
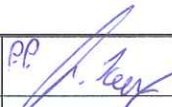

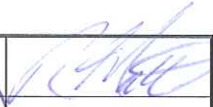


**Baffinland Iron Mines Corporation
Mary River Project****Waste Management Plan for Construction, Operation, and Closure**

2013-04-19	0	Approved for Use	 A. Grzegorzczuk	 J. Binns	 S. Perry	 J. Millard
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Date	Rev.	Status	Prepared By	Checked By	Approved By	Approved By

Revision History

Revision No.	Section	Revision Date	Changes	Approval
A		April 2012	Updated for Type A Water License	
0		April 2013	Updated to Support 2013 Work Program	

Track Changes Table

A review and update of the Waste Management Plan for Operation, Construction and Closure has been undertaken, with the following salient revisions to the January 2012 version (H337697-0000-07-126-0001, Rev C, FEIS Appendix 10D-4):

Revision 0, April 2013:

Modification/Addition	Where they appear in the document	
	Section	Page Number
Addition of section regarding applicability for 2013 Work Plan	1.1	1
Addition of potential water licence conditions	1.4	3
Addition of Baffinland 2013 HSE Policy, removal of Sustainability Policy	2	6
Updated waste generation estimates considering 2013 Work Plan	Table 4-2, 4-3, 4-4	12-16
Updated incinerator allocation considering 2013 Work Plan	Table 4-6	23-24
Updated Roles and Responsibility section to reflect 2013 Work Plan	5	32
Updated Milne Inlet and Mine Site Block Flow Diagrams reflecting 2013 Work Plan	Annex 1	N/A
Updated Milne Inlet and Mine Site Layouts reflecting 2013 Work Plan	Annex 2	N/A
Inclusion of 2013 Work Plan	Annex 7	N/A

Table Of Contents

1. Introduction.....	1
1.1 2013 Work Plan	1
1.2 Purpose.....	2
1.3 Definitions	3
1.4 Regulatory Requirements	3
1.5 Relationship to Other Management Plans	5
1.6 Baffinland's Commitments	5
1.7 Update of This Management Plan	6
2. Baffinland Policy.....	6
2.1 Health Safety and Environment (HSE) Policy	6
2.2 Baffinland Sustainability Policy	7
3. Targeted VEC's	9
4. Waste Management Approach	9
4.1 Waste Identification.....	9
4.2 Waste Management Methods.....	10
4.3 Waste Flow	17
4.3.1 Generation Points	17
4.3.2 Waste Collection	17
4.3.3 Temporary Waste Sorting and Processing Facilities (during Construction Phase only).....	17
4.3.4 Permanent Waste Sorting and Processing Facilities	17
4.4 Waste Handling and Minimization by Category	20
4.4.1 Grubbed Material and Soil	20
4.4.2 Other Spoils Removed During Excavation	20
4.4.3 Nonhazardous Waste Materials Generated During Construction Operations.....	20
4.4.4 Unset Concrete and Concrete Wash Water from Mixing and Transportation of Concrete	21
4.4.5 Camp Site Waste.....	22
4.4.6 Sewage Generated at the Various Working Locations and at the Rail Camp Sites	22
4.4.7 Hazardous Waste	22
4.4.8 Other Miscellaneous Materials, or Items that No Longer Have Economic Value	22
4.4.9 Office Paper	23
4.5 Incinerators	23
4.5.1 Personnel Training Programs for Incinerator Operation.....	24
4.5.2 Air Emissions	24
4.5.3 Ash Disposal.....	25
4.5.4 Monitoring During Operation	26
4.6 Inert Landfill	27
4.6.1 Landfill Operation.....	28
4.6.2 Operating Procedure	28
4.6.3 Placement of waste	28
4.6.4 Monitoring during operation	29
4.6.5 Annual Report.....	29

4.7	Hazardous Waste Storage and Disposal.....	30
4.8	In-Site Treatment of Hydrocarbon Contaminated Material.....	30
4.9	Ship waste management	31
4.10	Used Tires.....	31
4.11	Propylene Glycol.....	31
4.12	EPP Procedures Relevant to this Waste Management Plan.....	31
5.	Roles and Responsibilities	32
5.1	Roles and Responsibilities.....	32
5.1.1	Environmental Project Team	32
5.1.2	Mary River Project Organizational Charts	35
5.2	Training Programs	37
5.3	Communication	38
5.4	External Communications.....	38
5.5	Construction.....	39
5.6	Operation and Closure.....	39
6.	Performance Indicators, Thresholds, and Incident Response	39
7.	Monitoring and Reporting Requirements	39
7.1	Waste Monitoring.....	39
7.1.1	Incinerator Monitoring.....	40
7.1.2	Landfill Monitoring.....	40
7.1.3	Hazardous Waste Monitoring	41
7.1.4	Landfarm Monitoring.....	41
7.2	Operations Monitoring	41
7.3	Data Management	41
7.4	Water Licence Reporting	41
7.5	Stakeholder Reporting	42
8.	Adaptive Strategies	42
9.	QA/QC	42
10.	References	43

List of Annex

Annex 1: Block Waste Flow Diagrams

- H337697-7000-07-002-0001 Milne Port Site - Block Flow Diagram for Construction Solid Waste
- H337697-4210-07-002-0001 Mine Site - Block Flow Diagram for Construction/Operation Solid Waste
- H337697-4510-07-002-0001 Steensby Port Site - Block Flow Diagram for Construction/Operation Solid Waste
- H337697-7000-07-002-0003 Ravn River Rail Camp - Block Flow Diagram for Construction Solid Waste
- H337697-7000-07-002-0002 Mid Rail Rail Camp - Block Flow Diagram for Construction Solid Waste
- H337697-7000-07-002-0004 North Cockburn Lake Rail Camp- Block Flow Diagram for Construction Solid Waste
- H337697-7000-07-002-0005 South Cockburn Lake Rail Camp - Block Flow Diagram for Construction Solid Waste

Annex 2: Locations and Layouts of Waste Management Facilities

- H337697-7000-10-014-1001 Milne Inlet Construction Works Site Layout
- H337697-7000-10-014-1002 Mary River Mine Site Construction Works Site Layout
- H337697-7000-10-014-1003 Ravn River Rail Camp Construction Works Site Layout
- H337697-7000-10-014-1004 Mid Rail Camp Construction Works Site Layout
- H337697-7000-10-014-1005 South Cockburn Lake Rail Camp Construction Works Site Layout
- H337697-7000-10-014-1006 Steensby Inlet Construction Works Site Layout
- E337697-0000-10-042-0001 General Arrangement of Typical Landfarm
- E337697-PM406-50-014-0001 Milne Inlet Environmental Waste Management Building Layout
- H337697-7000-10-042-0007 Milne Inlet Environmental Waste Management Facilities
- H337697-4350-10-014-0001 Mine Site Landfill and Landfarm Site Layout
- H337697-4350-10-042-0001 Mine Site Environmental Waste Management Facility
- E337697-PM406-50-014-0002 Mine Site Environmental Waste Management Building Layout
- H337697-4660-10-014-0001 Steensby Inlet Landfill and Landfarm Site Layout
- E337697-PM406-50-014-0003 Steensby Inlet Environmental Waste Management Building Layout
- H337697-4660-10-042-0001 Steensby Inlet Environmental Waste Management Facility

Annex 3: Incinerator Operation Information

1. H377697-PM406: Section 2 - General Description ECO 1TN 1P
2. H377697-PM406: Section 5 - Operating Instructions ECO 1TN 1P
3. H377697-PM406: Section 6 - Maintenance Instructions ECO 1TN 1P

Annex 4: Mary River Project Landfill Operating Manual

Annex 5: Landfarm Operation Information

- Hydrocarbon Impacted Soils Storage and Landfarm Facility Operations Maintenance and Monitoring Plan (EBA, 2010)

Annex 6: Waste Sorting Guidelines

Annex 7: 2013 Work Plan and Site Layout Drawings

1. Project Location Map – Figure 1.1
2. Milne Port Site Layout - H349000-2000-00-015-0002
3. Tote Road - Drainage Crossing Locations Plan (All Crossings) – NB102-181/10 400
4. Mine Site - Site Layout - H349000-4000-00-015-0002
5. Mine Site Enhanced Site Layout - H349000-4000-00-015-0003
6. Existing Site Layout At Mid Rail Camp – Figure 1.6
7. Existing Site Layout At Steensby Port – Figure 1.7

ABBREVIATIONS

Baffinland	:	Baffinland Iron Mines Corporation
CCME	:	Canadian Council of Ministers of the Environment
EHS	:	Environmental, Health and Safety
EIS	:	Environmental impact statement
EPCM	:	Engineering, Procurement, and Construction Management
EPP	:	Environmental Protection Plan
ERCB	:	Energy Resources Conservation Board
HSE	:	Health, Safety and Environment
IIBA	:	Inuit Impacts Benefits Agreement
the Project	:	Mary River Project
NIRB	:	Nunavut Impact Review Board
NWB	:	Nunavut Water Board
NWT	:	Northwest Territories
QIA	:	Qikiqtani Inuit Association
TDG	:	Transportation of Dangerous Goods
VEC	:	Valued Ecosystem Components
WMP	:	Waste Management Plan

1. Introduction

Baffinland Iron Mines Corporation is committed to taking the necessary steps to ensure that the collection, handling, storage, transportation and disposal of wastes generated during the construction, operation and closure of the Mary River Project is conducted in a safe, efficient and environmentally compliant manner. One of the first steps towards achieving these goals is the preparation of this Waste Management Plan for Construction, Operation and Closure (WMP). The WMP establishes the roles and responsibilities of employees, contractors and other site personnel as well as protocols for handling, storing and disposing of all solid wastes generated onsite. The intent is to afford a high degree of control over the waste generation and to minimize the adverse environmental effects associated with waste generation.

The basis of a sound waste management program lies in the three R's: reduction, recovery, reuse and recycling of wastes. The main objectives of this WMP are:

- the creation of a framework for the proper handling and disposal of wastes
- the minimization of potentially adverse impacts on the environment
- compliance with all regulatory requirements for waste management.

Waste generation follows the "Cradle to Grave" principle. It is the primary responsibility of all personnel to implement the plan as outlined, in accordance with their contractual and legal obligations, under the supervision of the Project Manager or Site Manager as assisted by the Site Environmental Coordinator (SEC).

This WMP applies to the Construction, Operation and Closure Phase of the Mary River Project at all project sites. This plan will be reviewed on an annual basis and updated as necessary to accommodate any deficiencies, inadequacies or potential improvements that are identified.

1.1 2013 Work Plan

A camp currently operates at both Milne Port and Mary River Mine site to support exploration activity on site. During the summer of 2013 new equipment will begin to arrive onsite for use during the construction and mining operation phase of the site. Prior to the 2013 sealift, minor site preparation activities will be undertaken at Milne Port and the Mine Site from May to July 2013 to prepare for sea lift and post sea lift construction phase of the work program. The completion of this work is contingent on receipt of a new Type B Licence (currently in process) and approval of applicable Work Plan activities by the QIA. The 2013 Work Plan and site layout plans are presented in Annex 7 to this report. Throughout the remainder of 2013 a portion of the construction and operation phase facilities will need to be installed, commissioned and brought into service. The waste management infrastructure at each project site will continued to be used as approved and designed for. During start-up and commissioning of the new waste management infrastructure, personnel levels will remain within the design capacity at each site. For the 2013, this plan will be applied as appropriate

to all project sites applicable under the existing/future Type B and future Type A Water Licence including Milne Port and the Mary River Mine Site.

1.2 Purpose

The aim of the Waste Management Plan is to implement a sound waste minimization program that will focus upon the principles of Reduction/Recovery/Reuse/Recycling. The residual waste generated by the Project activities will then be disposed of in a landfill/landfarm, incinerated or shipped off-site to southern Canada for final disposal, treatment, or recycling.

This Waste Management Plan deals with wastes generated by the Mary River Project including, among others, inert and non-hazardous solid wastes, i.e., solids, semi-solid and sludge, construction debris, domestic waste etc. The management of sewage effluent and sludge from the sewage treatment plants is the subject of the Fresh Water Supply, Sewage, and Wastewater Management Plan, H349000-1000-07-126-0006. The management of hazardous wastes (used oils, contaminated fuel, and antifreeze, used chemical products, biomedical waste and spills clean-up materials) is the subject of the Hazardous Materials and Hazardous Waste Management Plan, H349000-1000-07-126-0008.

The Waste Management Plan presents the various disposal methods, the types and expected quantities of waste produced and the ultimate disposal of the waste stream. The Plan also defines the roles and responsibilities, specific requirements, and monitoring controls for managing solid and hazardous wastes generated by the Project. It also presents the strategy for adaptive management and continuous improvement.

In order to handle, storage, transport and treat/dispose the wastes generated during the construction, operation and closure phase of the Project, several treatment or disposal facilities must be built on-site to ensure that the waste management is being conducted in a safe, efficient and environmental-compliant manner. The infrastructure deemed necessary to manage the wastes appropriately are:

- Two long term waste management facilities at the Mine Site and Steensby Port.
- Two long term landfills and land farm's at the Mine Site and Steensby Port.
- Temporary landfarm, incinerator, hazardous/medical waste storage facility and waste oil treatment/recovery facility at Milne Port.
- Temporary incinerator and waste storage areas at Mine Site, Steensby Port and Rail Camps for use only during construction.
- Short term waste storage area at a future possible Tote Road camp (subject to regulatory approval).

All Project activities are regulated and will be performed according to the law and regulations applicable to the Project and procedures developed.

The Waste Management Plan (WMP) presented in this document establishes a management strategy for all the wastes generated during the construction, operation, closure and reclamation of the Project.

1.3 Definitions

- Project** : All necessary tasks and work from construction, operation, closure and reclamation phase, during the lifespan of the Project, on the Site.
- Site** : All of the areas occupied by the Project facilities (permanent or temporary) during the construction, operation, closure and reclamation phase of the Project.
- Contractor** : A person or business which provides goods, material, equipment, personnel, and/or services to Baffinland Iron Mines Corporation under terms specified in a contract.
- Waste** : All residual material (hazardous, non-hazardous or Putrescible) generated during the construction, operation, closure and reclamation phase of the Project.
- Hazardous Waste** : All kind of wastes generated during the lifespan of the Project and that present a threat to the human health or the environment because they possess one or more of the following characteristics: corrosive, reactive, explosive, toxic, inflammable, or biologically infectious.
- Non-Hazardous Waste** : All kind of wastes generated during the lifespan of the Project and that do not present a threat to human health or the environment.
- Putrescible Wastes** : All kind of wastes generated during the lifespan of the Project and that are degraded very rapidly, i.e., plants, food scraps or animal remains.

1.4 Regulatory Requirements

A number of Acts and Regulations provide specific requirements for the management of the different types of waste generated at the Mary River Project. They are:

- Territorial Lands Act 1985
- Territorial Land Use Regulations
- Nunavut Waters and Nunavut Surface Rights Tribunal Act 2002
- Canadian Environmental Protection Act
- Transportation of Dangerous Goods Act and Regulations
- Safety Act, Occupational Health and Safety Regulations

- Work Site Hazardous Materials Information Systems Regulations
- Export and Import of Hazardous Waste Regulations
- Spill Contingency Planning and Reporting Regulations
- National Fire Code
- Public Health Act
- Explosives Act
- Fisheries Act
- Metal Mining Effluent Regulations
- Petroleum Refining Liquid Effluent Regulation.

