectations regarding health, safety and environment are being met or exceeded. Inspection documentation shall be made available to Environment personnel conducting periodic inspections or to external inspectors, regulators, and agencies conducting inspections under the terms and conditions of Baffinland's licences, permits, authorizations, and leases.

In addition to departmental inspections, Environmental personnel will conduct routine inspections throughout the Project site to confirm department personnel are operating in accordance with the Company's Water Licences, permits and other regulatory requirements put in place by stakeholders, land owners and government regulators. Project Personnel who are unsure about certain environmental impacts and/or necessary protection measures should consult the Environmental Protection Plan first followed by the Environment Department before proceeding with the activity under question.

While conducting inspections, departments should pay close attention to the following:

- All hazardous materials and hazardous waste should be contained in a spill tray, a lined containment berm or some other form of secondary containment.
- All waste should be segregated in accordance with the Waste Sorting Guidelines. Departments should ensure that disposal bins for each type of waste (hazardous, landfill, incinerator) are accessible and clearly labelled.
- All food waste and wildlife attractants will be disposed indoors to prevent the attraction and food conditioning of wildlife.
- All refuelling and equipment maintenance activities should employ the use of spill trays to prevent hazardous materials such as fuel, oils and greases from spilling onto the ground. See the Environmental Standard – Use of Spill Trays at Site for more details.
- All spills should be documented and reported to the Environment Department as soon as possible. Spills should be cleaned up as soon as possible after being reported, unless told otherwise by the Environment Department. For more details on spill reporting see Operational Environment Standard: Spill Control Measures and Reporting (Section 2.33).
- For a complete list of project components and items to monitor refer to Environmental Inspection Forms (Section 3.7).

- The schedule for conducting environmental inspections will vary from month to month and will be established by the Environmental Superintendents and Coordinators and approved by the Environmental Manager. The schedule will be developed based on a Project activity risk based approach.

2.32.1 FORMS

- Baffinland EPP - Environmental Inspection Forms (Section 3.7)

2.32.2 RELATED DOCUMENTS

- Baffinland EPP – Spill Control Measures and Reporting (Section 2.33)
- Baffinland EPP – Fuel Storage and Handling (Section 2.7)
- Baffinland EPP – Hazardous Material and Hazardous Waste Management (Section 2.16)
- Baffinland – Environmental Standard - Waste Sorting Guidelines
- Baffinland - Environmental Standard – Use of Spill Trays at Site
- Baffinland – Waste Management Plan (BAF-PH1-830-P16-0028)

2.33 SPILL CONTROL MEASURES AND REPORTING

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
2.33	Spill Control Measures and Reporting	A	July 15, 2014

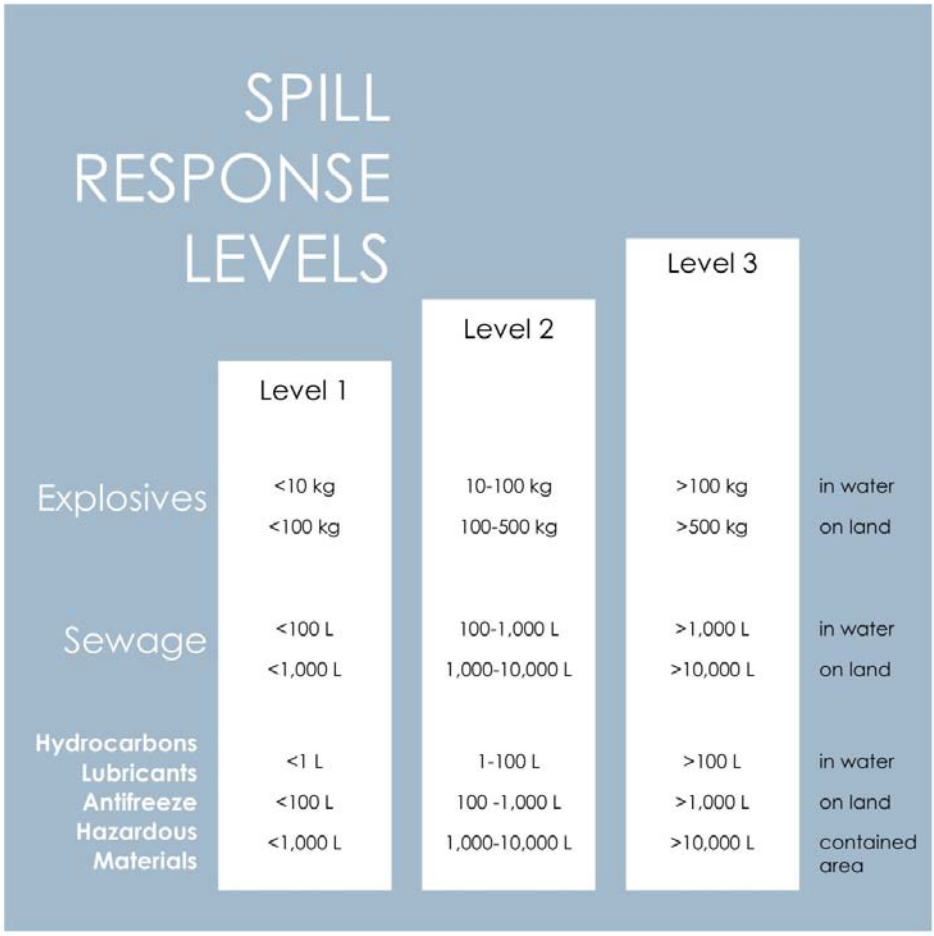
A wide range of hazardous materials will be used during the life of the Project including Jet-A, diesel, oils, greases, antifreeze, calcium chloride salt, ammonium nitrate, lead acid batteries, cleaners and a variety of other materials. The management of hazardous materials onsite will focus on preventing the materials from causing harm to the health and safety of Project Personnel and the surrounding environment. All spills, leaks and releases of hazardous materials will be reported to the Environment Department immediately and documented by submitting the necessary documentation within 12 hours of the spill using the *Baffinland Incident Investigation Form* and *NT-NU Spill Report Form* (Section 3.12).

Refer to the Spill Contingency Plans and Emergency Response Plans for various response action levels based on type of hazardous product spilled, volume spilled and type of receiving environment. A brief summary of the various spill response action levels are provided below.

The levels of emergency response for spills are detailed in the ERP document under Section 2.0. Baffinland has adopted a generic classification system that includes three levels of emergencies. Each level of emergency, based on the significance of the event, requires varying degrees of response, effort and support. With emphasis on spills and releases the three response levels are as follows:

- Level 1 (Low) – Minor accidental release of a deleterious substance with:
  - No threat to public safety; and/or
  - Negligible environmental impact to receiving environment.
- Level 2 (Medium) – Major accidental release of a deleterious substance with:
  - Some threat to public safety; and/or
  - Moderate environmental impact to receiving environment
- Level 3 (High) – Uncontrolled hazard which:
  - Jeopardizes project personnel safety: and/or
  - Significant environmental impacts to receiving environment

For spills, the level of emergency response to a given spill incident is based in part on the specific substance released, quantity spilled, the receiving environment that is potentially impacted, and human health risk. The level of response is also based on whether the location of the spill release is within engineered containment. The following matrix provides a working guideline for project personnel with regard to the level of response that is warranted for a specific spill release based on the above mentioned factors.



Various aspects of the emergency spill response such as organization, roles and responsibilities, generic emergency response procedures, internal and external contacts lists, training, resources, and reporting are detailed in the Emergency Response Plan document. The reader is referred to the ERP for guidance and instruction regarding those aspects of emergency response.

As a general guideline, Table 2.33-1 summarizes the respective roles for responsible department and Baffinland Environment Department for spill reporting and clean-up protocol for hazardous materials on site. In all cases, the department responsible for the spill is required to conduct the clean-up using whatever resources are required. In the event of a Level 2 or 3 response initial assistance and resources will be provided by the Emergency Response Team.

Internal Baffinland reports are to be provided by the responsible department to the Environment Department via the Baffinland Incident Reporting System. All external reporting to outside agencies are to be provided by the Environment Department.

TABLE 2.33-1: GENERAL SPILL REPORTING AND CLEAN UP STANDARDS

Spill on Land		
Volume (L)	**Required Documentation**	**Spill Clean up**
Less than 1 litre	- Verbal or email report	Environment Department will advise if needed.
Greater than 1 litre and less than 100 litres	- Photos of Spill and Clean-up - Baffinland Incident Investigation Report - NT-NU Spill Report	Spills greater than 30 litres will have an Environmental Monitor present to advise clean-up efforts.
Greater than 100 litres	- Photos of Spill and Clean-up - Baffinland Incident Investigation Report - NT-NU Spill Report - Notification to regulators and the Spill Line	Environmental Superintendent or his/her designate will lead and advise clean-up efforts.
Spill on Water Body or Watercourse		
Volume (L)	**Required Documentation**	**Spill Clean up**
Any volume	- Photos of Spill and Clean-up - Baffinland Incident Investigation Report - NT-NU Spill Report - Notification to regulators and the Spill Line	Environmental Superintendent or his/her designate will lead and advise clean-up efforts.

For more information on proper handling and control measures associated with hazardous materials please refer to the documentation listed below under the heading 'Related Documents'.

2.33.1 FORMS

- Baffinland – Baffinland Incident Investigation Form
- Baffinland EPP - NT-NU Spill Report Form (Section 3.12)

2.33.2 RELATED DOCUMENTS

- Baffinland EPP – Hazardous Material & Hazardous Waste Management (Section 2.16)
- Baffinland EPP – Spill Control Measures and Reporting (Section 2.33)
- Baffinland - Spill Contingency Plan (BAF-PH1-830-P16-0036)
- Baffinland – Emergency Response Plan (BAF-PH1-830-P16-0007)

- Baffinland - Spill Contingency Plan (BAF-PH1-830-P16-0036)
- Baffinland - Exploration Spill Contingency Plan (BAF-PH1-830-P16-0037)
- Baffinland - Emergency Response Plan (BAF-PH1-830-P16-0007)
- Baffinland – Steensby Oil Pollution Emergency Plan
- Baffinland – Milne Port Oil Pollution Emergency Plan

3 DOCUMENTATION LOGS AND FORMS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.0	Documentation Logs and Forms	D	July 15, 2014

DOCUMENTATION PROCEDURES

A key aspect of the Environmental Protection Plan (EPP) is effective record-keeping. The following logs and forms are to be used to record key information:

- Human Use Log (Section 3.1).
- Wildlife Log (Section 3.2).
- Drill Inspection Forms (Section 3.3).
- Off-site Waste Disposal Log (Section 3.4).
- Watercourse Crossing Monitoring Data Form (Section 3.5).
- Turbidity Monitoring Data Form (Section 3.6).
- Environmental Inspection Forms (Section 3.7).
- Daily Tank Farm Inspection Checklist (Section 3.8).
- Fuel Tank Dipping Form (Section 3.9).
- Water Collection Log (Section 3.10).
- Wastewater Log (Section 3.11).
- NT-NU Spill Report Form (Section 3.12).
- Cultural Heritage Chance Find Discovery Form (Section 3.13).

The record keeping forms are described further in their respective sections of the EPP. All completed logs and forms are to be submitted to the appropriate departments.

3.1 HUMAN USE LOG

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.1	Human Use Log	B	July 15, 2014

3.1.1 ENVIRONMENTAL CONCERN

Land and resource uses in the Project Area include; hunting, fishing, trapping, and tourism. Potential impacts to existing land use will include the interruption of camping, hunting, tourism and marine activities mainly in Milne Inlet and Mary River areas, but also extending throughout North Baffin Island. Baffinland has made a commitment to minimize disturbance to other land users to the extent possible.

Approvals issued to Baffinland require that the Company monitor the potential effects of its activities on Inuit harvesting activities. To do so, Baffinland wants to be aware of when people come into the area. The objective is to understand the activities of other land users only as much as needed to be able to modify Project activities to minimize disruption to other land users. Baffinland does not want to know other people's personal business!

TABLE 3.1- 1: MARY RIVER HUMAN USE OF OBSERVATION LOG

Date	Where (GPS)	Number of People In Party	Inuit or Non-Inuit	Activities Observed (Camp, Hunting, Travel, Etc)

3.2 WILDLIFE LOG

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.2	Wildlife Log	C	July 15, 2014

DID YOU SEE ANY WILDLIFE?

LET US KNOW ᐅᒪᔪᓐᓂᒃ

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Wildlife observations by site personnel make very important contributions to environmental baseline studies. It is important enough that Baffinland asks you to record any observations of wildlife by listing them on this form.
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ᐊᑐᕈᑎᖃᕐᓂᖓ ᐱᔪᑎᒋᓗᒍ ᐸᕙᓐᓚᓐᑦ ᐃᓕᓯᓐᓂᒃ ᐊᐱᕆᕚᑦ ᐅᒪᔪᓐᓂᒃ ᑕᑯᖕᖓᕕᑦ ᑎᑎᖃᑦᑕᕐᓗᒋᑦ

DATE ᐅᓪᓗᖓ	ANIMAL & HOW MANY? ᐅᒪᔫᖅ ᑭᓱᓚᐅᕐᐸ ᐊᒪᓗ ᖃᓯᐅᓚᐅᕐᐸᑦ ?	WHERE? ᓇᓃ ?	COMMENTS ᐅᖃᐅᓯᑦ

Please leave wildlife alone. Do not feed them and never leave waste behind.

ᐊᑦᑎ ᐅᒪᔪᑦ ᐅᓚᕕᔅᖃᑕᕆᓪᓗᒋᑦ. ᕿᒥᕆᕙᕆᓪᓗᒋᑦ ᐊᒪᓗ ᑕᒪᐅᖓᓗᐃᓇᖅ ᐃᒋᑎᖃᑕᕆᓪᓗᑎᑦ

The information contained herein is proprietary Baffinland Iron Mines Corporation and is used solely for the purpose for which it is supplied.
It shall not be disclosed in whole or in part, to any other party, without the express permission in writing by Baffinland Iron Mines Corporation.