Due to the complexities and the number of acts and regulations involved, the Government of Nunavut has published a number of Guidelines to assist the generators of waste in the development and an effective waste management plan for their specific sites. These guidelines are listed as references in Section 10.

The Project will be subject to a future Type 'A' Water License. Proposed site preparation activities between May and July 2013 will be subject to its current and new Type 'B' Water Licences. Conditions during the construction phase of the Project regarding aspects of waste disposal as outlined in this Plan will/are specified by water license terms and conditions and may include the following:

- The Licensee shall perform regular inspection of all waste management facilities. Records of inspection shall be available for the Inspector upon request.
- Submission of landfill expansion design documents t prior to construction.
- Any required updates to the Landfill Operations and Maintenance Plan.
- Submission of a revised Environmental Monitoring Plan.
- The Licensee shall locate areas designated for solid waste transfer or temporary storage at a minimum distance of thirty-one (31) metres from the ordinary high water mark of any water body such that the quality, quantity or flow of water is not impaired, unless otherwise approved by the Board in writing.
- Prior to the removal and transfer of waste, a declaration of authorization must be obtained from the Hamlet of Pond Inlet which clearly indicates the authorization to allow the deposit of solid waste in the Hamlet's NWB licensed solid waste facility.
- Records must be maintained of waste (including hazardous waste, waste oil, and non-combustible waste) that is backhauled and records must be maintained confirming proper disposal/fate of backhauled waste.

- Food waste, paper waste, and wood products must be incinerated using an incinerator capable of meeting Canada Wide Standards for Dioxins and Furans, and Mercury.
- The Licensee shall implement waste reduction and recycling practices.
- To the extent possible, the Licensee shall sort waste at the source.
- Recyclable waste material (scrap metal/machinery) shall be stored separately from general debris and solid waste.
- All solid waste generated at temporary construction sites or at Milne Port shall be transported to either the Mine Site landfill or the Steensby Port landfill for ultimate disposal.

1.5 Relationship to Other Management Plans

This plan is based on the concepts and principles found in Appendix 10A-1 EHS Management System Framework Standard and 10A-2 Hazard Identification and Risk Assessment Standard of the FEIS. The plan should be reviewed in concert with the following additional plans that have been prepared for the FEIS and in some cases, updated in early 2013:

- Construction Environmental Protection Plan (updated April 2013).
- Surface Water and Aquatic Ecosystem Management Plan (updated March 2013).
- Wastewater Management Plan (updated March 2013).
- Freshwater Supply, Sewage and Wastewater Management Plan (updated March 2013).
- Preliminary Mine Closure and Reclamation Plan.
- 2013 Abandonment and Reclamation Plan for Advanced Exploration Activities (updated January 2013).
- 2013 Work Plan Marginal Closure Cost Summary.
- Air Quality and Noise Management Plan (updated March 2013).
- Emergency Response and Spill Contingency Plan (Updated April 2013).
- Explosives Management Plan.
- Terrestrial Wildlife Management Plan.
- Hazardous Materials and Hazardous Waste Management Plan (Updated April 2013).

1.6 Baffinland's Commitments

Baffinland provides adequate resources to implement and maintain the EHS Management System including the necessary human, material and financial resources. Baffinland's Health Safety and Environment (HSE) Policy is presented in Section 2.

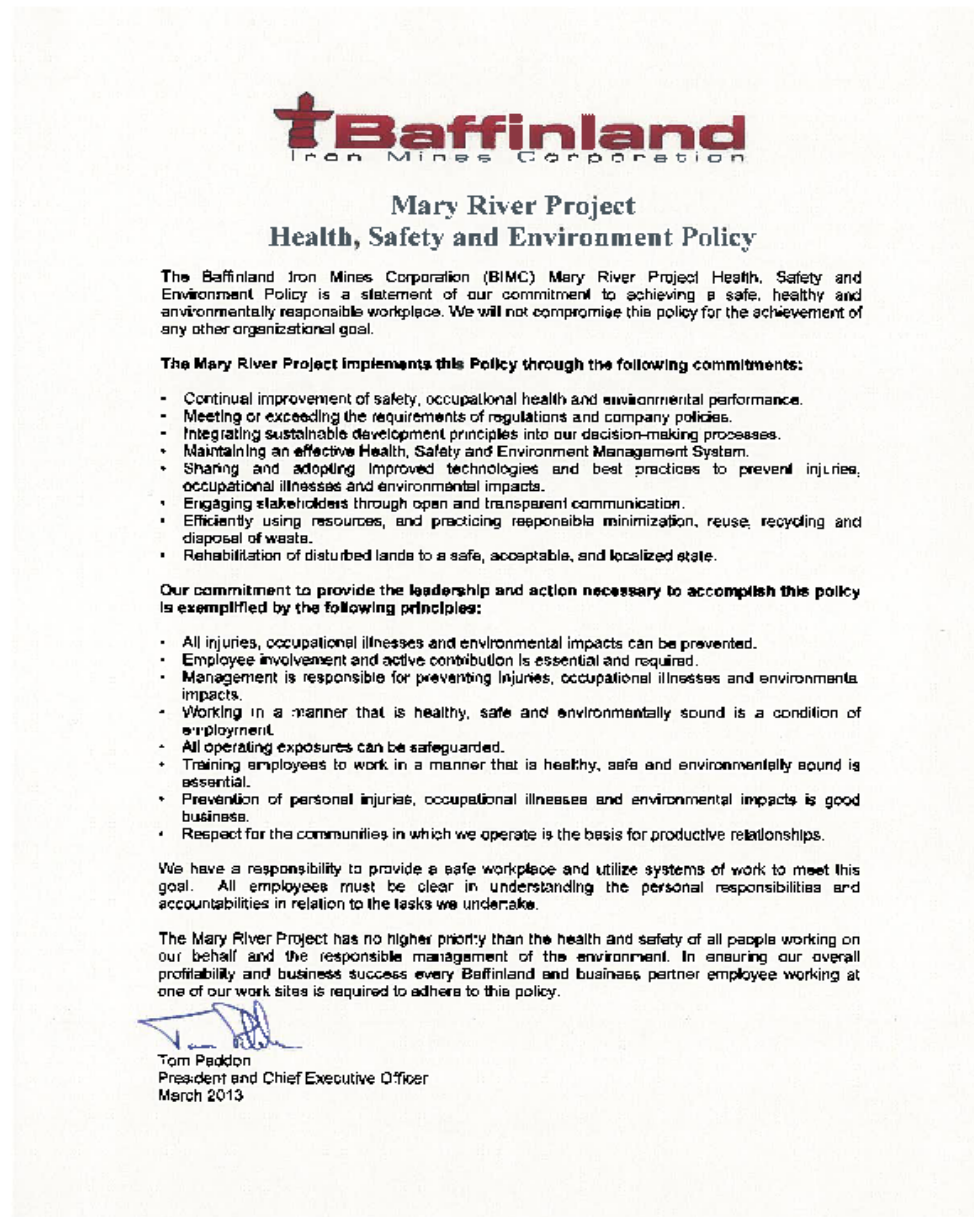
1.7 Update of This Management Plan

The Waste Management Plan is a “living document”. It will be regularly updated on the basis of management reviews (as outlined in Section 8), incident investigations, regulatory changes or other Project related changes.

2. Baffinland Policy

2.1 Health Safety and Environment (HSE) Policy

Figure: Health Safety and Environment (HSE) Policy



2.2 Baffinland Sustainability Policy



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

1.0 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.

2.0 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.

3.0 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.

4.0 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

3. Targeted VEC's

Waste will be generated throughout the life cycle of the project. To ensure that wastes are handled, stored and managed in a safe and environmentally acceptable manner, Baffinland will apply best practices for its waste management activities.

Inadequate handling, storage and elimination of waste could impact the following valued ecosystem components (VECs):

- Soils (spills and contamination).
- Water quality (contamination of runoff).
- Fish and fish habitat.
- Permafrost.
- Vegetation (uptake of contaminants or loss of vegetation).
- Birds (exposure and ingestion of contaminants).
- Terrestrial wildlife (exposure and ingestion of contaminants).
- Human health (exposure and ingestion of contaminants).

4. Waste Management Approach

The aim of the Waste Management Plan is to implement a sound waste minimization program that will focus upon the principles out lined in Appendix 10A-1 EHS Management System Framework Standard. The remaining waste will then be disposed of in a non-hazardous landfill, incinerated or shipped off-site for final disposal/treatment or recycling.

4.1 Waste Identification

A summary of the types of waste expected to be generated by the Project, and disposal method, are presented below. Operations and Maintenance procedures will be developed for each waste to be managed. This information will be summarized in manuals and training will be provided as required. For the majority of long term infrastructure, the facilities used in construction will be the same ones used during the operations phase.

Table 4-5 presents an overview of the types of waste generated by the Mary River Project and the general disposal method for each type of waste.

Table 4-2, Table 4-3, and Table 4-4, presents the expected quantities of waste generated for the construction and operation phases respectively presents the expected quantities of waste generated for the construction and operation phases respectively.

4.2 Waste Management Methods

Wastes remaining after application of the waste minimization techniques will be managed in a practical and environmentally responsible manner utilizing methods appropriate for each waste type generated. The following methods will be applied at the site:

- Waste sorting at all generation points.
- Incineration of non-hazardous combustible wastes.
- Open burning in a regulated burn pit of untreated wood and cardboard.
- Landfilling of inert non-combustible wastes.
- Temporary storage and off-site shipping of hazardous and recyclable waste materials.
- On-site treatment for contaminated soil and oily water from hydrocarbon spills in a landfarm.

Note: Prior to the commencement of any open burning Baffinland will incorporate into the Waste Management Plan a section that details open burning QA/QC provisions including requirements to document and report on the type and quantity of material being burnt. Surface water and sediment quality of potentially affected water bodies will be monitored as outlined by the Surface Water and Aquatic Ecosystems Management Plan.

Table 4–1: Waste Type and General Disposal Methods

Source	Waste Description	Waste Type	General Disposal Method
Offices	Computers and other electronic wastes, fluorescent lights	Recycle	Off-site recycling or disposal
	Waste paper	Combustible/ non-hazardous	Incineration
Wastewater treatment facility	Biological sludge (dried solids)	Combustible/ non-hazardous	Incineration/Landfilling
Maintenance complex	Used batteries, waste hydrocarbon products, engine oil, oil filters, glycols, aerosol cans, refrigerants, solvents, etc.	Hazardous	Off-site recycling or disposal, possible reuse of fuel and oil for heating and other uses.
	Scrap metal, tires, rubber, plastic	Inert	Inert landfill
Laboratory	Chemical laboratory wastes, toxic substances	Hazardous	Off-site recycling or disposal
Domestic waste from construction camp, accommodation facility and kitchens/canteens	Accommodation facility garbage, food wastes	Combustible/ non-hazardous	Incineration

Source	Waste Description	Waste Type	General Disposal Method
Inert waste from construction sites and materials from operations	Treated wood, plastics, cement, sand, used construction materials, metal, pipes, glass, insulation, etc.	Inert	Landfill
	Untreated wood/cardboard	Combustible/non-hazardous	Incineration/open burning
Medical facility	Biomedical wastes	Hazardous	Biomedical off-site disposal
Incinerator	Ash (placed in closed drums)	Inert	Inert Landfill (if non-hazardous)
Fuel spill	Hydrocarbon-contaminated soil	-	On-site treatment using landfarm facility
Fuel spill	Hydrocarbon-contaminated snow/water/ice	-	On-site treatment and reuse of product if practical

Table 4–2: Waste Generation Estimates

Non-Hazardous Solid Waste Generation Estimate										
Project Phase and Location	Time Period	On Site Personnel ⁽¹⁾	Total Waste Generated (excluding sludge and ash) ⁽²⁾	Incineration Waste			Inert Landfill Waste			
				Waste Stream - Suitable for Incineration	Sewage Sludge Cakes ⁽⁶⁾	Total Waste Incinerated	Waste Stream - Suitable for Landfill	Inert Wastes ⁽⁶⁾	Ash ⁽⁷⁾⁽⁹⁾	Total
			(tonnes)						(m ³)	
2013 WORK PLAN										
Mine Site Camp	Daily (avg)	320	1.79	0.60	0.12	0.72	1.19	2.99	0.36	3.34
	Annual	320	654	218	43.2	261	436	1090	131	1221
	Total ⁽⁷⁾ (2 years)		1308	436	86.4	522	872	2180	261	2442
Milne Inlet Camp	Daily (avg)	175	0.98	0.33	0.06	0.39	0.65	1.63	0.20	1.83
	Annual	175	358	119	23.6	143	238	596	71	668
	Total ⁽⁷⁾ (2 years)		715	238	47.3	286	477	1192	143	1335
Tote Road Construction Camp ⁽⁸⁾	Daily (avg)	49	0.27	0.09	0.02	0.11	0.18	0.46	0.05	0.51
	Annual	49	100	33	6.6	40	67	167	20	187
	Total ⁽⁷⁾ (2 years)		200	67	13.2	80	134	334	40	374
2013 Work Plan Total			2224	741	147	888	1483	3706	444	4151
CONSTRUCTION PHASE ⁽³⁾										
Mine Site Camp	Daily (avg)	1200	6.72	2.24	0.44	2.68	4.48	11.20	0.67	11.87
	Annual	1200	2453	818	162.1	980	1635	4088	245	4333
	Total ⁽⁷⁾ (4 years)		9811	3270	648.2	3919	6541	16352	980	17332
Steensby Port Camp	Daily (avg)	600	3.36	1.12	0.22	1.34	2.24	5.60	0.34	5.94
	Annual	600	1226	409	81.0	490	818	2044	122	2166
	Total ⁽⁷⁾ (4 years)		4906	1635	324.1	1959	3270	8176	490	8666
Milne Port Camp	Daily (avg)	165	0.92	0.31	0.06	0.37	0.62	1.54	0.09	1.63
	Annual	165	337	112	22.3	135	225	562	34	596
	Total ⁽⁷⁾ (4 years)		1349	450	89.1	539	899	2248	135	2383