Note: This is an UNCONTROLLED COPY. All staff members are responsible to ensure the latest revision is used.

3.3 DRILL INSPECTION FORMS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.3	Drill Inspection Forms: Pre-Drilling, Daily, and Post Drilling	B	June 19, 2009

PRE-DRILLING INSPECTION REPORT

Baffinland	**PRE-DRILLING INSPECTION REPORT** **Baffinland personnel:** **Date:** **Time:** **Proposed hole ID:** **Final hole ID:**

PROPOSED HOLE INFORMATION:

Deposit #:		**Collar location:**	E
Project:		(NAD 83)	N
Area:		**Dip:**	
NTS:		**Azimuth: Elevation:**	
		Target depth:	

Description of drill hole location:
Purpose of drill hole:

DRILLING INFORMATION:

Has site been approved by drill foreman?
Drill contractor: Drill personnel: Drill #:
Expected start of drilling:
Is moving of drill hole required?
If yes, provide reason:
New collar location: E N

WATER MANAGEMENT:

Water source:
Pump Station #:
Sump location identified and constructed?: Yes/No (Photo required)
Corner 1: E N
Corner 2: E N
Silt fence(s) constructed?: Yes/No (Photo required)
Corner 1: E N
Corner 2: E N

SITE ASSESSMENTS:

Are wildlife present?: (If yes, record in log)
Is site safe for drilling?

Stable platform	Yes /No	Fire Extinguisher	Yes /No
First Aid kit	Yes /No	Eye Wash	Yes /No
PPE	Yes /No	Spill Kits	Yes /No

Safety concerns/issues:
Environmental concerns?

PHOTOGRAPHIC RECORD:

Photo of drill hole location prior to setup? Yes /No
Name: Folder:
Uploaded to hard drive?

COMMENTS:

DAILY DRILLING INSPECTION REPORT

Baffinland	**DAILY DRILL INSPECTION REPORT** **Baffinland personnel:** **Date:** **Time:** **Hole ID:**

HOLE INFORMATION:

Deposit #:	1	**Collar location:**	E
Location:		(NAD 83)	N

DRILLING INFORMATION

Drill contractor:
Drill personnel:
Drill #:

DRILLING PROGRESS:

Day Shift	**Night Shift**
Start depth:	**Start depth:**
End depth:	**End depth:**
Total depth drilled:	**Total depth drilled:**
Casing installed:	**Casing installed:**

Any rods/casing/tools lost in the drillhole? If yes, what was lost?

Delays/Problems: (breakdowns, stuck rods, bit change, weather, wait time, drill move, etc) Provide time estimate

WATER USE ASSESSMENT:

Sediment control measures in place:
Assessment of effectiveness:
Approximate water level in sump:
Color of water in sump:
Color of runoff?

DAILY WATER USE MONITORING:

Water meter reading (start of day):

Water meter reading (end of day):

Conductivity readings?:	Station #	Reading
	Station #	Reading
	Station #	Reading
Turbidity sample(s) taken?:	Sample #	Reading
	Sample #	Reading

SITE ASSESSMENT:

Are wildlife present?: (check log for previous wildlife activity)

Is site safe for drilling?

Stable platform	Yes /No	Fire Extinguisher	Yes / No
First Aid kit	Yes /No	Eye Wash	Yes / No
PPE	Yes /No	Spill Kits	Yes / No
Lined Berms	Yes /No		

Safety concerns/issues:
Environmental concerns?
Corrective action required?: Action plan (if required):
Responsible party:
Date to be completed: Photograph (only required to document problems and corrective actions)

PHOTOGRAPHIC RECORD:

Photo of drill hole during drilling? Photo of water management measures? Yes /No
Name: Folder:
Uploaded to hard drive?

COMMENTS:

POST-DRILLING INSPECTION REPORT

Baffinland	**POST-DRILLING INSPECTION REPORT** **Baffinland personnel:** **Date:** **Time:** **Final hole ID:**

HOLE INFORMATION:

Deposit #:		**Collar location:**	E
Project:	MARY RIVER	(NAD 83)	N
Area:	BAFFIN ISLAND	**Dip:**	
NTS:	37G/5	**Azimuth:**	
Elevation:		**EOH:**	

Description of drill hole location:
Purpose of drill hole:

DRILLING INFORMATION:

Drill contractor:
Drill personnel:
Drill #:
End of drilling:
Casing:
Any rods/casing/tools lost in the drill hole? If yes, what was lost?

Are rods/casing left in the ground cut at ground level and is the hole properly plugged and capped? Yes / No
Next set-up collar location: E N

WATER USE ASSESSMENT:

Water source: Mary River
Pump station #:
Total amount of hours water was pumped from pump station:

SITE ASSESSMENT:

All materials and debris removed from site? Yes /No
Any environmental concerns? Yes /No If yes, please describe below:

Any additional work required? Yes /No If yes, please describe below:

Corrective action:
Responsible party:
Date to be completed by:

PHOTOGRAPHIC RECORD:

Photo of drill hole location following demobilization and clean up? Yes /No
Name: Folder:
Uploaded to hard drive?

COMMENTS:

INSPECTION COMPLETED BY:

Baffinland signature: Drill contractor signature:

3.4 OFF-SITE WASTE DISPOSAL LOG

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.4	Off-Site Waste Disposal Log	C	July 15, 2014

Line	Prov. Code	Shipping Name of Waste (i.e. Kitchen Grease, Contaminated Oily Solid, etc.)	Class	UN	P.G	Quant. Shipped (kg)	Packaging				Phys. State (S, L, G)
							Mine Site	Milne Port	Total	Packaging Type	

Note : PACKAGING TYPE : 01 drum; 02 tank; 03 bulk; 04 carton; 05 bag; 06 roll-off or lugger; 07 other

3.5 WATERCOURSE CROSSING DATA MONITORING FORM

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.5	Watercourse Crossing Data Monitoring Form	A	June 4, 2008

CROSSING ID:										
Construction Duration:		**Start:**			**Finish:**					
		Environmental Inspector:			**Start (Date and Time):**			**Finish (Date and Time):**		
Env. Inspector on site during in-water work:										
LOCATION	**Datum:**				**Zone:**					
Easting (m):		**Northing (m):**			**Elevation (from mapping):**			**Other notes:**		
FISH ASSESSMENT PRIOR TO CONSTRUCTION					**Date of Inspection:**					
Fish Present?	**Y / N**				**If Yes, distance from crossing:**				**US / DS**	
Spawning Arctic Char present at crossing?		**Y / N**			**(If yes, contact biologist)**					
Spawning site present 20 m upstream or downstream of crossing?					**Y / N**					
CHANNEL CHARACTERISTICS		**Date Measured:**								
		Pre-Construction					**Post Construction**			
Location	**Distance**	**Width (m)**		**Water Depth (m)**			**Width (m)**		**Water Depth (m)**	
		Wetted	**High W**	**Max**	**Avg.**		**Wetted**	**High W**	**Max**	**Avg.**
Crossing										
Upstream										
Downstream										
SEDIMENT AND EROSION CONTROL MEASURES										
Measure installed:								**Date installed:**		
								Dated removed:		
								Turbidity monitored	Y / N	
Measures taken to stabilize disturbed areas:										
CROSSING INSTALLATION DETAILS										
1.2 m		**culverts**		**lengths of culvert**			**Notes:**			
1.0 m		**culverts**		**lengths of culvert**						
0.5 m		**culverts**		**lengths of culvert**						
PHOTOS		***View across crossing, view from upstream, view from downstream and any other to illustrate conditions.***								
	Photo #	**Date**	**Direction**	**Vantage point**		**Photo #**	**Date**	**Direction**	**Vantage point**	
Before					**After**					
across					across					
from US					from US					
from DS					from DS					
During					**Sed Con**					
across					across					
from US					from US					
from DS					from DS					
NOTES										