Non-Hazardous Solid Waste Generation Estimate										
Project Phase and Location	Time Period	On Site Personnel ⁽¹⁾	Total Waste Generated (excluding sludge and ash) ⁽²⁾	Incineration Waste			Inert Landfill Waste			
				Waste Stream - Suitable for Incineration	Sewage Sludge Cakes ⁽⁶⁾	Total Waste Incinerated	Waste Stream - Suitable for Landfill	Inert Wastes ⁽⁶⁾	Ash ⁽⁷⁾⁽⁹⁾	Total
				(tonnes)				(m ³)		
Rail Camp (Ravn River) ⁽⁸⁾	Daily (avg)	200	1.12	0.37	0.07	0.45	0.75	1.87	0.11	1.98
	Annual	200	409	136	27.0	163	273	681	41	722
	Total ⁽⁷⁾ (4 years)		1635	545	108.0	653	1090	2725	163	2889
Rail Camp (Mid Rail) ⁽⁸⁾	Daily (avg)	200	1.12	0.37	0.07	0.45	0.75	1.87	0.11	1.98
	Annual	200	409	136	27.0	163	273	681	41	722
	Total ⁽⁷⁾ (4 years)		1635	545	108.0	653	1090	2725	163	2889
Rail Camp (North Cockburn) ⁽⁹⁾	Daily (avg)	200	1.12	0.37	0.07	0.45	0.75	1.87	0.11	1.98
	Annual	200	409	136	27.0	163	273	681	41	722
	Total ⁽⁷⁾ (4 years)		1635	545	108.0	653	1090	2725	163	2889
Rail Camp (South Cockburn) ⁽⁹⁾	Daily (avg)	300	1.68	0.56	0.11	0.67	1.12	2.80	0.17	2.97
	Annual	300	613	204	40.5	245	409	1022	61	1083
	Total ⁽⁷⁾ (4 years)		2453	818	162.1	980	1635	4088	245	4333
Construction Total			20971	6990	1386	8376	13981	34952	2094	37046
OPERATION PHASE ⁽⁴⁾										
Mine Site Camp	Daily (avg)	475	2.66	1.33	0.18	1.51	1.33	3.33	1.51	4.83
	Annual	475	971	485	64.1	550	485	1214	550	1763
	Total ⁽⁷⁾ (20 years)		19418	9709	1283.0	10992	9709	24273	10992	35264
Steensby Port Camp	Daily (avg)	175	0.98	0.49	0.06	0.55	0.49	1.23	0.55	1.78
	Annual	175	358	179	23.6	202	179	447	202	650
	Total ⁽⁷⁾ (20 years)		7154	3577	472.7	4050	3577	8943	4050	12992
Operation Total			26572	13286	1756	15042	13286	33215	15042	48257

Non-Hazardous Solid Waste Generation Estimate

Project Phase and Location	Time Period	On Site Personnel ⁽¹⁾	Total Waste Generated (excluding sludge and ash) ⁽²⁾	Incineration Waste			Inert Landfill Waste			
				Waste Stream - Suitable for Incineration	Sewage Sludge Cakes ⁽⁶⁾	Total Waste Incinerated	Waste Stream - Suitable for Landfill	Inert Wastes ⁽⁶⁾	Ash ⁽⁷⁾⁽⁹⁾	Total
				(tonnes)				(m ³)		

⁽¹⁾ Maximum populations were assumed to be carried year round to be conservative

⁽²⁾ Disposal Rate of 5.6 kg/day - Cold Region Utilities Monograph, 3rd edition, pg 14-16 1996

⁽³⁾ Assumed 1/3 of waste stream is suitable for incineration, 2/3 suitable for landfill during construction phase due to high amounts of packaging waste during construction

⁽⁴⁾ Assume 1/2 of waste stream is suitable for incineration, 1/2 suitable for landfill during operation phase as per Meadowbank Landfill Management Plan, 2008

⁽⁵⁾ Estimated sewage sludge production at 0.37 kg/person/day based on Draft EIS Appendix 10D-3, Seprotech specification

⁽⁶⁾ Estimated waste density was assumed as 0.4 tonnes/m³ for moderately compacted solid waste - AMEC Earth & Environmental. Victor Diamond Mine Project Comprehensive Study. Waste Management Addendum Jan 18 2005

⁽⁷⁾ Estimated ash density was assumed as 1.0 tonnes/m³ - AMEC Earth & Environmental. Victor Diamond Mine Project Comprehensive Study. Waste Management Addendum Jan 18 2005

⁽⁸⁾ Assume all waste suitable for landfill goes to Mine site

⁽⁹⁾ Assume all waste suitable for landfill goes to Steensby Port

⁽⁹⁾ Assume 95% volume reduction, 200 kg/m³ density for non-compacted waste

Table 4–3: Estimated Domestic Solid Non Hazardous Waste Generation

Waste	Waste Description	Disposal Method	Est. Total Annual Production (tonnes)
2013 Work Plan			
Organic	Kitchens	Incinerator	586
Paper	Packaging/Offices	Incinerator/On-site landfill	168
Plastic	Offices/Camps	Incinerator ² /On-site landfill	120
Cardboard	Packaging/Camps	Incinerator	128
Cloth	Camps	Incinerator	39
Multi-Material	Packaging/Camps	Incinerator/On-site landfill	28
Metal	Packaging	On-site landfill	17
Glass	Camps	On-site landfill	16
Wood	Packaging	Incinerator	11
Construction Phase			
Organic	Kitchens	Incinerator	6172
Paper	Packaging/Offices	Incinerator/On-site landfill	1769
Plastic	Offices/Camps	Incinerator ² /On-site landfill	1265
Cardboard	Packaging/Camps	Incinerator	1347
Cloth	Camps	Incinerator	410
Multi-Material	Packaging/Camps	Incinerator/On-site landfill	293
Metal	Packaging	On-site landfill	176
Glass	Camps	On-site landfill	164
Wood	Packaging	Incinerator	117
Operation Phase			
Organic	Kitchens	Incinerator	7002
Paper	Packaging/Offices	Incinerator/On-site landfill	2006
Plastic	Offices/Camps	Incinerator ³ /On-site landfill	1435
Cardboard	Packaging/Camps	Incinerator	1528
Cloth	Camps	Incinerator	465
Multi-Material	Packaging/Camps	Incinerator/On-site landfill	332
Metal	Packaging	On-site landfill	199
Glass	Camps	On-site landfill	186
Wood	Packaging	Incinerator	133

¹ Composition based in part on 2011 Mary River Waste Audit results (Aug 27 - Aug 29), Assume 50% of waste generated to be domestic

² Poly-chlorinated plastics will be sorted out of waste stream and sent to landfill and will not be incinerated

Table 4-4: Estimated Hazardous Waste Generation ¹

Waste	Waste Description	Disposal Method	Est. Total Annual Production (tonnes)
2013 Work Plan			
Waste oils and fluids	Maintenance	Shipped off Site	0.64
Batteries	Maintenance	Shipped off Site	0.06
Spent activated carbon	Domestic	Shipped off Site	0.06
Aerosol containers	Misc.	Shipped off Site	0.04
Empty compressed gas cylinders	Misc.	Shipped off Site	minimal
Kitchen grease	Kitchen	Shipped off Site	0.28
Crushed drums/plastic pails	Misc.	Shipped off Site	0.13
Spoiled CaCl	Drilling	Shipped off Site	0.02
Construction Phase			
Waste oils and fluids	Maintenance	Shipped off Site	133
Batteries	Maintenance	Shipped off Site	13
Spent activated carbon	Domestic	Shipped off Site	13
Aerosol containers	Misc.	Shipped off Site	8
Empty compressed gas cylinders	Misc.	Shipped off Site	minimal
Kitchen grease	Kitchen	Shipped off Site	57
Crushed drums/plastic pails	Misc.	Shipped off Site	26
Spoiled CaCl	Drilling	Shipped off Site	4
Operation Phase			
Waste oils and fluids	Maintenance	Shipped off Site	76
Batteries	Maintenance	Shipped off Site	7
Spent activated carbon	Domestic	Shipped off Site	8
Aerosol containers	Misc.	Shipped off Site	5
Empty compressed gas cylinders	Misc.	Shipped off Site	minimal
Kitchen grease	Kitchen	Shipped off Site	33
Crushed drums/plastic pails	Misc.	Shipped off Site	15
Spoiled CaCl	Drilling	Shipped off Site	3
Contaminated Soils or Snow to Landfarm during all phases (m³)²			
Soils contaminated with Hydrocarbon	Fuel spill	On-site treatment (landfarm)	8400
Water/ice/snow contaminated with HC	Fuel spill	On-site treatment (landfarm)	25200

¹ Composition based on Canutuec Hazardous Waste Shipment Manifest from Mary River Project 2011

² Assume 350 m³ of contaminated soil 1/4 of the year, Landfarm Design and Management Plan, Meadowbank Mine (Golder, 2007)

³ Assume 350 m³ of contaminated snow/ice 3/4 of the year, Landfarm Design and Management Plan, Meadowbank Mine (Golder, 2007)

4.3 Waste Flow

Visual representations of waste flows are presented in Annex as block flow diagrams. Waste streams are described and their respective storage and treatment paths are demonstrated. Diagrams are provided for construction and operation phase for the Mine Site and Steensby Port. Diagrams are provided for construction phase for Milne Port, Mid-Rail Rail Camp, Ravn River Rail Camp and Cockburn Lake Rail Camp.

4.3.1 Generation Points

Waste will be sorted and collected at all major generation points at each project site (Mary River, Steensby Port, Milne Port, and Rail Camps) according to the Mary River Project Waste Sorting Guidelines (Annex 6). Disposal will occur in appropriately labelled receptacles based on disposal methods and waste sorting guidelines. This will ensure waste types are disposed of in the correct methods as outlined in Table 4–1. Waste will be stored indoors or in secure wildlife proof receptacles prior to collection.

4.3.2 Waste Collection

Waste will be collected from generation points regularly by a waste collection vehicle(s) and taken the appropriate waste handling facility for treatment and/or final disposal as shown in Annex 1. Waste will be collected by personnel trained in waste handling guidelines and personnel will use visual inspection to ensure waste types are taken to the appropriate treatment or disposal location.

4.3.3 Temporary Waste Sorting and Processing Facilities (during Construction Phase only)

Temporary waste management facilities will be constructed at all sites (Mary River, Steensby Port, Milne Port, Ravn River Rail Camp, Mid Rail Camp and South Cockburn Lake Rail Camp for use only during the construction phase. These facilities will consist of:

- A secure central depot where waste generated across the site will be managed, properly processed, packaged, labelled, inventoried, secured (e.g., on pallets) and stored for transportation to disposal site as per Block Flow Diagrams in Annex 1.
- All wildlife attracting wastes such as organics, sewage waste or petroleum based chemicals will be stored animal proof containers inside a secured area that will be monitored.

As much as possible and practical, the various waste streams will be sorted at the source according to the Mary River Project Waste Sorting Guideline (Annex 6).

4.3.4 Permanent Waste Sorting and Processing Facilities

Permanent waste management facilities will be constructed at Steensby Port and the Mine Site. These facilities will consist of a heated all season building and adjacent laydown areas that provide the following capabilities, functions and/or facilities:

- A central depot where waste generated across the site will be managed, properly processed, packaged, labelled, inventoried, secured (e.g., on pallets) and stored for sealift or reuse on site.

- The waste management facility has a poured concrete floor with large doors for transferring waste in and out plus an adjacent office for the waste management technician.
- Waste oil storage tank adjacent to facility with waste oil filtering process inside and temporary storage for filtered or unfiltered oil.
 - ♦ The filtered waste oil will be used for waste oil burners used to heat select facilities on site which include the waste management facility itself, truck warming shed, etc. Waste oil can also be blended into fuel for certain operations.
- Oil filter draining and crushing facility.
- Drum crushing machine.
- Strapping and plastic wrap capabilities.
- Label making capabilities.

As much as possible and practical, the various waste streams will be sorted at the source according to the Mary River Project Waste Sorting Guideline (Annex 6).

All food waste and other animal attractants (greases, glycol based antifreeze) will be stored inside of the facility prior to incineration to avoid the attraction of wildlife.

Table 4–5: Mary River Project Waste Management Facility Summary

Location	Facility Type	Components	Function
Milne Port	Temporary - Waste Management Facility	<ul style="list-style-type: none"> • Secured laydown area • Heated building • Incinerator • secure hazardous waste storage area • Used tire storage area 	A central depot where hazardous waste and waste suitable for incineration generated across the site will be managed properly processed, packaged, labelled, inventoried, and treated and/or stored for disposal on site or off site as appropriate.
Milne Port	Landfarm	<ul style="list-style-type: none"> • Landfarm facility 	See Annex 5.
Mine Site	Temporary - Waste Management Facility	<ul style="list-style-type: none"> • Secured laydown area • Secure hazardous waste storage area and containers • Animal proof containers for storage of animal attracting waste 	A secure central depot where waste generated across the site will be managed, properly processed, packaged, labelled, inventoried, secured (e.g., on pallets) and stored for transportation to disposal or treatment locations
Mine Site	Landfarm	<ul style="list-style-type: none"> • Landfarm facility 	See Annex 5.
Mine Site	Landfill	<ul style="list-style-type: none"> • Licensed Landfill facility • Access road • Used tire storage area 	Disposal of inert, non-combustible waste and non-hazardous wastes.

Location	Facility Type	Components	Function
Mine Site	Permanent - Waste Management Facility	<ul style="list-style-type: none"> Secured area, heated building, incinerator, secure hazardous waste storage area 	A central depot where hazardous waste and waste suitable for incineration generated across the site will be managed properly processed, packaged, labelled, inventoried, and treated and/or stored for disposal on site or off site as appropriate.
Steensby Port	Temporary - Waste Management Facility	<ul style="list-style-type: none"> Secured area, Secure hazardous waste storage area Animal proof containers for storage of animal attracting waste 	A secure central depot where waste generated across the site will be managed, properly processed, packaged, labelled, inventoried, secured (e.g., on pallets) and stored for transportation to disposal or treatment locations.
Steensby Port	Landfarm	<ul style="list-style-type: none"> Landfarm facility 	See Annex 5.
Steensby Port	Landfill	<ul style="list-style-type: none"> Licensed Landfill Facility Access road Used tire storage area 	Disposal of inert, non-combustible waste and non-hazardous wastes.
Steensby Port	Permanent - Waste Management Facility	<ul style="list-style-type: none"> Secured area, Heated building, Incinerator, Secure hazardous waste storage area 	A central depot where hazardous waste and waste suitable for incineration generated across the site will be managed properly processed, packaged, labelled, inventoried, and treated and/or stored for disposal on site or off site as appropriate.
Ravn River Rail Camp	Temporary - Waste Management Facility	<ul style="list-style-type: none"> Secured area, Incinerator, secure hazardous waste storage area 	A central depot where hazardous waste and waste suitable for incineration generated across the site will be managed properly processed, packaged, labelled, inventoried, and treated and/or stored for disposal on site or off site as appropriate.
Mid Rail Rail Camp	Temporary - Waste Management Facility	<ul style="list-style-type: none"> Secured area, Incinerator, secure hazardous waste storage area 	A central depot where hazardous waste and waste suitable for incineration generated across the site will be managed properly processed, packaged, labelled, inventoried, and treated and/or stored for disposal on site or off site as appropriate.
North Cockburn Lake Rail Camp	Temporary - Waste Management Facility	<ul style="list-style-type: none"> Secured area, Incinerator, secure hazardous waste storage area 	A central depot where hazardous waste and waste suitable for incineration generated across the site will be managed properly processed, packaged, labelled, inventoried, and treated and/or stored for disposal on site or off site as appropriate.
South Cockburn Lake Rail Camp	Temporary - Waste Management Facility	<ul style="list-style-type: none"> Secured area, Incinerator, secure hazardous waste storage area 	A central depot where hazardous waste and waste suitable for incineration generated across the site will be managed properly processed, packaged, labelled, inventoried, and treated and/or stored for disposal on site or off site as appropriate.

4.4 Waste Handling and Minimization by Category

The Waste Management Plan is designed to ensure that a sound waste management program which focuses on the principles of reduction/recovery/reuse/recycling is implemented. The following are examples the Mary River Project will undertake to minimize the amount of waste being generated on Project sites and ensure proper handling.

4.4.1 *Grubbed Material and Soil*

There will be a need during and at the completion of construction for re-establishment of disturbed areas. There is very little topsoil and vegetation at the site, but what is available will be stockpiled for future use when re-establishing disturbed areas, including the temporary camp sites and laydown areas.

4.4.2 *Other Spoils Removed During Excavation*

Every effort will be made during the design to balance the cut and fill requirements. However most of the fill area has requirements for stability of materials that will preclude the use of some of the excavated materials. Such materials will be disposed of in one of the designated Disposal Sites (e.g., used for landfill cover) or used in other applications as much as possible.

4.4.3 *Nonhazardous Waste Materials Generated During Construction Operations*

A large amount of material will be generated during the construction operation, including packing materials, containers, temporary supports and general construction debris, used tools and pieces of construction material.

It is anticipated that some of the contractors generating this waste will carry out their own salvage of economically worthwhile recyclables, particularly ferrous metals and copper, where a ready market exists. Typically tires, where the casings are sound, are retreaded for ongoing use, reducing the materials requiring final disposal.

In some cases large amounts of a single waste product will be produced, that can be readily source separated. Specific items identified at this time include:

- Timber - generated by unpacking, and from the disposal of temporary supports. Where possible shipments will be bought in on pallets that can be returned for reuse, thereby reducing the waste generated. Where timber waste consists of clean timber of useable size it will be stacked and made available for reuse. Timber that is not reusable will be disposed of via open burning. Note that chemically treated timber shall be separated and, if it cannot be reused, shall be disposed of in the nonhazardous landfill.
- Polyethylene film - Film is used in large quantities to wrap and hence protect equipment. It is anticipated that substantial amounts will be generated by unpacking equipment. Opportunities for recycling this material will be explored and if practical the film will be baled and shipped for reuse. Otherwise, it will be disposed of in the non-hazardous landfill on site.

- Steel and other scrap metal waste shall be kept separate from the other solid waste produced during construction. Separation of steel and scrap metal from other solid waste shall be the responsibility of site personnel handling the materials. If economically worthwhile steel and other scrap metal waste will be shipped off site for recycling, otherwise it will be disposed of in the on-site non-hazardous landfill.

Recyclable materials shall be placed in appropriate recycling bins or on pads by site personnel. Containers shall be clearly marked and have signage reminding all workers of what is recyclable and what is not. Recycling bins shall be placed alongside garbage bins to promote recycling habits.

All other nonhazardous waste material will be separated at source into categories, based on potential for recycling, such as metal containers, water bottles, corrugated board, and the need for segregation for final disposal, such as tire casings.

During the course of the project, opportunities will be explored to expand the list of recyclables, particularly for wastes generated in large quantities. Recyclable materials shall be placed in appropriate recycling bins by site personnel. Containers shall be clearly marked and have signage reminding all workers of what is recyclable and what is not. Recycling bins shall be placed alongside garbage bins to promote recycling habits.

All sites will be provided with, at fixed locations, separate containers/areas for each type of waste to be separated, and dispose of to a recycling facility off site, hazardous waste facility off-site, landfill, or incinerator. The containers will be located in convenient locations to encourage utilization, and will be protected by fencing, to catch any wind blow generated during transfer of waste to the containers.

Each contractor will be responsible for bringing all of the waste collected on their site to the provided waste containers.

In locations where organic (food) waste will be generated, a separate container will be provided for this waste, secure against animal access. These organic waste containers will be emptied each day, and the waste will be disposed by incineration.

4.4.4 Unset Concrete and Concrete Wash Water from Mixing and Transportation of Concrete

During the major works, concrete will be provided from a batching plant located at the construction laydown area. Waste concrete will arise from off-spec mixes, residual concrete at the end of a pour, and from wash down of the equipment.

A purpose built pond shall be used to receive all of the waste concrete and concrete contaminated wash water. The pond that will receive wash water will be designed to allow for settling of solids and decant; and analysis, and if necessary pH adjustment, prior to discharge will occur.

All fresh concrete and concrete product waste to be disposed of onsite shall be disposed of in the concrete waste pond. No concrete truck shall be cleaned anywhere else onsite. Waste hardened concrete will be either used as fill or disposed of in one of the onsite landfills.

4.4.5 Camp Site Waste

During peak of construction camps will provide housing for up to 2900 of personnel across the project and provide meals and other domestic support facilities. Wastes generated from this operation will be similar to normal residential domestic garbage, with a higher percentage of organic (food) wastes.

The operation of the camp site will be by a contractor, who will have responsibility for the management, including source separation and disposal, of all waste generated on site. Recyclables will be consolidated and disposed of to the Contractor supplied containers, and the remaining waste transported and disposed of to as per Annex1 by the Camp Contractor, using appropriate vehicles, equipped to stop any loss of either liquid or wind-blow during transportation.

The camp contractor will be required to collect all waste in secure containers, and to remove organic (food) waste daily. All containers containing food waste or items potentially contaminated by food shall be secure against animal access.

4.4.6 Sewage Generated at the Various Working Locations and at the Rail Camp Sites

Sewage will generate at all sites, throughout the period of construction and operation. During the period from beginning of construction until facilities are available, all sewage generated on site, will be collected in holding tanks, which will be pumped out for disposal once facilities become available. The trucks used for transport will be sealed and the unloading facility designed to minimize odor generation during waste transfer operations.

4.4.7 Hazardous Waste

Hazardous Waste handling is described in the Mary River Project Hazardous Waste Management Plan (H349000-1000-07-126-0008).

4.4.8 Other Miscellaneous Materials, or Items that No Longer Have Economic Value

During the operation miscellaneous tools, used parts, clothing etc will be discarded. Items requiring special handling should be dealt with by the generator either by disposal or breakdown into readily handled components to be treated in accordance with the previous sections.

Parts should be drained of oil or other liquids before disposal, with the drained fluids being disposed of as per Mary River Project Hazardous Waste Management Plan ([H349000-1000-07-126-0008](#)).

4.4.9 Office Paper

All white paper waste generated at the office site shall be collected in secured bins for shredding and disposal. Paper waste generated elsewhere shall be placed in a waste disposal bin by site personnel. To reduce the amount of paper waste generated on site the following list of procedures could be developed and implemented:

- Distribute electronically – Electronic forms increase the amount of desk/shelf space available.
- Double Sided Printing – When practical ensure all documents are double sided.
- Print Only the Pages You Need – Rather than printing the entire document consider saving the file electronically as well as cutting and pasting relevant information. Only reprint pages of documents that have been revised rather than the full document.
- Reuse – Collect single sided paper in a bin so that it could be reused for printing, faxing or scratch pad.
- Route Hardcopy Memos and Newsletters – Instead of making numerous copies, route one copy around the office.
- Copier Maintenance – Only allow qualified personnel to provide maintenance to all copiers and printers.

4.5 Incinerators

The main disposal method for combustible non-hazardous wastes generated on-site will be incineration. This method will eliminate problems associated with odours attracting wildlife, or the creation of poisonous or flammable gases through the decomposition of putrescible materials.

Incinerators for the Project are proposed as follows in Table 4.6:

Table 4–6: Incinerator Allocation

	2013 WORK PLAN		CONSTRUCTION		OPERATION		
	Waste Produced Suitable for Incineration (t/day)	Units	Waste Produced Suitable for Incineration (t/day)	Units	Waste Produced Suitable for Incineration (t/day)	Units	Capacity (t)
Mine Site	1.79	2 ton (x1)	2.68	2 ton (x1), 1 ton (x1)	1.51	2 ton (x1)	2
Steensby Port	-	-	1.34	1 ton (x2)	0.55	1 ton (x1)	1
Milne Port	0.98 (1.25 t combined)	2 ton (x1)	0.37	1 ton (x1)	0.00	-	-

	2013 WORK PLAN		CONSTRUCTION		OPERATION		
Ravn River	-	-	0.45	1 ton (x1)	0.00	-	-
Mid Rail	-	-	0.45	1 ton (x1)	0.00	-	-
North Cockburn	-	-	0.45	1 ton (x1)	0.00	-	-
South Cockburn	-	-	0.67	1 ton (x1)	0.00	-	-
Tote Road Camp ¹	0.27	-	-	-	-	-	-

¹ Acceptable waste will be transported from Tote Road Camp to Milne Camp for incineration

The locations of the incinerators are shown in Annex 2.

The sample specifications for the proposed incinerators are presented in Annex 3.

All incinerators will have the option of using a liquid waste system to burn waste petroleum products such as used oil or off-spec fuels, which would decrease diesel requirements but would increase power consumption. Larger or additional incinerators will be brought on-line as required to meet the Project's needs during the construction phase.

Waste that is destined for the incinerator will be segregated as part of operating procedures to ensure that only appropriate materials will be incinerated. Biomedical waste, hazardous wastes, non-combustible materials, or treated wood products must not be incinerated. The incineration of plastics will be minimized to the maximum extent practicable. Incineration of some food-related and other plastics is unavoidable; however, best efforts will be made to reduce volumes of potentially dioxin/furan related plastics during the procurement process.

All incinerator systems will operate in accordance with the Environmental Guideline for the Burning and Incineration of Solid Waste by the Department of the Environment, Government of Nunavut, January 2012. This included all regulatory guidelines, operating procedures and best management practices whenever feasible.

4.5.1 **Personnel Training Programs for Incinerator Operation**

Only trained personnel will operate the incinerator(s), and operating manuals will be provided (see example in Annex 3), including standard operating procedures. The incinerator manufacturer will be requested to provide on-site specialized training as required.

4.5.2 **Air Emissions**

Air emission standards establish limits on the amount of contaminants that can be released into the atmosphere. These standards are expressed as a concentration in the exhaust gases leaving the stack and are capable of being achieved using generally available technology or waste diversion practices. The following emission standards apply to solid waste incinerators operating in Nunavut and have been adopted from the Canadian Council of Ministers of the

Environment (CCME) Canada Wide Standards for Dioxins and Furans and Mercury Emissions, respectively. Similar standards for the open burning of solid waste and modified burn barrels have not been established.

For existing, new or expanding solid waste incinerators the maximum concentration (corrected to 11% oxygen at stack) of dioxins, furans and mercury in the exhaust gases from the stack are provided in Table 4–7.

Table 4–7: Air Emission Standards for Solid Waste Incinerators

Parameter	Numeric Standard	Explanation
Dioxins and Furans	80 pgTEQ/cubic metre	Unit of measure is picograms of International Toxicity Equivalents per cubic metre of air
Mercury	20 µg/Rcubic metre	Unit of measure is micrograms per Reference cubic metre (the volume of gas adjusted to 25oC and 101.3 kilopascals)

Opacity is the degree to which the exhaust gases reduce the transmission of light and obscure the view of any object in the background. It is expressed as a percentage representing the extent to which an object viewed through the gases is obscured. Although not an emission standard, opacity provides an indication of the general performance of the incinerator during normal operation. Opacity in the incinerator stack should not exceed 5%. While it is not anticipated that opacity levels would exceed 1% to 2% under normal operation, values greater than 5% indicate the incinerator is not performing properly and additional performance evaluation and adjustment is required.

Air monitoring for dioxins, furans, and mercury will be conducted on an as-required basis based on applicable federal and territorial standards and guidelines. Guidelines also exist for sulphur dioxide and total suspended particulates, which may be analyzed as a 'best management practice.

Routine inspections and monitoring will be undertaken on incineration facilities as required. Details of the incinerators are provided in Annex 3.

4.5.3 Ash Disposal

The management of bottom ash and other unburned residue is an integral part of sound waste management and the ash will need to be disposed of. Extreme care must always be exercised when handling ash because of its physical (i.e. glass, nails) and chemical hazards. Closed or covered containers will be used when moving or transporting bottom ash from the incinerator to the final disposal site. This will minimize physical contact with the ash and any release of fine ash particles to the environment. Bottom ash will only be handled once completely cooled.

Bottom ash from the open burning of paper, paperboard packing and untreated wood waste or unburned materials from modified burn barrels used to burn paper, paperboard packing, untreated wood, food waste, food packaging and natural fibre textiles is suitable for burial in a designated pit or municipal landfill.

Ashes from the incineration process will be buried within a designated area of the landfill. A Toxicity Characteristic Leaching Procedure (TCLP) analysis will be conducted to ensure that the incinerator ash is suitable for disposal in the landfills. The ash testing protocol shall ensure that an ash sample will be collected at the beginning of operation of the incinerator. The sample will be compared to the Government of Nunavut guidelines for solid waste/process residual concentrations suitable for landfills, as described in the Environmental Guideline for Industrial Waste Discharges and presented in Table 4–5

Following the initial testing, ash samples will be collected and tested annually, or upon a significant change in the source or type of material sent to the incinerator. If monitoring indicates the ash is above the guidelines and not suitable for landfilling, an investigation will be undertaken to identify the cause and eliminate the source for this exceedance. Ash that does not meet guidelines following TCLP analysis will be treated on-site if possible or transported for off-site disposal at an appropriate facility. The TCLP Procedure Test method 1311 (US EPA) will be the preferred method to analyze the residuals as this test is designed to simulate the processes a material would be subjected to if placed in a landfill.

Table 4–8: Guidelines for Solid Waste/Process Residuals Suitable for Landfill

Parameter	Concentration maximum (mg/L)
Arsenic	2.5
Barium	100
Cadmium	0.5
Chromium	0.5
Lead	5
Mercury	0.1
Selenium	1
Silver	5
Zinc	500

4.5.4 Monitoring During Operation

Monitoring of the incinerators will be conducted in conjunction with other monitoring program required for the Project. Specifically, incinerator monitoring will include incinerators will be inspected for signs of leakage, corrosion or other physical defects before each burn cycle. Repairs must be completed before the equipment is used again to ensure the health and safety of the operator, nearby people and the environment. An initial stack test will be conducted upon commissioning to confirm conformance with all applicable regulations based on a 'typical' waste stream.

The operation of incinerators will be monitored using on-line instruments capable of continuously measuring the combustion process and stack emission; this included the temperature in both the primary and secondary burn chambers. Temperature readings outside of the normal range can warn the operator that the system is not working properly.

Continuous emissions monitoring will also be used at all permanent incinerator units. In-stack monitoring provides the operator with information on the combustion process and on pollutants being released to the environment and help detect if operating conditions malfunction and contaminants enter the environment (i.e. hydrogen chloride, dioxins, furans, mercury).

Each process and in-stack monitor will be equipped with visible and audible alarms to warn operators of poor incinerator operation.

Written records will be kept by incinerator operators of what waste is burned, when and how much.

Other record keeping requirements include:

- Operating data including readings from the process and emissions monitoring instruments.
- Weather conditions (i.e. air temperature and wind speed) at the time the incinerator is being operated.
- Repairs and maintenance performed on the incinerator and monitoring instruments.
- Major changes in operation.
- Quantity, condition and disposal location of the collected bottom ash.
- Operator training.

Records will be maintained on-site throughout the operational life of the facility and be made available to Inspectors and other regulatory officials upon request.

4.6 Inert Landfill

A central inert landfill has been constructed near the Mine Site. The landfill design was submitted to the NWB for approval before construction, as required by the water license. The landfill is used for disposal of inert, non-combustible waste only (plastics, cement, sand, used construction materials, scrap metal, pipes, glass, etc.). Non-hazardous waste, including ashes from the incineration process, and waste which cannot be salvaged or incinerated, will be deposited in this site. There will be no disposal of food waste, hazardous materials, paper products or biomedical waste in the landfill. A secondary landfill will be constructed at the Steensby Port site. The locations of these landfills are shown in Annex 2.