3.6 TURBIDITY MONITORING DATA FORM

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.6	Turbidity Monitoring Data Form	A	June 4, 2008

CROSSING ID:			
Field Crew:		**Date:**	**Time:**
LOCATION **Datum:**		**Zone:**	
Easting (m):	**Northing (m):**	**Elevation (from mapping):**	**Other notes:**
CURRENT WEATHER: Wind:	**Air Temp:**	**Precipitation:**	**Cloud Cover (%):**
Recent Weather Events:			
CONSTRUCTION **Construction Phase (circle one):** Pre-Construction During Construction Post-Construction			
Type of Activity:	**Equipment in Use:**		
Date Construction Began:			
Is the crossing location changing? (i.e. Is the crossing moving upstream or downstream of its original location? How far? Which direction?)			
SITE SKETCH, NOTES, REMARKS: (i.e. high water table, high turbidity, natural bank erosion, water color, char observed in stream, algae in water, etc.) Is there anything unique about this crossing compared to other watercourses? (i.e. steep banks, clay in water, etc.)			
Substrate Particles **% Areal Coverage (est.)** **% sand/silt/clay (<2mm)** **% gravel (2 - 64 mm)** **% cobble (64 - 256 mm)** **% boulder (> 256 mm)** **% bedrock**		**Riparian Vegation and Shading (describe):**	

***IN SITU* TURBIDITY READINGS** (complete at least one measurement upstream and downstream of crossing)
Meter Make and Model:

Location	Distance from crossing (m)	Turbidity (NTU)	Time	Location	Distance from crossing (m)	Turbidity (NTU)	Time
Upstream				**Upstream**			
Crossing				**Crossing**			
Dwnstrm				**Downstream**			

FLOW ESTIMATES **Location :**	
High Water Width (m):	**Distance between points (m):**
Wetted Channel Width:	**Time (min): /**
Approx. Average Depth:	**Surface velocity estimate:**
	Average Velocity (0.8 (1) x Surface Velocity) (V) =
Note (1) - depends on substrate composition: 0.8 for rough, loose rocks or coarse gravel / 0.9 for smooth mud, sand, or hard pan rock	
PHOTOS: (upstream, crossing, downstream)	
NOTES:	

3.7 ENVIRONMENTAL INSPECTION FORMS

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.7	Environmental Inspection Forms	A	July 15, 2014

Aircraft Fuel Dispensing Areas Inspection Checklist

Baffinland

Date:	
Inspecting Personnel:	
Camp:	

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Is a spill kit present and fully stocked?					
2	Is a drum or disposal bin present for used absorbent pads?					
3	Is there a spill tray present for re-fuelling activities?					
4	Are spill trays damaged or overflowing?					
6	Are fuel lines damaged or leaking?					
7	Does the Jet A fuel tank have visible signs of overflow (ex. stains on the side of the tank)?					
8	Are there visible leaks or free product within the fuel berm?					
9	Is there evidence of leaking or visible staining outside of lined area?					
10	Is there water present in the bermed area? If so, specify maximum water depth.					
11	Is there free phase product visible on any water surface within the bermed area?					
12	Are there signs of instability or tears in bermed areas? (i.e. collapsing berm or exposed liner).					
13	Is there any other refuse present? (i.e. garbage, loose materials, etc.)					

Additional Notes:

Containment Berms and Accommodations Complex Fuel Storage Inspection Checklist

Date:	
Inspecting Personnel:	
Camp:	

Baffinland

Area		Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
Accomodations Complex - Fuel Tanks (Day)	1	Are spill kits present, labelled and fully stocked?					
	2	Is there any visible damage to the fuel tanks?					
	3	Are any lines, fittings, or pipes damaged and/or leaking?					
	4	Are there any fuel stains or visible spills near the fuel storage tanks?					
	5	Are storage tanks protected by cement barriers?					
Containment Berms (Bladder Farm, New Product Berms, Steel Tank Farm)	1	Is a spill kit present, labelled and stocked at each berm?					
	2	Are there visible leaks or stains within or outside the berms?					
	3	Is there water present in the bermed areas? If so, specify maximum water depth.					
	4	Is there free phase product visible on any water surface within the bermed areas?					
	6	Are there signs of instability or tears in bermed areas? (i.e. collapsing berm or exposed liner)					
	7	Are all containers within the berms labelled, stored upright, and in good condition (i.e. free of structural defects)?					
	8	Is there any refuse present? (i.e. garbage, loose materials, etc.)					

Additional Notes:

Hazardous Waste Containment Berm Inspection Checklist

Date:

Inspecting Personnel:

Camp:

Baffinland

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Are spill kits present, labelled, and fully stocked?					
2	Are all containers within the berm correctly labelled, stored upright and in good condition (i.e. free of structural defects)?					
3	Is there evidence of leaking or visible staining outside of lined area?					
4	Is there water present in the bermed area? If so, specify maximum water depth.					
5	Is there free phase product visible on any water surface within the bermed area?					
6	Is there free phase product visible on the ground within the bermed area?					
7	Are there signs of instability or tears in bermed areas? (i.e. collapsing berm or exposed liner)					
8	Is there any other refuse present? (i.e. garbage, loose materials, etc.)					

Additional Notes:

Crusher and Quarry Inspection Checklist

Baffinland

Date:
Inspecting Personnel:
Camp:

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Are hazardous materials and waste being stored in secondary containment?					
2	Are spill kits present, labelled, and fully stocked?					
3	Is explosives packaging (boxes, plastic bags) being burnt in an approved open burn location?					
4	Is ash generated from open burns being transferred and stored in the appropriate drums?					
5	Are waste items being properly sorted and diposed of?					
6	Are the natural drainage patterns of the quarried area still intact?					
7	Are silt fences or settling ponds in place to limit sediment transport into surrounding water bodies?					
8	Is there any signs of pooling water or thawing permafrost?					
9	Are there any fuel stains or visible spills?					
10	Is topsoil or overburden being stockpiled in area away from drainage routes?					
11	Are operators conducting pre-operation checks on their equipment?					
12	Do equipment operators have an adequate amount of spill reponse supplies on board?					