Details of the Landfill design and closure are provided in Annex 5. The quantities of inert waste expected are presented in Table 4–2.

4.6.1 Landfill Operation

Landfill operation will be performed under the same guidelines at both the Mine Site and Steensby Port landfills. As is presently the practice, the landfill will be operated by trained personnel who will carry out regular inspection and monitoring of the facility. An operation and maintenance manual approved by the NWB will direct landfill operations. This manual will include:

- A general description of how the landfill is to be operated and maintained.
- A proposed schedule for when specific operating and maintenance activities are to be conducted (i.e., seasonal surface water sampling, routine visual inspection, berm inspections, etc.).
- A list of who is responsible for completing each item scheduled.
- Location of the landfill and proximity to receiving waters.
- A description of the cover material to be used as well as the source of the material and how it will be placed.
- Runoff and drainage control within and around the landfill, including erosion and sediment control and proposed restoration measures for erosion which occurs.
- Treatment measures for contaminated drainage (although this is not seen as an issue).
- Prevention of windblown debris (although this is not seen as an issue).
- Method and frequency of site maintenance.

The manual will assist landfill site operators in establishing a proper waste management system and in ensuring that the system operates efficiently and in compliance with the permits.

4.6.2 Operating Procedure

Regular cover will be applied to reduce the risk of wind-blown debris, and the landfill will be engineered for closure. Open burning of un-treated wood and cardboard wastes may be conducted to reduce volume requirements as permits allow. Routine inspection and monitoring will be undertaken in terms of waste volume, type, source, water seepage, etc.

4.6.3 Placement of waste

The area method will be used to place the waste in the landfill. Once the first layer is completed and covered, a second layer will be formed. The following measures will be taken during the landfill operation:

- Compaction of waste will be undertaken typically once per week or in combination with collection frequency, depending on the nature of the waste. Generally the waste will be worked and compacted as they are dumped.
- Operations will be undertaken to minimize close-out requirements.

- Cover material will be placed to a thickness of 0.1 m between cells, 0.3 m on the surface of cells, and, 1.5 m for closure.

4.6.4 Monitoring during operation

Monitoring of the landfill will be conducted in conjunction with other monitoring program required for the Project. Specifically, landfill monitoring will include:

4.6.4.1 Volume and Waste Composition:

Records will be kept of waste volume/type and cover material placed in the landfill. The annual volume of waste disposed of in the landfill will be determined from these records. The annual volume may be confirmed through the use of survey.

4.6.4.2 Water sampling and soil:

The "Guidance Manual on Sampling and Data Management for Contaminated Sites" (CCME 1993) will be followed for all water and soil quality monitoring. Refer to the Site Water Management Plan for surface water sampling locations and procedures. A soil sampling program will be initiated at several locations around the landfill site(s) prior to construction and after the initial perimeter berm.

4.6.4.3 Ground temperature monitoring:

It is expected that the active layer will progress into the landfill waste and cover material. Ground temperatures are not expected to increase due to the presence of the landfill and the type of waste disposed in it. During regular landfill inspections, signs of ground warming will be monitored by watching for evidence of soil creep.

4.6.4.4 Leachate monitoring:

Leachate production is not expected based on the relatively dry, inert nature of the waste to be placed in the landfill. However, periodic surface water monitoring will allow for the detection of landfill leachate, in the unlikely event leachate is generated.

4.6.4.5 Inspection and maintenance:

Routine visual inspections will be conducted for various components of the landfill, including the berms, fencing (if installed), etc. If required, maintenance will be completed as soon as required. Records will be kept at all inspections and maintenance measures completed and will form part of the annual landfill site report.

4.6.5 Annual Report

An annual report will be completed for the overall project and will include the following information on the landfill:

- Total volume of waste deposited in the landfill site during the previous year.
- Progression of the landfill site development, indicating the landfill site location currently in use and areas that have been closed.
- Monitoring results.
- Remaining life expectancy of the landfill site.

- Details of operational problems encountered during the year and the measures taken to resolve the operational problems.
- Photographs.

4.7 Hazardous Waste Storage and Disposal

Some of the materials included in the waste streams are classified as hazardous wastes because of the potential risk to human health and safety, property and the environment. Hazardous wastes that will be generated on-site will include, but not be limited to: used oils, solvents and paints, used and/or surplus chemicals, medical wastes, gas cylinders, electronic waste, batteries, light bulbs, and smoke detectors.

Baffinland is responsible for ensuring that all hazardous waste generated on its site will be properly managed from the time it is generated to final disposal. Hazardous waste must be properly stored, transported, treated and disposed. Contractors can manage waste on behalf of Baffinland; however, Baffinland is responsible for ensuring, in advance, that the waste management method is acceptable. All of Baffinland's contractors will be required to submit a Waste Management Plan for their specific activities.

All Hazardous waste will be managed according the Mary River Project Hazardous Materials and Hazardous Waste Management Plan (H349000-1000-07-126-0008).

4.8 In-Site Treatment of Hydrocarbon Contaminated Material

Soils contaminated by hydrocarbons from spills will be salvaged and deposited within a land farm cell for bioremediation. The land farm will initially be approximately 70 m x 100 m in size and no more than 0.3 m deep to ensure the soils are kept within the thermally active zone. The cell will be confined within a berm and underlain by an Arctic geomembrane beneath select fill material. The contaminated soils will be placed and spread during summer months for remediation through natural microbiological and evaporative processes. Soil that has reached acceptable levels of hydrocarbon degradation will be removed and transferred to the landfill. The land farm will be operated in accordance with Nunavut government guidelines. The soil will be turned regularly to provide aeration and promote the remediation process. Inspections and sampling will be done to assess the effectiveness of the cell under different climatic conditions. If the harsh climatic conditions at Mary River inhibit natural biological activity, special bacteria may be introduced. If it becomes evident that effective remediation is still not achievable, Baffinland will source an off-site land farm for disposal. Note, as per New Substances Notification Regulations (Organisms) before importing or using bacteria in landfarming applications Baffinland will notify the Government of Canada if the bacteria used are not listed on Canada's Domestic Substance List and before the bacteria is imported or used at the Mary River Project site.

4.9 Ship waste management

Baffinland will not accept any type of waste originating from a ship. All vessels will be expected to be equipped with a sewage treatment plant and an incinerator for solid and liquid wastes. All tanks containing oil or oily waste will be placed in a location in the ship that will keep them separated from clean areas. A diesel fired incinerator for incinerating oil waste and sludge from the sewage plant may be installed in the incinerator room on board.

4.10 Used Tires

Used tires are a major waste stream of mining operations. Used tires will either be stockpiled at Milne or Steensby port facilities for shipment off site (re-treading, re-use, or disposal) or will be disposed on site in the landfill or in a designated location within the footprint of the waste rock pile at a depth that will allow for permafrost aggradations. Options that increase project sustainability will be taken advantage of if used tires can be re-used on site in an environmentally safe manner (e.g. road barriers).

4.11 Propylene Glycol

Propylene glycol will be used at Steensby Port and Mine Site airstrips for plane de-icing as will in the heating of project buildings. All storage, handling, use and disposal of propylene glycol will be done in contained areas to avoid spills to the environment and as described by the manufactures MSDS sheet. Prior to use propylene glycol will be stored in tightly closed containers or tanks in a cool, dry, well-ventilated area away from incompatible substances. Used propylene glycol will be collected then stored in the waste management temporary storage facilities on site in secured containers for shipment off-site for disposal.

4.12 EPP Procedures Relevant to this Waste Management Plan

The following table outlines the EPP procedures that are relevant to the Waste Management Plan. The EPP is a living document and is subject to on-going updates.

Table 4–9: Content of the EPP Related to the Waste Management Plan

Section	Title/Description
2.5	Geotechnical Drilling Operations
2.6	Equipment Operations
2.7	Fuel Storage and Handling
2.14	Solid Waste Management
2.15	Sewage Treatment
2.16	Hazardous Waste Management
2.17	Road Construction and Borrow Development
2.19	Road Traffic Management
2.21	Exploration Drilling Operations
3.7	Off-Site Waste Disposal Log

5. Roles and Responsibilities

5.1 Roles and Responsibilities

Personnel responsible for the Environment Health and Safety (EHS) on the project are divided into three distinct groups, each with their own representatives and responsibilities. Baffinland Iron Mines Corporation's (Baffinland) senior management is ultimately responsible for all policy creation, while the Baffinland onsite management team is responsible for monitoring and reporting to senior management and regulatory bodies. The respective contractors will each have their own EHS personnel to ensure compliance and implementation of their scope of work with regards to EHS.

These are described in detail in the following sections. For the sake of clarity the focus has been on those roles relevant to environment and site reporting procedures.

The first organizational chart, as shown in Figure 5-1 provides further detail. The second organizational chart in Figure 5-2 demonstrates the communication and reporting lines and responsibilities.

5.1.1 Environmental Project Team

5.1.1.1 The Baffinland Environmental Team

The Baffinland Environmental Team will oversee all environmental and community works on and off site.

The Baffinland Corporate Environmental Team based in Baffinland's head office will be responsible for: environmental permitting applications/amendments and regulatory responsibilities, design and implementation of the overall Environmental Management System (EMS) and the Construction Environmental Protection Plan (CEPP), monitoring and baseline studies, government and community relations. Further responsibilities of the Baffinland's corporate team are summarized in Table 5–1.

Table 5–1: Baffinland Iron Mines Corporation Senior Management

Baffinland Iron Mines Corporation Senior Management	
Position	Responsibilities and Accountabilities
Project Director	<ul style="list-style-type: none"> - Reports to Baffinland's CEO - Overall accountability for the Project execution - Allocation of resources (human and financial) for the implementation of Baffinland's commitments and objectives related to health, safety and environment during Construction of the Project - Accountable for on-site environmental, health and safety performance during construction of the Project

Baffinland Iron Mines Corporation Senior Management	
Position	Responsibilities and Accountabilities
VP Operation	<ul style="list-style-type: none"> - Reports to Baffinland's CEO - Overall accountability for the Operation of the Project once constructed - Allocation of resources (human and financial) for the implementation of Baffinland's commitments and objectives related to health, safety and environment during Operation - Accountable for on-site environmental, health and safety performance during Operation
VP Sustainable Development, Health, Safety and Environment	<ul style="list-style-type: none"> - Reports to Baffinland's CEO - Establish corporate environmental policies and objectives - Monitors and reports on Baffinland's performance related to environmental, health and safety policies and objectives - Community liaison - Liaise with regulatory authorities - Obtains necessary permits and authorizations - Monitors compliance with terms and conditions of permits and licences - Routine EHS audit of contractor performance while on site
Manager Purchasing and Contract	<ul style="list-style-type: none"> - Reports to Baffinland's Project Director - Accountable for procurement and purchasing - Ensure that environmental commitments, policies and objectives are included in all contract documents
VP Corporate Affairs	<ul style="list-style-type: none"> - Reports to Baffinland's CEO - Accountable for external communication (Governments, media, NGO, others) related to Baffinland's press release and overall communication of site incidents/events

The on-site Baffinland environmental team will be led by an Environmental Manager, reporting to Baffinland's VP Sustainable Development, Health, Safety & Environment. Reporting to the Environmental Manager will be the Environmental Coordinators based at both Milne and the Mine site. In addition there will be Environmental Monitors carrying out sampling, supervision and other tasks at all three areas of operation. There will also be a Construction Manager on-site who will be liaising with the Environmental Manager and reporting to the Project Site Director.

The Baffinland environmental team will be responsible for the implementation of the Environmental Management System, training programs, environmental status reports, leading site visits by regulators, and managing contractors and site inspections. The Company's environmental management staff will oversee all environmental activities on site. Table 5-2 summarizes these responsibilities.

Table 5-2: Baffinland Iron Mines Corporation On-Site Management Team

Baffinland Iron Mines Corporation On-Site Management Team	
Construction Manager	<ul style="list-style-type: none"> - Reports to the Project Director - Responsible for daily on-site management of construction activities - Accountable to the Project director for site environmental, health and safety performance - Organize and provides necessary induction, safety and environmental training for all employees - Ensure that all contractors on-site abide by Baffinland's policies, EHS commitments
Environmental Manager	<ul style="list-style-type: none"> - Reports to VP EHS & Sustainability - Monitors environmental performance of contractors on site - Monitors compliance with permits, licenses and authorizations - Regulatory environmental monitoring and reporting (monthly, annual) - Routine audit of contractor's environmental performance on-site - Initiate/supervise environmental studies - Investigate and reports on accidents and incidents when they occur - Review and update environmental management plans
Environmental Supervisor (s)	<ul style="list-style-type: none"> - Reports to Environmental Manager - Specific accountabilities for environmental monitoring and reporting - Provides induction and environmental awareness training to new employees and contract workers
Environmental Support Group	<ul style="list-style-type: none"> - Reports to the Environmental Supervisor - Environmental database management - Various sampling, monitoring and reporting activities as required by permits, licenses and environmental management plans - Prepare updates to environmental protection plan and management plans
Environmental Monitors	<ul style="list-style-type: none"> - Reports to the Environmental Superintendent

5.1.1.2 Construction Contractor's Environmental Team

The Construction Contractor will designate a Construction Manager with overall responsibility for environmental management of the contractor's activities. The Construction Manager must be suitably qualified with construction experience and have knowledge of environmental management. In addition to this the Construction Manager will appoint site specific EHS supervisors who will oversee environmental components of the day to day activities on the individual sites. The responsibilities of the Construction Contractors environmental team is summarized in Table 5-3.

Table 5–3: Construction Contractor(s)

Construction Contractor(s)	
Construction Manager	<ul style="list-style-type: none"> - Reports to the Baffinland's Construction Manager - Accountable for the EHS components of his scope of work - Accountable for implementation of the Construction Environmental Protection Plan - Co-ordination/interaction with Baffinland and Baffinland's Representative Environmental Monitors.
EHS Supervisor	<ul style="list-style-type: none"> - Reports to the Contractor's Construction Environmental Manager - Liaise with Baffinland's Environmental Supervisors and monitors. - Holds daily EHS briefing - Monitors and ensures that Contractor complies with requirements of management plans, terms and conditions of all authorization, licences and permits associated with the Contractor's scope of work - Investigate, reports and follow up on environmental accidents and incident - Provides site specific environmental monitoring - Daily supervision of construction activities for environmental performance - Attendance at all environmental meetings/Project meetings (as required). - Routine interaction with construction crews to ensure all construction activities are in compliance with requirements of the CEPP and Contractors Environmental Method Statements. Monitor the environmental permitting status of the Project to ensure that no work proceeds until appropriate and complete permitting is received for the applicable facility.

5.1.2 **Mary River Project Organizational Charts**

For further information regarding the Mary River Projects organizational structure, please refer to Figure 5-1 and Figure 5-2 below. Figure 5-1 shows the organizational structure while Figure 5-2 provides an overview of the communication channels between individuals. The organizational structure is relevant for the entire project.

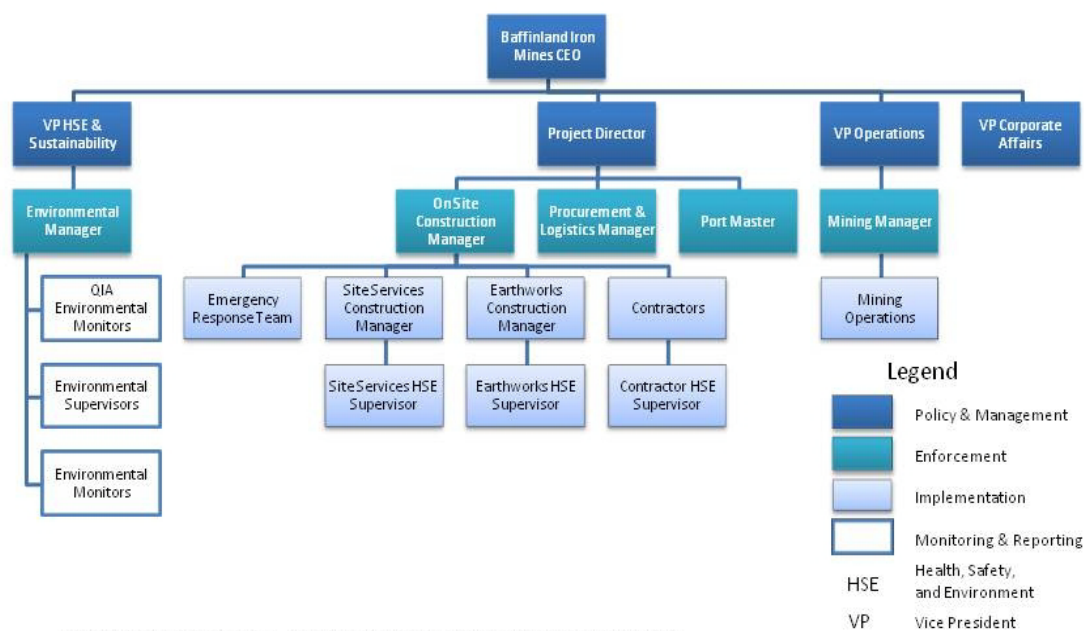


Figure 5-1: Mary River Project Organization Chart

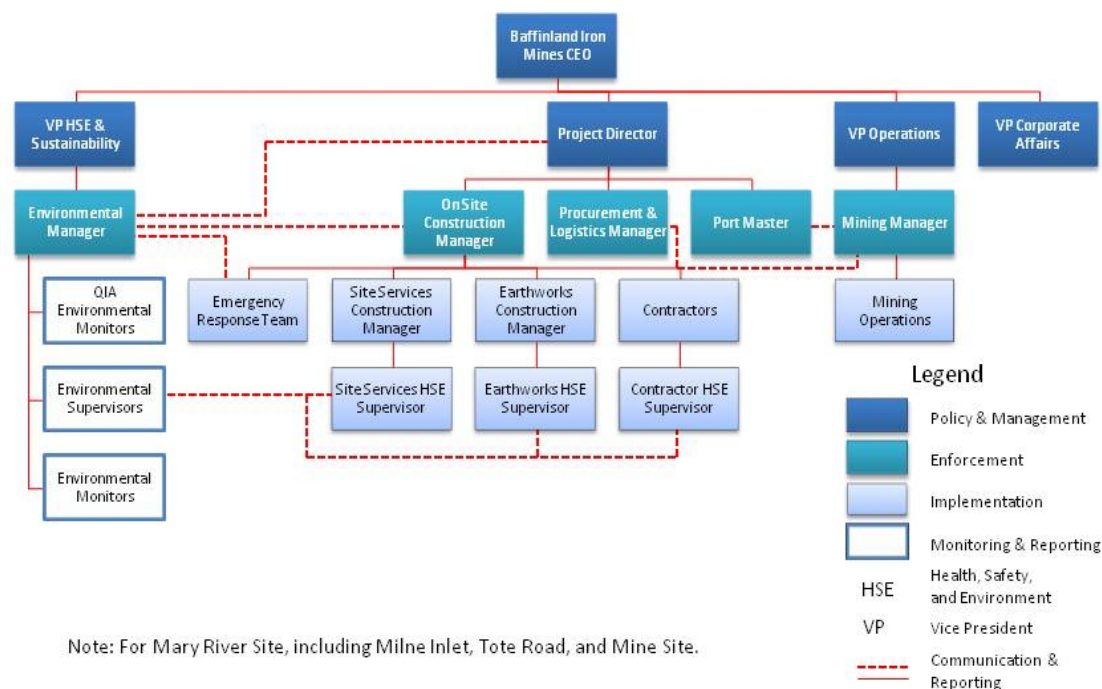


Figure 5-2: Mary River Project Organizational Chart with Communication Channels

5.2 Training Programs

Baffinland will identify and document training needs and deliver the appropriate training to all employees and contractors whose work may impact on the risks to health and safety in the work place and whose work may cause a significant environmental impact. During orientation training, all employees and contractors will be made aware of:

- The importance of conformance with the Waste Management Plan and its procedures.
- The risk to the environment and health & safety associated with handling of various types of waste products.
- The consequences to the environment, health and safety if there are deviations from specified operational controls.
- Best management practices related to waste handling and strategies to avoid attracting wildlife.
- Their specific roles and responsibilities in achieving conformance.

Staff and sub-contractors working on site will receive environmental training as part of the Site Orientation, to achieve a basic level of environmental awareness understanding of their obligations regarding compliance with regulatory requirements, commitments and best practices.

Construction Managers, Site Managers and contractor supervisors will be provided this Plan and will receive additional orientation with respect to the requirements outlined. In addition, all supervising level staff and sub-contractors will be provided with the Operational Standards (the Construction Environmental Protection Plan and applicable work procedures or work instructions) as written guidance/reference for their work.

Targeted environmental awareness training will be provided to both individuals and groups of workers assuming a specific authority or responsibility for environmental management or those undertaking an activity with an elevated high risk of environmental impact, such as in-water work at watercourse crossings. These will be delivered in the form of toolbox/tailgate meetings or other means as appropriate.

- a) The content of the environmental component of the site induction will include at a minimum:
- ◆ Location of environmental sensitivities.
 - ◆ Location of additional information on environmental matters.
 - ◆ Due diligence responsibilities.
 - ◆ Responsibilities related to waste management, minimizing noise as necessary, road traffic rules, etc.
 - ◆ Principles and necessary steps to avoid encounters with bears or other wildlife and what to do if one such encounter occurs.

With respect to waste management, Baffinland will have a written training and awareness plan which will consider:

- the differing level of risks and potential consequences associated with different types of wastes.
- the different responsibilities, abilities, and literacy of employees.
- the culture of the employees.
- contractors involved and their relevant experience/expertise.
- the trainers, training methods and settings.
- training frequency.
- documentation of training and evaluation of training.

Baffinland will regularly review and update the training and awareness plan based on changes in training needs and regulatory required training.

5.3 **Communication**

The types of communications for which members of the team will participate include the following:

- a) formal written correspondence and meetings with stakeholders.
- b) site visits by community representatives.
- c) design, construction and planning meetings.
- d) field inspections and monitoring reports disseminated by the Environmental Manager.
- e) electronic communications.
- f) tailgate/toolbox meetings.
- g) formal written correspondence and meetings with government regulatory bodies.
- h) formal environmental awareness training.

Communications will be appropriately recorded and filed for future reference. Where appropriate, the copies of communications will be forwarded to the Construction Manager(s), and Vice President of HSE & Sustainability.

5.4 **External Communications**

Effective forms of communication include the proactive notification to external stakeholders of Project activity. Project activity updates will be provided to the communities of north Baffin Island through various means including regular meetings, public notices and radio announcements as appropriate. Baffinland will endeavour to maintain Community Liaison Offices to assist in this regard. Information on waste management will be integral to this external communication effort.

5.5 Construction

During the construction phase of the Project, Site Services Manager will be responsible for implementing this Plan. The waste management will take into account the numerous construction sites, volumes and types of waste generated. The organizational structure of the Project will reflect the waste management complexity of the construction phase.

5.6 Operation and Closure

During the operations phase, Operations Manager will be responsible for operation of waste management facilities in accordance with this Plan, and subsequent updates to the majority of the Plan. Environmental guidance and monitoring will be the responsibility of the Baffinland Environmental Manager.

6. Performance Indicators, Thresholds, and Incident Response

Periodic inspections of waste management facilities will ensure compliance with this waste management plan. The EPP and associated operations procedures / work instructions outline detailed procedures for handling and storage of fuel, lubricants and other waste materials. These procedures are in place and training will be provided to all employees and contractors on waste handling. Accidental spills are the most likely type of environmental incident to occur while conducting the above mentioned activities. Response procedures, documented in the EPP and the Emergency and Spill Response Plan (H349000-1000-07-126-0002), are in place to deal with these occurrences.

The ultimate performance indicator for hazardous materials management is the number of incidents of non compliance reported on a daily or monthly basis. Incidents of non-compliance are classified by type and each type entails remedial actions as outlined in Appendix 10A-2: Hazard Identification and Risk Assessment Standard.

Where an investigation triggers a review and update of established EPP procedures, these reviews and update will be carried out in accordance the procedures established by Baffinland's EHS Framework.

7. Monitoring and Reporting Requirements

7.1 Waste Monitoring

Waste monitoring includes the visual inspection of three main components of the waste management system (described below) and the measurement and recording of all wastes taken off site. The following information will be reported on an annual basis as currently is the practice:

- a) The quantities hazardous waste transported off-site for disposal.
- b) The location and name of the disposal facility for each waste type.
- c) The date that each was hauled off-site for disposal, for each occasion that these are removed from the site.

- d) Quantities of non-hazardous inert solid wastes disposed in the landfill.
- e) Quantities of hydrocarbon contaminated soils and water processed in treatment facilities.

Inert solid wastes will be stored and disposed in a manner that minimizes the opportunity for wind-blown debris and animal attraction. Any wastes that are shipped off site will be recorded using an Off-Site Waste Disposal Log or equivalent developed from the EPP.

Regular visual inspection of waste management facilities will be conducted by the HSE Manager to ensure proper operation and adequate environmental/health and safety controls are in place.

Waste audits will be undertaken periodically generation points to ensure waste streams are properly segregated

7.1.1 Incinerator Monitoring

Monitoring of the incinerator operation involves ensuring proper operation and that appropriate wastes are incinerated as well as those described in Section 4.1.

7.1.2 Landfill Monitoring

Monitoring of the inert landfill, involves visual inspections to ensure that only inert wastes are deposited in the landfill, and that adequate cover is provided so that wastes are contained and are not being dispersed by the wind. The Waste Disposal Facility (Landfill) Inspection Form is included in the EPP and landfill operating procedures. Wastes will be managed and monitored for compatibility with landfill disposal prior to disposal in the landfill. Also Waste audits will be undertaken periodically at generation points to ensure waste streams are properly segregated and that potential wildlife attractants are diverted from landfill.

A written operations manual has been developed and submitted to the Water Board as part of the landfill design and commissioning process. The operations manual provides the following information:

- a description of the facility and the design.
- the maintenance schedule, frequency of inspection of dams, dykes and drainage works.
- the operation schedule.
- identify the personnel responsible for completion of operations.
- the runoff and drainage control within and around the facility and restoration of erosion.
- treatment option for contaminated drainage.
- the control of effluent discharge and effluent quality.
- prevention measures for windblown debris.
- management procedures for sorting of waste, along with management of hazardous waste and recyclable materials.

7.1.3 Hazardous Waste Monitoring

All Hazardous waste will be monitored according the Mary River Project Hazardous Waste Management Plan (H349000-1000-07-126-0002).

7.1.4 Landfarm Monitoring

All Hazardous waste will be monitored according the Mary River Project Hazardous Waste Management Plan (H349000-1000-07-126-0002).

7.2 Operations Monitoring

In addition to specific monitoring and reporting requirements under the regulatory approvals such as the water license, QIA land lease, land use permits, and fisheries authorization as well as monitoring of project effects, the Environmental Manager will coordinate routine inspections of various aspects of the operations. Routine inspections are conducted to confirm overall conformance with the requirements of the Waste Management Plan, companion EPP, and operating procedures/work instructions, and will include inspections of site-based waste management activities.

Compliance Monitoring Forms are used to document the findings and required actions. These reports are generated as an internal operational management tool to promote continuous improvement in environmental performance and stewardship. Checklists are used as internal operational monitoring and compliance tools. These checklists are integrated into the EPP and other operating procedures/work instructions.

7.3 Data Management

The Environmental Manager is responsible for data management and reporting related to waste management. The data management system includes conducting routine inspections and monitoring, and providing these results to appropriate parties as required.

7.4 Water Licence Reporting

Since waste disposal is regulated by the Nunavut Water Board (NWB) through the water licensing process, there will be monthly water license reporting requirements. An annual Project report will be prepared that addresses requirements specified by the water licence, the Nunavut Impact Review Board (NIRB), and the landowners. Information likely to be included in reporting regarding waste disposal includes:

- GPS coordinates and photographic records of waste disposal facilities and status.
- annual geotechnical inspection recommendations from a geotechnical engineer concerning the performance of lined and bermed waste containment structures.
- quantities and fate of various types of waste on and off site Any other details on waste disposal requested by the NWB.

Records of waste disposal activities will be available upon request to NWB and landowner's inspectors.

7.5 Stakeholder Reporting

Future arrangements regarding reporting could be made through the Inuit Impact Benefits Agreement (IIBA) or other mechanisms; this will be incorporated in future Plan updates.

8. Adaptive Strategies

Baffinland is committed to continual improvement in its work activities with the aim of reducing risks to the environment and improving operational effectiveness. The strategy employed at Baffinland is regular monitoring supported by operational change and adoption of other mitigating measures if warranted.

Housekeeping and operational measures have been instituted. As part of the EPP, work procedures will continuously be adapted with the goal to reduce, recover, reuse and recycle waste. Regular scheduled inspections of waste management facilities along with the non-compliance reporting system described in Section 6 will ensure continual improvement and adaptation of waste management strategies throughout the life cycle of the Project.

As per the requirements of Baffinland's EHS Management Framework, the company will conduct and document management reviews of its Waste Management Plan on a regular basis. Such reviews will ensure the integration of monitoring results for the waste management plan are integrated with other aspects of the Project and that necessary adjustments are implemented as required. These reviews also provide a formal mechanism to assess the effectiveness of the management in achieving the company's objectives and maintaining on-going compliance with Project permits and authorizations.

9. QA/QC

As per the requirements of Baffinland's EHS Framework, regular audits will be undertaken to ensure compliance with the current Waste Management Plan and that best management practices are implemented for waste management. The result of these audits will form the basis for an annual written statement of assurance by management on the effectiveness of its Waste Management Plan.

Camp incinerators are installed at each of the camps associated with the Mary River Project, namely Milne Port, Mine Site, Mid-Rail and Steensby. Each of these incinerators utilizes dual chamber, variable air flow design technology and is specifically designed for remote camp operations. QA/QC procedures for air emission monitoring are outlined in the *Air Quality & Noise Abatement Management Plan*.