Genset Area Inspection Checklist

Date:	
Inspecting Personnel:	
Camp:	

Baffinland

Area		Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
Genset Area	1	Is a spill kit present, labelled and fully stocked?					
	2	Are spill berms present under the oil drains, hose connections, and any other points of potential leakage?					
	3	Are spill berms in danger of overflowing?					
	4	Is there visible staining under the oil drains or other areas of potential leakage?					
	5	Are any hoses or nozzles cracked, damaged or leaking?					
	6	Are all hazardous waste/materials in secondary containment?					
	7	Is there any other refuse present? (i.e. garbage, loose materials, etc.)					

Additional Notes:

Incinerator and Burnable Waste Storage Inspection Checklist

Date:	
Inspecting Personnel:	
Camp:	

Baffinland

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Is a spill kit present, labelled and fully stocked?					
2	Are fuel lines damaged or leaking?					
3	Are spill trays present at any points of potential leakage in fuel lines? (e.g. hose connections)					
4	Is any burnable waste securely contained within the sea can?					
5	Are any inappropriate waste types present (ex. styrofoam, aerosols, waste batteries)?					
6	Is the surrounding area free of loose debris?					
8	Are there any animal attractants (ex. food waste being left outdoors)?					
9	Is the door to the incinerator securely shut to prevent animal access?					
11	Do all ash drums have lids on them?					
12	Are operators filling out the incinerator log?					
13	Is there signage describing acceptable wastes?					

Additional Notes:

Maintenance Shop Inspection Checklist

Date:	
Inspection Personnel:	
Camp:	

Baffinland

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Are spill trays present and in use at all points of potential leakage?					
2	Are the vehicles needing maintenance leaking? If so, is there a spill tray underneath?					
3	Is there visible staining under areas of potential leakage?					
4	Are all fuel or other hazardous products (e.g. jerry cans, 5 gallon pails, batteries etc.) located in secondary containment?					
5	Is waste properly segregated into labelled containers? (e.g. oil filers, used absorbents etc.)?					
6	Is a spill kit present, labelled, and fully stocked?					
7	Is there any other refuse present? (i.e. garbage, loose materials, etc.)					

Additional Notes:

Accommodations Complex Waste Management Inspection Checklist

Date:	
Inspection Personnel:	
Camp:	

Baffinland

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
	Accommodations Complex					
1	Do the aerosol/waste battery disposal bins contain only the designated waste?					
2	Are the aerosol/waste battery disposal bins properly labelled?					
6	Do the garbage cans contain acceptable wastes (ex. food items and packaging, paper products, small plastics)?					
7	Are garbage cans located in a well ventilated area?					
8	Are signs located over washroom sinks, kitchen sinks etc. indicating acceptable drain waste?					
9	Are signs located in the washroom stalls indictating flushable wastes?					
10	Are the Waste Sorting Guidelines posted throughout the complex?					
11	Is all waste from the kitchen (food product, waste grease etc.) being segregated into the proper bins?					
12	Is all hazardous waste being stored in secondary containment (oils, greases, fuel)?					
13	Are there animal attractants located outside (i.e. food wastes)?					

Additional Notes:

Tent City (Exploration Camp) Inspection Checklist

Baffinland

Date:	
Inspecting Personnel:	
Camp:	

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Are fuel berms present behind each tent?					
2	Are fuel berms structurally sound? (i.e. no rips, tears or leaks)					
3	Are fuel berms in danger of overflowing?					
4	Are fuel drum and fuel drum stands structurally sound? (i.e. punctures, tilting, etc.)					
5	Is there any staining around fuel berms or tents indicating a spill?					
6	Are the fuel lines damaged or leaking?					
7	Is there any refuse present? (i.e. Loose garbage)					
8	Is environmental lab waste stored in a labelled quatrex bag?					

Additional Notes:

Truck Refueling Modules Inspection Checklist

Date:
Inspecting Personnel:
Camp:

Baffinland

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Is a spill kit present and fully stocked?					
2	Is a drum or disposal bin present for used absorbent pads?					
3	Is there a spill tray present for re-fuelling activities?					
4	Are all jerry cans and hazardous materials stored in secondary containment?					
5	Are spill trays damaged or overflowing?					
6	Are lights operational in the sea-can and pump?					
7	Is a re-fuelling SOP present?					
8	Are fuel lines cracked or damaged?					
9	Is there evidence of leaking or visible staining outside of lined area?					
10	Are there visible leaks or stains within the lined area?					
11	Is there any other refuse present? (i.e. garbage, loose materials, etc.)					

Additional Notes:

Tote Road Construction Inspection Checklist

Date:
Inspecting Personnel:
Section of Road Inspected:

Baffinland

	Condition	Y/N or NA	Recommended Corrective Action (if necessary)	Responsible Party	Corrective Action Taken or Plan	Completion Date
1	Are all archaeology sites clearly marked?					
2	Are streams and water bodies within construction zones clearly visible?					
3	Are borrow pits 31 meters away from all streams and water bodies?					
4	Are borrow pits 50 meters away from all archaeological sites?					
5	Is there any signs of construction activity or disturbance within 50 meters of any archaeology site?					
6	Do equipment operators have an adequate amount of spill response supplies on board?					
7	Are operators conducting pre-operation checks on their equipment?					
8	Are there any fuel stains or visible spills?					
9	Are hazardous materials and waste being stored in secondary containment?					
10	Are spill kits present, labelled, and fully stocked at high activity areas (i.e. quarries, borrow pits)?					
11	Are silt fences in place to minimize sediment transport into surrounding water bodies?					
12	Are there any signs of wildlife nearby (i.e. tracks, sightings)?					

Baffinland

Waste Sorting Area Inspection Checklist

Date: _____
Time: _____
Inspector name: _____
Inspector's position: _____

Please review and complete the form as applicable. Any non-conformances with the waste sorting area should be reported to the Environment Department.

General Site			
	Yes	No	Corrective Action
Is the route to the waste sorting area in suitable condition to provide truck access?			
Are the waste sorting signs in good condition?			
Are the waste containers upright and in their appropriate locations?			
Does the waste appear to be sorted?			
Is the site clean and free of litter?			
Are there any unacceptable wastes present? (ie. food scraps, cardboard, paper, scrap wood, small plastics or other burnables)			

Waste Sorting Containers						
	Container type* (drum or quatrex)	Quantity	Capacity (Full, half, empty)	Condition (OK, damaged, leaky)	Signage (OK, damaged, missing)	Comments
Aerosol cans						
Used absorbents						
Propane Containers						
Used oil filters						
Waste batteries						
Contaminated hoses						
Mixed waste containers						
Oily plastics						

Additional Comments

_____

_____

Baffinland

General Environmental Inspection Form

NAME:_____ DATE:_____

AREA(S) INSPECTED:_____

_____

_____

_____

ENVIRONMENTAL CONCERNS: _____

_____

_____

CORRECTIVE ACTIONS REQUIRED:_____

_____

_____

_____

COMMENTS:_____

_____

_____

Baffinland

Landfill Facility Inspection Form

Date: _____
Time: _____
Inspector name: _____
Inspector's position: _____

Please review and complete the form as applicable. Any non-conformances with the landfill should be reported to the Site Manager(s) in writing, for action.

General Site

	Yes	No
Is the route to the landfill in suitable condition to provide truck access?		
If not, describe location and problem.		
Is the unloading area at the working face levelled?		
If not, explain.		
Are the User Rules and Landfill Waste Sorting signs in good condition?		
If not, explain.		
Is the tundra around the outside perimeter of the landfill berm stable?		
If not, describe problem.		
Is open burning occurring or is there evidence of open burning?		
If so, list the applicable permit.		

Surface Water and Site Runoff

Please inspect within landfill area, around berms and follow drainage to observe the following:

	Yes	No
Any pooling of water present within landfill area or against berms?		
If so, where?		
Any leachate developing in and around landfill area?		
If so, where?		
Are culverts draining?		
If not, explain. Ground Frozen		
Is the water flow silt free?		
If not, describe problem. Ground Frozen		
Is site runoff draining properly around landfill and directed towards Sheardown Lake?		
If not, explain. Ground Frozen		

Geotechnical Assessment

Please examine the integrity of the berms and floor of landfill area to observe the following:

	Yes	No
Any evidence of ground temperature warming? e.g. soil creep, subsidence, heaving, etc.		
If so, where?		
Any visible sign of erosion from wind or runoff?		
If so, where?		
Any indication of berm settlement? e.g. low spots or pooling water		
If so, where?		
Does the most recent cell cover have 0.1 m on the face and 0.3 m on the deck?		
If not, how is it?		

Baffinland

Waste Composition, Litter Control and Placement

Please inspect areal placement and contents of landfill to observe the following:

	Yes	No
Is cover material stockpiled?		
Is the working face length as small as practical and below 12 m?		
Is the perimeter litter fences established?		
Are the litter fences capturing the litter?		
Do the wastes appear to be compacted on a regular basis? Recent waste has not been compacted		
Has the site been cleaned of litter in the last two weeks?		
Are there any unacceptable wastes present or proposed for landfill?		

If so, describe in the following table:

Unacceptable Waste Type	None	1-5 pieces	6-10 pieces	>10 pieces
Aerosol cans				
Batteries				
Food				
Food packaging				
Incinerator waste				
Oil contaminated waste				
Oil products and containers				
Other:				
Other:				

Wildlife Observations

Species	Number	Comments

Wildlife Signs (tracks, scats, or chews)

Species	Type of Sign	Number	Comments

Other Comments

Baffinland

PWSP Inspection Form

Date: _____
Inspectors: _____
Inspectors' Positions: _____
Camp: _____

Pond 1

		Yes	No
1	Is the roadway up to the pond suitable for truck access? If no, please provide an explanation below: _____ _____		
2	Is there any evidence of soil creep or berm displacement along the slope of the berm? _____ _____		
3	Is the berm area free of loose debris? (e.g. garbage, loose materials, etc.) _____ _____		
4	Is there any indication of berm settlement underneath the liner? _____ _____		
5	Are there any unwanted materials floating in the pond? _____ _____		
6	Are there unidentified tears in the liner that need to be repaired?		

Additional comments:

_____
_____

Pond 2

		Yes	No
1	Is the roadway up to the pond suitable for truck access? If no, please provide an explanation below: _____ _____		
2	Is there any evidence of soil creep or berm displacement along the slope of the berm? _____ _____		
3	Is the berm area free of loose debris? (e.g. garbage, loose materials, etc.) _____		

	_____		
4	Is there any indication of berm settlement underneath the liner? _____ _____		
5	Are there any unwanted materials floating in the pond? _____ _____		
6	Are there unidentified tears in the liner that need to be repaired?		

Additional comments:

_____

_____

_____

Pond 3

		Yes	No
1	Is the roadway up to the pond suitable for truck access? If no, please provide an explanation below: Access road to Pond # 1 not accessible, snowdrift build up _____ _____		
2	Is there any evidence of soil creep or berm displacement along the slope of the berm? _____ _____		
3	Is the berm area free of loose debris? (e.g. garbage, loose materials, etc.) _____ _____		
4	Is there any indication of berm settlement underneath the liner? _____ _____		
5	Are there any unwanted materials floating in the pond? _____ _____		
6	Are there unidentified tears in the liner that need to be repaired?		

Additional comments: _____

_____

3.8 DAILY TANK FARM INSPECTION CHECKLIST

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.8	Daily Tank Farm Inspection Checklist	A	July 15, 2014

Baffinland

Daily Fuel Tank Farm Inspection Checklist

Week Ending Date:_____

Check box to indicate area inspected:

☐ **Milne Inlet** : main bulk tank facility and distribution / dispensing stations.
☐ **Mary River** : bulk tank facility and distribution / dispensing stations.
☐ Other: _____

All functional areas will be inspected daily.

EMPLOYEE NAME:	M	T	W	T	F	S	S
Visually inspect entire bulk fuel facility, tanks, pipelines and pump buildings.							
Note any alarms or lit warning lamps, and determine cause.							
Check evidence of tank leakage, damage, or any unusual condition.							
Check evidence of pipeline connection leakage or any unusual condition.							
Are all pipe supports solidly in place?							
Check that the correct tank supply valves are open.							
Check condition of catwalks, stairs and building access - clear snow.							
Empty trash containers and remove trash from all areas inside and out.							
Reduce or eliminate drips or seeps where possible.							
Ensure that all drips are cleaned and sorbent pads are regularly changed.							
Ensure that an adequate supply of new sorbent pads are on hand.							
Confirm all listed fire extinguishers are checked.							
Check and confirm the availability and contents of the spill response kits.							
Ensure that electric lighting is adequate and no lamps are burned out.							
Confirm that signs are posted indicating no smoking, no ignition sources.							
Ensure that eyewash and first aid kits are in place.							

Comments: _____

3.9 FUEL TANK DIPPING FORM

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.9	Fuel Tank Dipping Form	A	July 15, 2014

Fuel Tank Dipping Form

Tank 1	Top of Flange					
	Dip 1	Dip 2	Dip 3	Final	Temperature	Calculated Volume
Comments or notes						

Tank 2	Top of Flange					
	Dip 1	Dip 2	Dip 3	Final	Temperature	Calculated Volume
Comments or notes						

Tank 3	Top of Flange					
	Dip 1	Dip 2	Dip 3	Final	Temperature	Calculated Volume
Comments or notes						

Tank 4	Top of Flange					
	Dip 1	Dip 2	Dip 3	Final	Temperature	Calculated Volume
Comments or notes						

Tank being Filled (Outlet Valves Open)	
Tank being Consumed from (Inlet Valves Open)	
Light Vehicle Meter reading at dispense	
Refueler Truck Meter reading at dispense	
Dipped By	
Date & Time	
Weather conditions	