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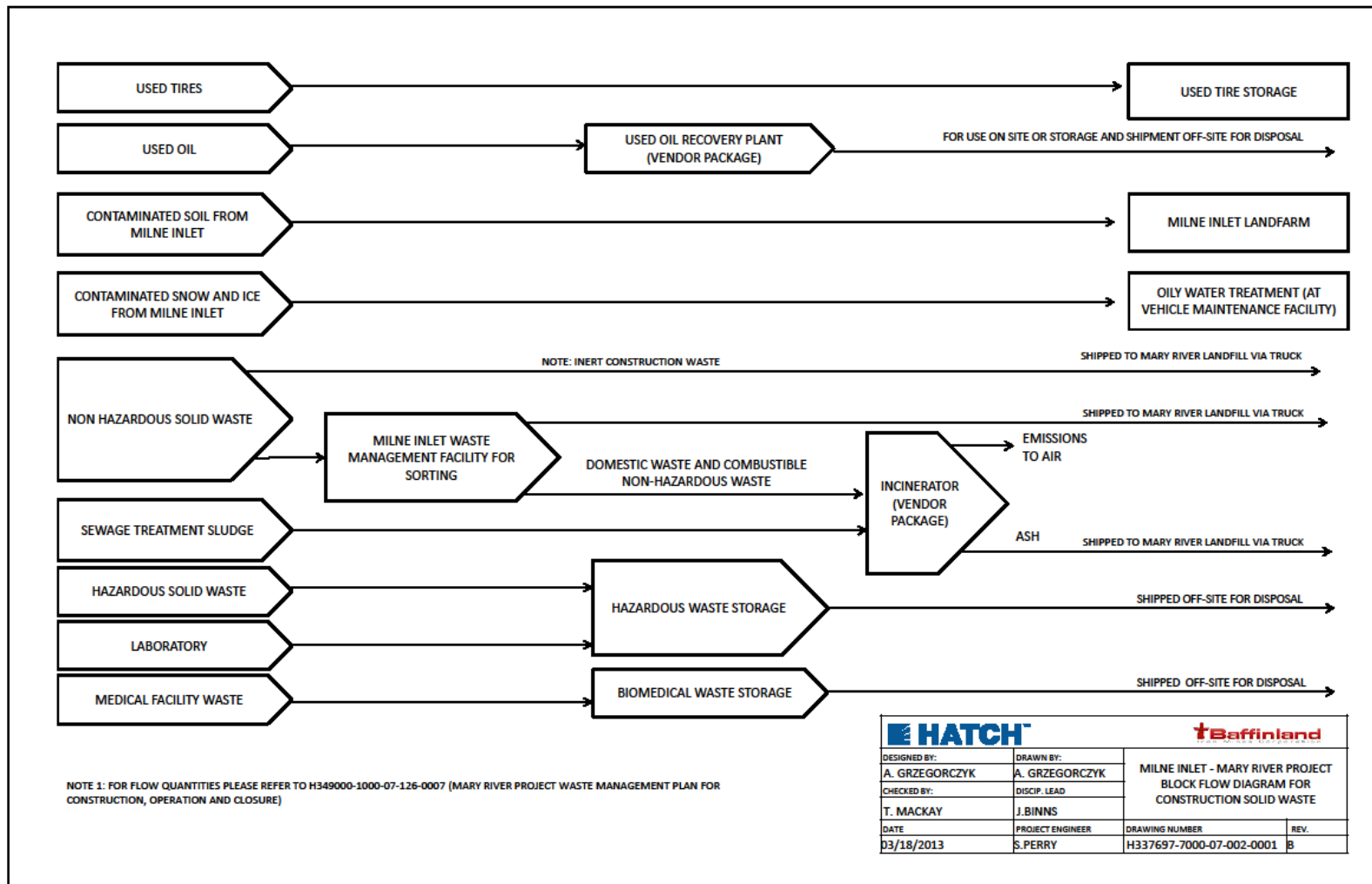
Northwest Territories (NWT). Municipal and Community Affairs. Guidelines for the Planning, Design, Operations and Maintenance of Modified Solid Waste Sites in the Northwest Territories. Prepared by Kent, R., P. Marshall and L. Hawke. Yellowknife: Ferguson Simek Clark, (April 21) 2003.

Annex 1

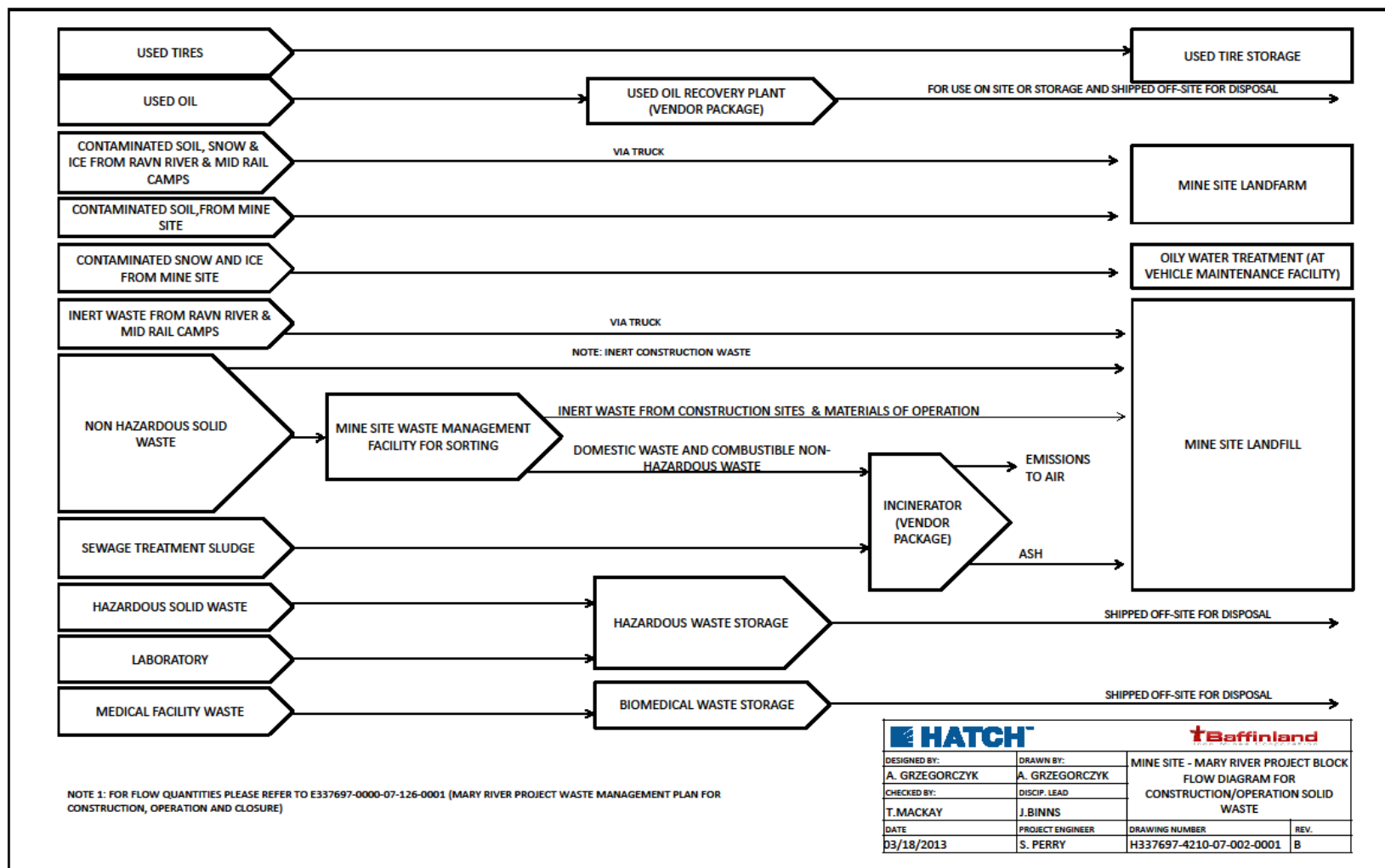
Block Waste Flow Diagrams

H337697-7000-07-002-0001	Milne Port - Mary River Project Block Flow Diagram for Construction Solid Waste
H337697-4210-07-002-0001	Mine Site - Mary River Project Block Flow Diagram for Construction Solid Waste
H337697-4510-07-002-0001	Steensby Port Site - Mary River Project Block Flow Diagram for Construction Solid Waste
H337697-7000-07-002-0003	Ravn River Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste
H337697-7000-07-002-2002	Mid Rail Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste
H337697-7000-07-002-0004	North Cockburn Lake Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste
H337697-7000-07-002-0005	South Cockburn Lake Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste

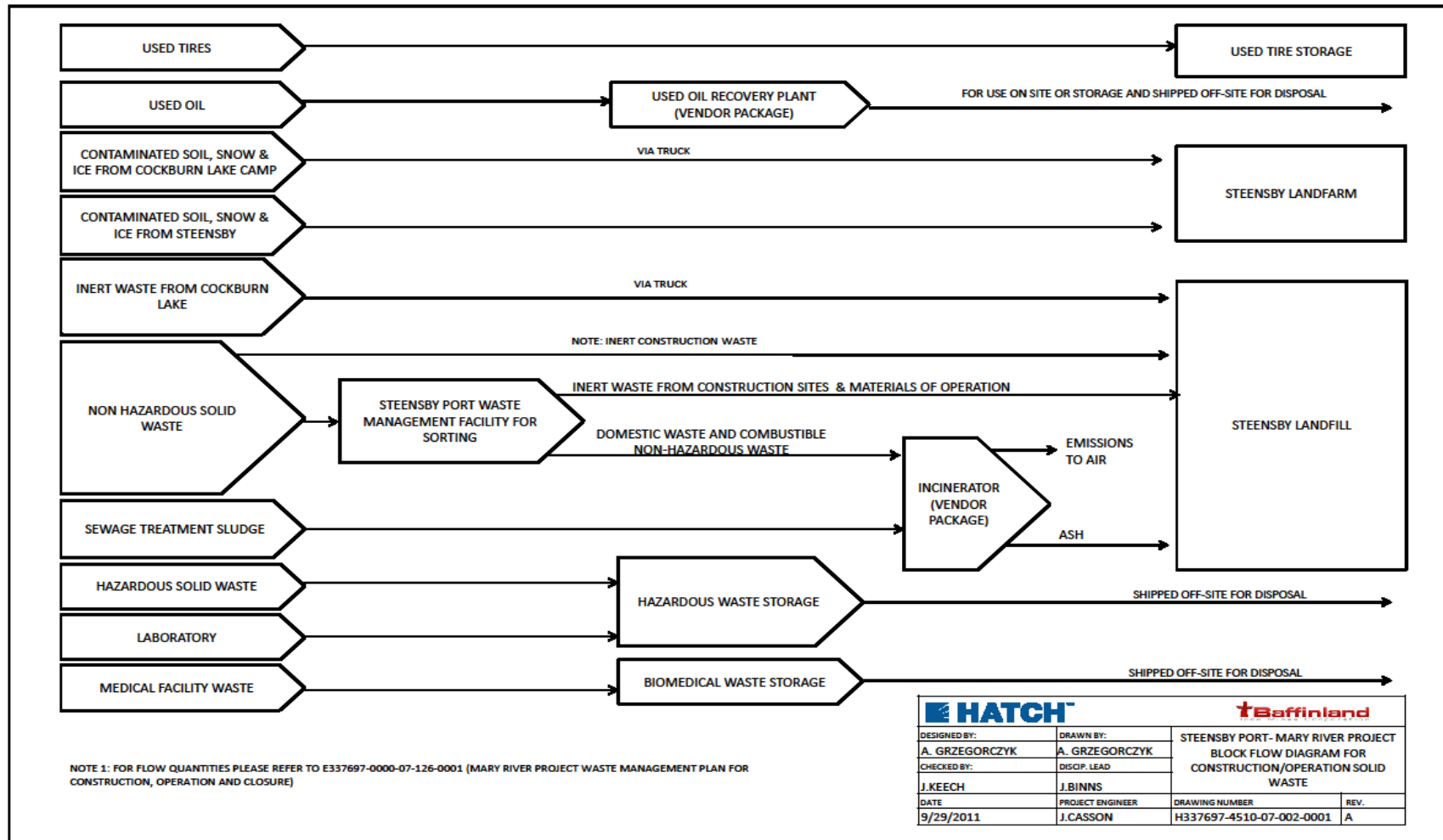
Annex 1. 1: H334697-70000-07*002-0001- Milne Port - Mary River Project Block Flow Diagram for Construction Solid Waste



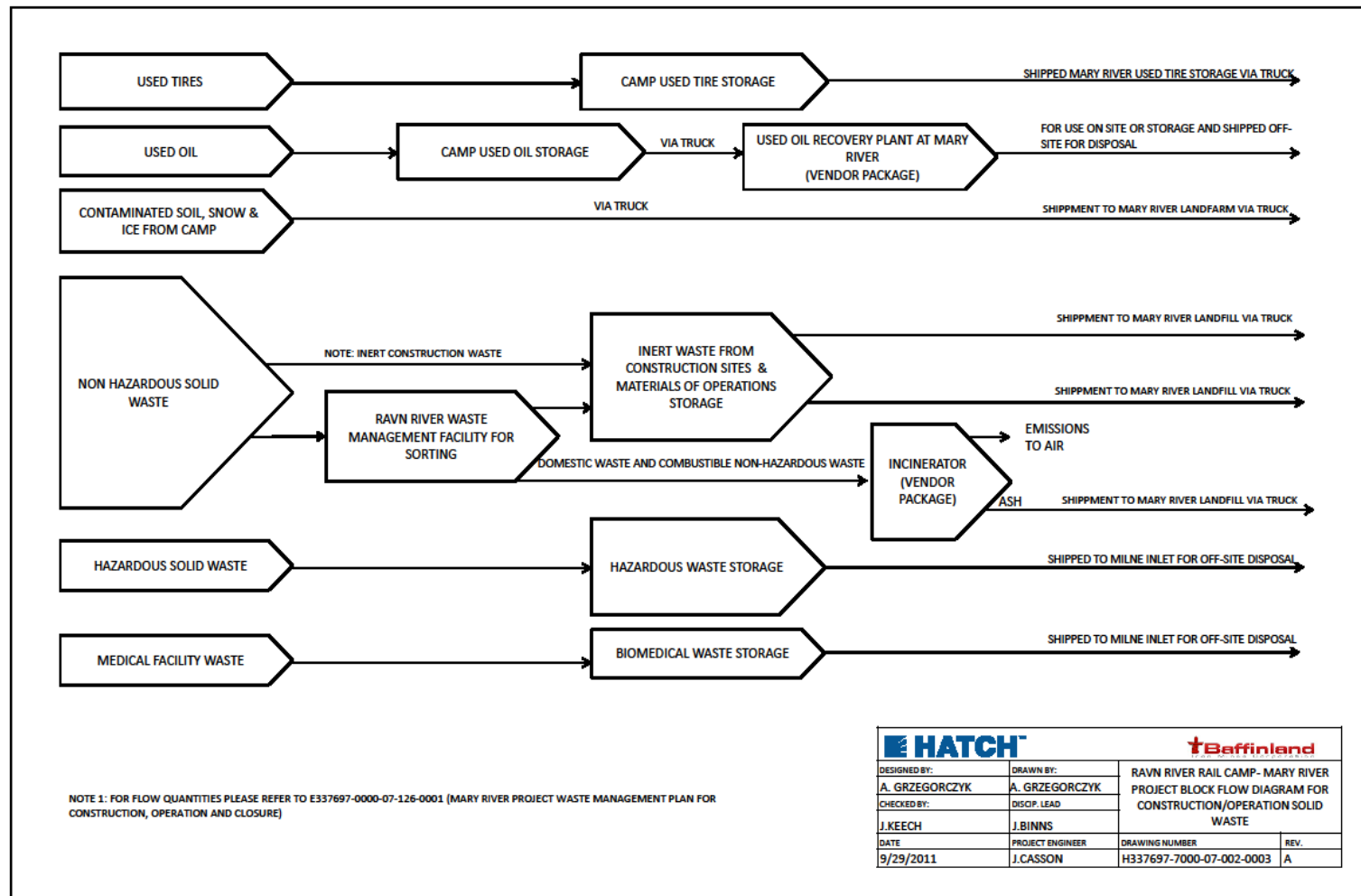
Annex 1. 2: H337697-4210-07-002-0001 - Mine Site - Mary River Project Block Flow Diagram for Construction Solid Waste