NOTE: A MINIMUM OF 2 DIPS FOR EACH TANK ARE REQUIRED. IF THEY ARE DIFFERENT A 3rd DIP IS REQUIRED FOR A 2 DIP MATCH
CHECK FOR ANY SAFETY CONCERNS BEFORE CLIMBING THE STAIRS SUCH AS ICE ON THE STEPS.
ALWAYS HOLD THE HAND RAIL WHEN CLIMBING OR DESCENDING THE STAIRS
BE SURE TO RECORD WHICH TANKS ARE BEING FILLED OR CONSUMED FROM ON THE DIP DAY

PPE REQUIRED FOR DIP
FULL PPE REQUIRED. SPECIAL PPE REQUIRED WILL BE GLOVES FIT FOR PURPOSE, DRESS FOR WEATHER CONDITIONS

TOOLS REQUIRED FOR DIP
CARRY BAG, DIPPING TAPE WITH BRASS WEIGHT TIP, DIPPING THERMOMETER, WIPING RAGS, FUEL & WATER PASTE (Ajax)

3.10 WATER COLLECTION LOG

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.10	Water Collection Log	A	July 15, 2014

Baffinland

Water Collection Log

Date	Time	Truck ID	No. Loads	Source	Discharge Location	Operator name	Initials

3.11 WASTEWATER LOG

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
3.11	Wastewater Log	A	July 15, 2014

Baffinland

Wastewater Log

Date	Time	Truck ID	No. Loads	Source	Discharge Location	Operator name	Initials

3.12 NT-NU SPILL REPORT FORM

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION	REVISION DATE
3.12	NT-NU Spill Report Form	A	July 15, 2014

Northwest Territories Nunavut Canada

NT-NU SPILL REPORT

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE
TEL: (867) 920-8130
FAX: (867) 873-6924
EMAIL: spills@gov.nt.ca

REPORT LINE USE ONLY

A	REPORT DATE: MONTH – DAY – YEAR	REPORT TIME	☐ ORIGINAL SPILL REPORT, OR	REPORT NUMBER
B	OCCURRENCE DATE: MONTH – DAY – YEAR	OCCURRENCE TIME	☐ UPDATE # TO THE ORIGINAL SPILL REPORT	
C	LAND USE PERMIT NUMBER (IF APPLICABLE) IOL - Commercial Lease No.: Q13C301	WATER LICENCE NUMBER (IF APPLICABLE) 2AM-MRY1325 Type "A"		
D	GEOGRAPHIC PLACE NAME OR DISTANCE AND DIRECTION FROM NAMED LOCATION	REGION ☐ NWT X NUNAVUT ☐ ADJACENT JURISDICTION OR OCEAN		
E	LATITUDE DEGREES MINUTES SECONDS	LONGITUDE DEGREES MINUTES SECONDS		
F	RESPONSIBLE PARTY OR VESSEL NAME	RESPONSIBLE PARTY ADDRESS OR OFFICE LOCATION		
G	ANY CONTRACTOR INVOLVED	CONTRACTOR ADDRESS OR OFFICE LOCATION		
H	PRODUCT SPILLED	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
	SECOND PRODUCT SPILLED (IF APPLICABLE)	QUANTITY IN LITRES, KILOGRAMS OR CUBIC METRES	U.N. NUMBER	
I	SPILL SOURCE	SPILL CAUSE	AREA OF CONTAMINATION IN SQUARE METRES	
J	FACTORS AFFECTING SPILL OR RECOVERY	DESCRIBE ANY ASSISTANCE REQUIRED	HAZARDS TO PERSONS, PROPERTY OR ENVIRONMENT	
K	ADDITIONAL INFORMATION, COMMENTS, ACTIONS PROPOSED OR TAKEN TO CONTAIN, RECOVER OR DISPOSE OF SPILLED PRODUCT AND CONTAMINATED MATERIALS			
L	REPORTED TO SPILL LINE BY	POSITION	EMPLOYER	LOCATION CALLING FROM / TELEPHONE
M	ANY ALTERNATE CONTACT	POSITION	EMPLOYER	ALTERNATE CONTACT LOCATION / ALTERNATE TELEPHONE

REPORT LINE USE ONLY

N	RECEIVED AT SPILL LINE BY	POSITION: STATION OPERATOR	EMPLOYER	LOCATION CALLED: YELLOWKNIFE, NT / REPORT LINE NUMBER: (867) 920-8130

LEAD AGENCY ☐ EC ☐ CCG ☐ GNWT ☐ GN ☐ LA ☐ NAC ☐ NEB ☐ TC | SIGNIFICANCE ☐ MINOR ☐ MAJOR ☐ UNKNOWN | FILE STATUS ☐ OPEN ☐ CLOSED

AGENCY	CONTACT NAME	CONTACT TIME	REMARKS
LEAD AGENCY			
FIRST SUPPORT AGENCY			
SECOND SUPPORT AGENCY			
THIRD SUPPORT AGENCY			

PAGE 1 OF _____

3.13 CULTURAL HERITAGE CHANCE FIND DISCOVERY FORM

SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION	REVISION DATE
3.13	Cultural Heritage Chance Find Discovery Form	B	July 15, 2014

Cultural Heritage Chance Find Discovery Form

Reference No. (Environment Department to assign)

Please complete this form in the event of a chance find of a suspected burial, archaeological finds scatter, or an isolated find of a single artifact (e.g. stone tools/arrowheads, eggshell, pottery, concave milling/grinding stones, spherical hammerstones)

Date of discovery	**Time**
Name of discoverer/team	**Tel no.** **Email**
Location of the discovery	Project area : GPS coordinates :
Description of archaeological discovery	
Estimated weight	Kg
Dimensions	x x cm
Sketch of discovery area	**Drawing of chance find(s)**
Temporary protection implemented	

Name	**Signature**	**Date**
Received by Environmental Manager	**Signature**	**Date**

Notes :

If you need more room to draw or describe the discovery area/finds, please use back of the page.

Please return this form to the Environment Department as soon as possible (within 24 hours of discovery at the most).

4 REQUEST FOR REVISION TO AN OPERATIONAL ENVIRONMENT STANDARD

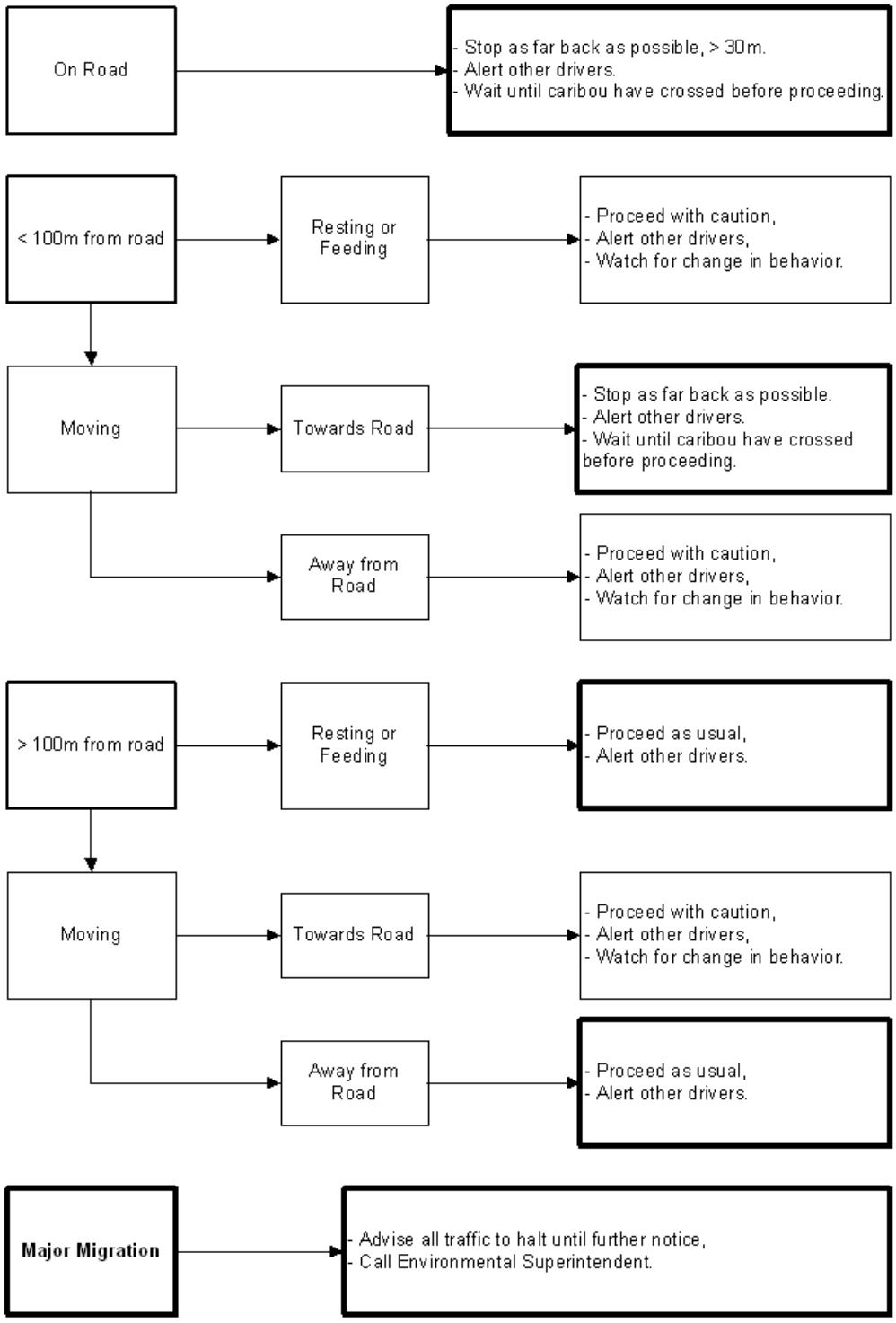
SECTION	OPERATIONAL ENVIRONMENT STANDARD	REVISION #	REVISION DATE
4.0	Request for Revision to an Operational Environment Standard	C	July 15, 2014

The Environmental Protection Plan is a living document, and its users are encouraged to suggest changes to the content or wording of Operational Environment Standards to make the document more useful, appropriate to the work being conducted, and user-friendly.

Please submit a copy of this Request for Revision to an Operational Environment Standard to the Baffinland Environmental Superintendent.

Section To Be Revised (or Title of New Operational Environment Standard): (E.g. Section 2.1 Archaeology)
Nature of Proposed Change: (E.g. update, addition, new, etc.)
Rationale For Request (E.g. Environmental Protection, worker safety, etc.)
The Revision (or New Operational Environment Standard): (Text)

Appendix A -
Caribou Encounters Decision Tree



Appendix B -
Mary River Active Migration Bird Surveys Protocol

Table 1. Recommended setback distances for activity near bird nests.

Species Group	Recommended Setbacks Distances (m)	
	Pedestrian / ATV's	Roads/Construction/Inustrial Activity
Songbirds	30	100
Shorebirds	50[a]	100[a]
Terns & Gulls	200[b]	300[b]
Ducks	100	150
Geese	300	500
Loons & Cranes	500	750

a For nests of American Golden Plover or Ruddy Turnstone, these setbacks should be increased to 150 m for pedestrians/ATVs and 300 m for Roads/Construction/Industrial Activities respectively. For nests of Black-bellied Plover, Whimbrel, or Red Knot, these setbacks should be increased to 300 m for pedestrians/ATVs and 500 m for Roads/Construction/Industrial Activities. If field crews are untrained in the identification of these species, then the higher setbacks should be applied for all shorebird species. In areas where several species are nesting in proximity, setbacks for the most sensitive species should be used if they are present.

b For project activities in proximity to nests of Ross's Gull these setbacks should be increased to 500 m for pedestrians/ATVs and 750 m for Roads/Construction/Industrial Activities. The draft Recovery Strategy for Ivory Gull currently identifies the area within a 2 km radius around colonies where at least one individual was observed nesting any time between 2002 and 2009 as Critical Habitat. As a precautionary approach, a 2 km setback should also be applied to any Ivory Gull nest that is encountered in an area that is not currently identified as Critical Habitat in the Recovery Strategy.

For further information, contact Baffinland's on-site Environment Team, or Environment Canada at

Director, Prairie and Northern Region, Canadian Wildlife Service, Environment Canada

Twin Atria Building, Room 200, 4999–98 Avenue, Edmonton AB, T6B 2X3

Phone: 780-951-8850

Further information on incidental take is available on the internet (as of June 2012):

http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=FA4AC736-1

EDI ENVIRONMENTAL DYNAMICS INC.

Baffinland Iron Mines Corporation

Mary River Active Migratory Bird Nest Survey (AMBNS) Protocol

ALL ACTIVE BIRD NESTS ARE PROTECTED FROM DISTURBANCE

Federal government regulations protect all active migratory bird nests from disturbance and destruction. Baffinland is committed to the protection of all active bird nests and this AMBNS protocol will be used during the Mary River Project's construction and operation. From 31 May to 31 August, when disturbance (clearing) or other industrial activities occur in previously undisturbed areas, Baffinland will conduct AMBNSs and protect nests and nesting birds with no disturbance buffers around active nests. This guide provides an overview of how to conduct an AMBNS and establish appropriate no disturbance buffers.

Background

The Migratory Birds Regulations, under the Migratory Birds Convention Act (MBCA), 1994, prohibit the harming of migratory birds and the disturbance or destruction of their nests and eggs. The inadvertent destruction of nests and eggs from industrial activity is called "incidental take" and is illegal. Environment Canada, responsible for the MBCA, expects that Baffinland will exercise due diligence to avoid harm to migratory birds, their nests, eggs, and young.

To avoid conflict with nesting birds, clearing should be completed outside of the migratory bird nesting season. In the Mary River Project area, bird nesting activity can occur from 31 May to 31 August. In the event that clearing unavoidably overlaps with the breeding bird season, Baffinland will conduct Active Migratory Bird Nest Surveys (AMBNS) and establish no-disturbance buffers to reduce the likelihood of disturbing or destroying active nest.