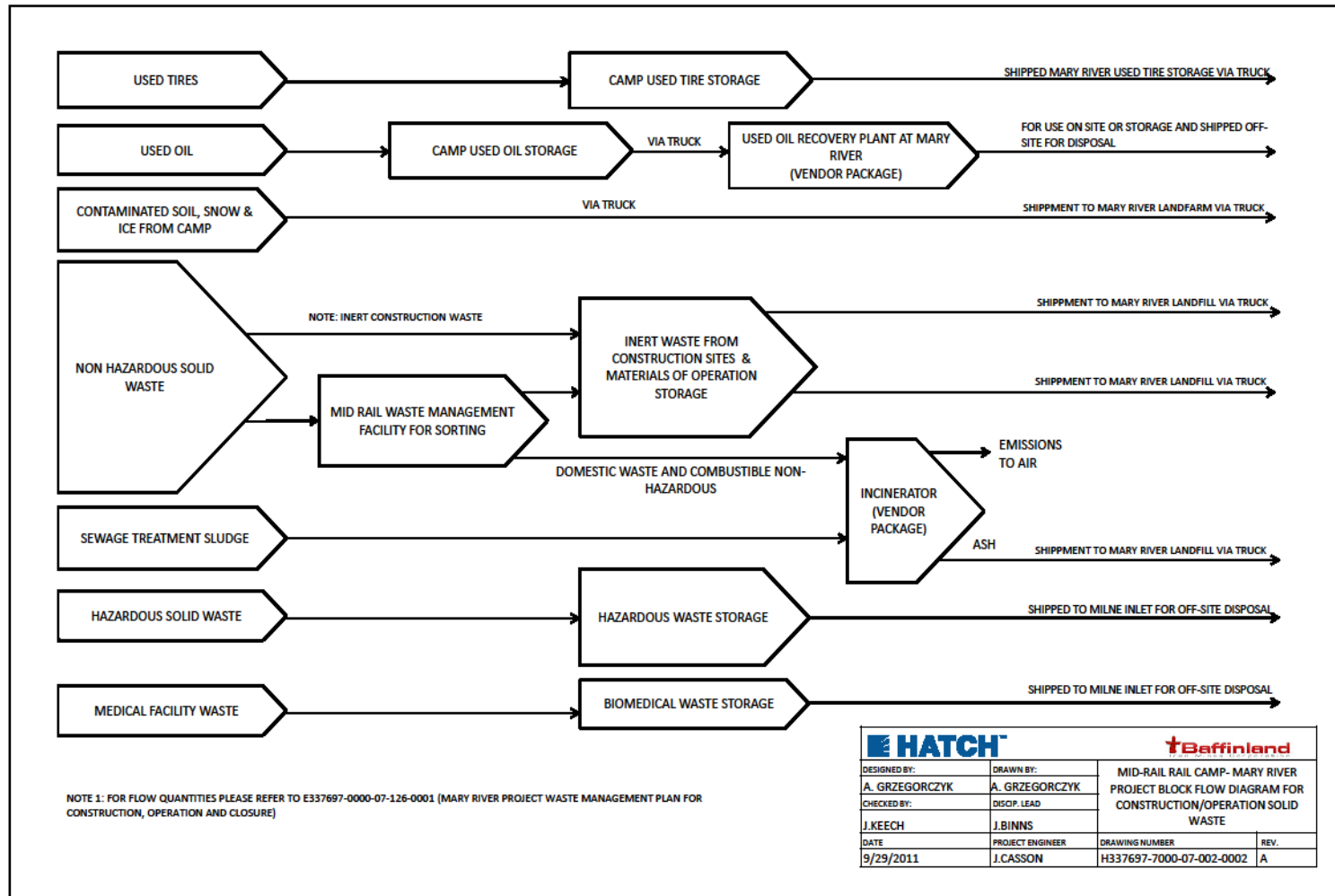
Annex 1. 3: H337697-4510-07-002-0001 - Steensby Port Site - Mary River Project Block Flow Diagram for Construction Solid Waste



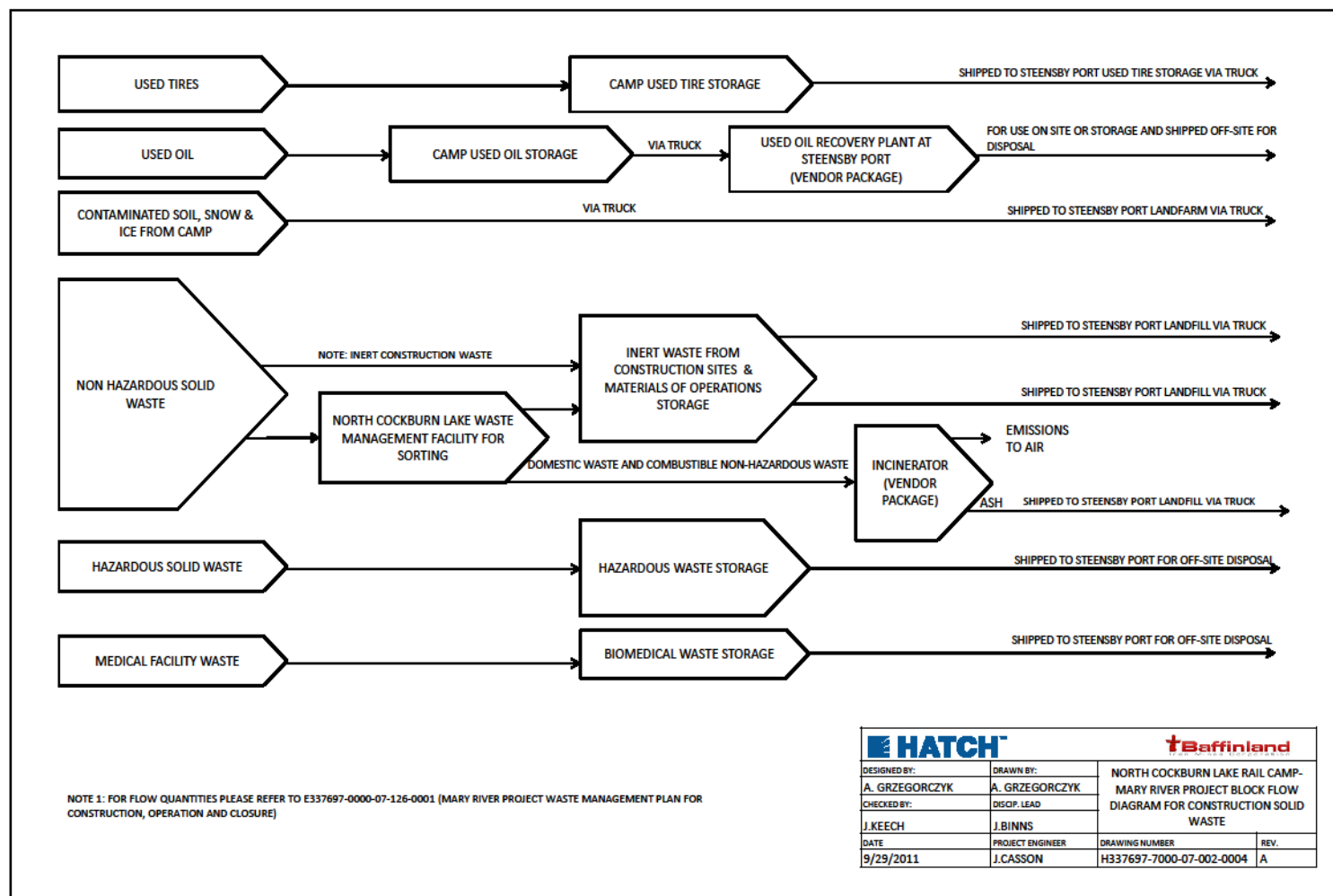
Annex 1. 4: H337697-7000-07-002-0003 - Ravn River Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste



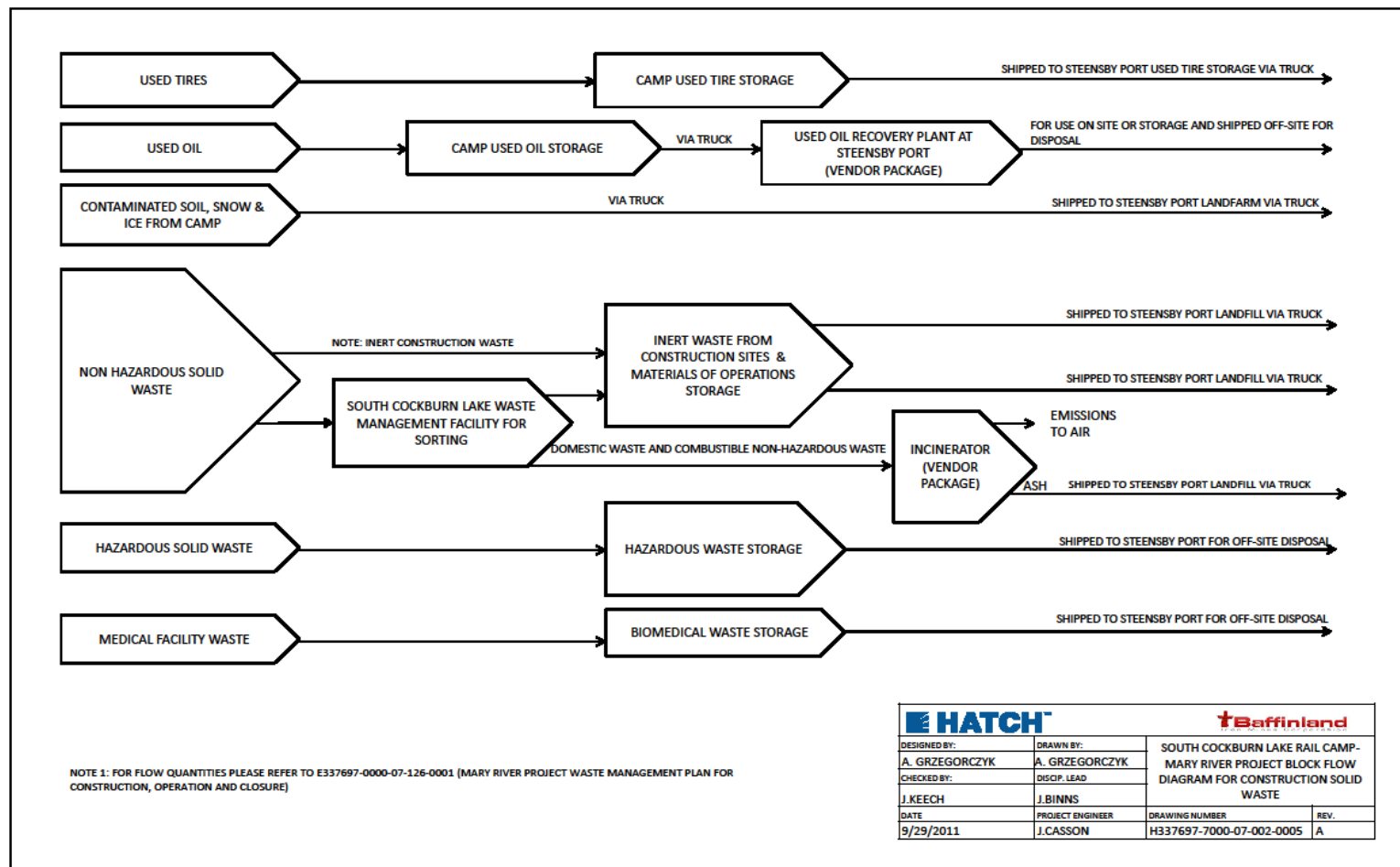
Annex 1. 5: H337697-7000-07-002-2002 - Mid Rail Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste



Annex 1. 6: H337697-7000-07-002-0004 - North Cockburn Lake Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste



Annex 1. 7: H337697-7000-07-002-0005 - South Cockburn Lake Rail Camp - Mary River Project Block Flow Diagram for Construction Solid Waste



NOTE 1: FOR FLOW QUANTITIES PLEASE REFER TO E337697-0000-07-126-0001 (MARY RIVER PROJECT WASTE MANAGEMENT PLAN FOR CONSTRUCTION, OPERATION AND CLOSURE)

HATCH		Baffinland	
DESIGNED BY:	A. GRZEGORCZYK	DRAWN BY:	A. GRZEGORCZYK
CHECKED BY:	J. KEECH	DISCOP. LEAD:	J. BINNS
DATE:	9/29/2011	PROJECT ENGINEER:	J. CASSON
		DRAWING NUMBER:	H337697-7000-07-002-0005
		REV.	A

Annex 2

Locations and Layouts of Waste Management Facilities

Please refer to Attachment 9 of Type A Water License Application for Drawings

H337697-7000-10-014-1001	Milne Port Construction Works Site Layout
H337697-7000-10-014-1002	Mary River Mine Site Construction Works Site Layout
H337697-7000-10-014-1003	Ravn River Rail Camp Construction Works Site Layout
H337697-7000-10-014-1004	Mid Rail Camp Construction Works Site Layout
H337697-7000-10-014-1005	South Cockburn Lake Rail Camp Construction Works Site Layout
H337697-7000-10-014-1006	Steensby Inlet Construction Works Site Layout
H337697-4610-07-042-0003	Steensby Inlet Environmental Monitoring Plan Site Layout (for proposed landfill location)
E337697-0000-10-042-0001	Hydrocarbon Impacted Soils Storage and Landfarm Facility - General Arrangement of Typical Landfarm
E337697-PM406-50-014-0001	Milne Inlet Environmental Waste Management Building Layout
H337697-7000-10-042-0007	Milne Inlet Environmental Waste Management Facilities
H337697-4350-10-014-0001	Mine Site Landfill and Landfarm Site Layout
H337697-4350-10-042-0001	Mine Site Environmental Waste Management Facility
E337697-PM406-50-014-0002	Mine Site Environmental Waste Management Building Layout
H337697-4660-10-014-0001	Steensby Inlet Landfill and Landfarm Site Layout
E337697-PM406-50-014-0003	Steensby Inlet Environmental Waste Management Building Layout
H337697-4660-10-042-0001	Steensby Inlet Environmental Waste Management Facility

Removed: H337697-7000-10-014-1001 - Milne Port Construction Works Site Layout
(Updated for 2013 Work Plan)

See: Annex 7 - Milne Port Site Layout - H349000-2000-00-015-0002