Baffinland Iron Mines Corporation

Fresh Water Supply, Sewage, and Wastewater Management Plan

BAF-PH1-830-P16-0010

Rev 4

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Index of Major Changes/Modifications in Revision 4

Item No.	Description of Change	Relevant Section
1	Updated Sustainable Development and HSE Policies.	3
2	Updated authorized freshwater sources and quantities for Domestic and Industrial Use (Table 4-1) and Dust Suppression (Table 4-2).	4.2
3	Removed miscellaneous discharge criteria from Section 5.3 and transferred criteria to their respective sections (Oily Water, Sedimentation Ponds, and Landfill)	5.3
4	Transferred discharge criteria for Landfarm Facility (Table 6-3) and Bulk Fuel Storage Facilities (Table 6-2) to Oily Water/Wastewater Treatment section.	5.3 / 6.1
5	Updated Oily Water Treatment Plan for both sites to reflect current operations.	6.2
6	Added discharge criteria (Type A Water Licence and MMER).	7
7	Transferred discharge criteria for the Landfill Facility from Section 5.3.	8
8	Updated Mobile Oily Water Separator Overview and O&M Plan.	9
9	Updated Roles and Responsibilities tables (Table 12-1 & 12-2) to reflect current operations and organizational structure.	12.1
10	Updated Organizational Chart (Figure 12-1) to reflect current operations.	12.7
11	Updated Appendix A to reflect amended Type A Water Licence.	Appendix A
12	Referenced 2016 Work Plan and Updated Site Layout Maps	Appendix B
13	Updated Block Flow/Water Balance Diagrams to reflect current operations.	Appendix C

Item No.	Description of Change	Relevant Section
14	Added updated Oily Water Separator (OWS) Manual	Appendix G
15	Added MMER Sampling and Reporting Requirements Memo (Minnow).	Appendix H
16	Added Truck Waste Facility Layouts and Component O & M Manuals	Appendix I

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Appendix H - MMER Sampling and Reporting Requirements Memo (Minnow)

Appendix I - Truck Wash and Oily Water Treatment Plant O & M Manuals

1 INTRODUCTION

This document describes the plan to manage the fresh water supply and wastewater for the various camp sites to be developed for the Mary River Project during the Project's construction and operation phases. Specifically, this document focuses on freshwater supply and wastewater treatment and disposal at Milne Port, the Mine Site, Steensby Port and various rail camps.

In accordance with annual reporting requirements this plan has been updated to take into account commitments made with respect to submissions received during the preliminary and technical review of various regulatory Application documents as well as final submissions and issues raised during Public Hearing Processes. This plan has also been updated to support the 2016 Work Plan presented in Appendix B.

The Fresh Water Supply, Sewage, and Wastewater Management Plan (the Plan) is an update to the existing plan and supersedes the BAF-PH1-830-P16-0010, Revision 3, dated March 2015 plan. This Plan will continue to support the Membrane Biological Reactor (MBR) sewage treatment plants (STPs) installed in 2014 which service the Mine Site Complex (MSC) and Port Site Complex (PSC) camps, and continue to support the potable water supply and oily water treatment activities under the Type 'A' Water Licence. This Plan will also support future upgrades and additions to the MBR STPs necessary to service future MSC and PSC camp expansions at Mine Site and Milne Port, respectively.

This Plan should be used in conjunction with the Aquatic Effects Monitoring Plan (AEMP)[1], (BAF-PH1-830-P16-0039) and the Surface Water Sampling Program – Quality Assurance and Quality Control (QA/QC) Plan[2] (BAF-PH1-830-P16-0001).

[1] Baffinland Iron Mines Corporation. Mary River Project – Aquatic Effects Monitoring Plan, Rev. 2. March 2016.

[2] Baffinland Iron Mines Corporation, Mary River Project - Sampling Program – Quality Assurance and Quality Control (QA/QC) Rev. 1, March 2016.

2 REGULATIONS, STANDARDS, AND CODES

As a minimum standard of acceptability, all actions undertaken will be compliant with appropriate sections of both Federal and Provincial legislation as indicated in the table below:

TABLE 2-1: APPLICABLE REGULATIONS, STANDARDS AND CODES

NUMBER/ACRONYM	TITLE
AWWA	American Water Works Association
IBC	International Building Codes
NSF	National Sanitation Foundation
GCDWQ	Guidelines for Canadian Drinking Water Quality
NWT Regulation 108-2009	Northwest Territories Water Supply System Regulations
Ontario Regulation 170/03	Safe Drinking Water Act, 2002
Nunavut Waters and Nunavut Surface Rights Tribunal Act, SC 2002, c 10	
Northwest Territories Water Act	
Northwest Territories Water Regulations (SOR/93-303)	
Ontario Drinking Water Quality Standards	
Canadian Fisheries Act	
Canadian Environmental Protection Act (1999)	
CCME Water Quality Guidelines for the Protection of Aquatic Life	
Ontario Guidelines for Sewage Works 2008	
CCME Guidelines for Compost Quality	
NSF/ANSI Standard 61	Drinking Water System Components
AWWA Standard B100	Filtering Material
AWWA Standard B604	Granular Activated Carbon
OSHA	Occupational Safety and Health Administration
MMER	Metal Mining Effluent Regulations

3 SUSTAINABLE DEVELOPMENT POLICY

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

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

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

1.0 HEALTH AND SAFETY

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

2.0 ENVIRONMENT

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

3.0 UPHOLDING HUMAN RIGHTS OF STAKEHOLDERS

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

4.0 TRANSPARENT GOVERNANCE

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

4.1 FURTHER INFORMATION

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

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

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

Brian Penney
Chief Executive Officer
March 2016

Health, Safety and Environment Policy

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

We implement this Policy through the following commitments:

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

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

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

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

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

Brian Penney
Chief Executive Officer
March 2016

4 FRESH WATER

4.1 GENERAL MITIGATION MEASURES FOR WATER USE

4.1.1 WATER INTAKES

4.1.1.1 ENGINEERING INTAKE STRUCTURES

Engineered intake structures are designed to minimize erosion, avoid sediment issues, and provide protection from ice and peak water flow. Care is taken to ensure that disturbance to aquatic environments is minimized during installation and maintenance of infrastructure. Rip rap used in construction is clean, free of fine sediment, non-acid leaching, and non-metal generating.

4.1.1.2 SCREENS ON INTAKE PIPES

Intakes are screened in accordance with the Department of Fisheries and Oceans (DFO) Freshwater Intake End-of-Pipe Fish Screen Guideline (DFO Guideline) to ensure no entrapment of fish. This guideline requires a 2.54 mm mesh size on the water intake pipeline to prevent entrainment of fish greater than 25 mm in length. It also requires a water withdrawal rate such that fish do not become impinged on the screen.

4.1.1.3 SELECTION OF SHORT-TERM WATER TAKE LOCATIONS

Short-term water intake will be required at many locations for a variety of needs including concrete manufacture, drilling and dust suppression, etc. A screening process will be used to confirm whether water sources are considered adequate as water take locations. Source selection begins by looking for the largest possible water body that is feasible for use. Lakes are considered first, followed by ponds and then large rivers. Streams and creeks will not be used for short term water take without prior approval of the Water Licence Inspector. The DFO guideline used for water taken from water bodies is to restrict removal of water to a maximum of 5% of the total volume. During winter under ice conditions water must be drawn from below two (2) m of non-frozen water (as the top two (2) m of water contain the majority of oxygen for fish). During the open water season, the water taking guideline states that no significant drawdown shall be caused. There must be no impact to fish or fish habitat.

4.1.1.4 WATER METERING AND WATER CONSERVATION MEASURES

Water meters are installed at strategic locations to monitor water consumption and enable the development of management strategies to reduce water usage/consumption. These strategies include the installation of low flow water taps, water use for drilling operation, etc.

4.2 FRESH WATER SOURCES

All fresh water for domestic camp use and industrial purposes, during Construction and Operations Phase of the Project shall be obtained in amount and from sources listed in the Table below:

TABLE 4-1: WATER USE FOR DOMESTIC AND INDUSTRIAL PURPOSES DURING THE CONSTRUCTION AND OPERATION PHASES1 *

Site	Source	Construction Phase	Operations Phase
		Volume (m^3/day)[2]	Volume (m^3/day)[2]
Milne Port (Milne Inlet)	Phillips Creek (summer)	367.5	367.5
	Km 32 Lake (Winter)		
Mine Site (Mary River)	Camp Lake	657.5	355.4
Steensby Port (Steensby Inlet)	ST 347 Km Lake	435.8	243.6
	3 Km Lake		
Raven River	Camp Lake	145.2	N/A
Mid-Rail	Nivek Lake (Summer)	79.5	N/A
	Ravn Camp Lake (Winter)		
Cockburn North (Tunnels Camp)	Cockburn Lake	101.4	N/A
Cockburn South Camp	Cockburn Lake	111.1	N/A
TOTAL		**1,898**	**966.5**

*Source: Type 'A' Water Licence (2AM-MRY1325 – Amendment No. 1).

[1]Baffinland began Early Revenue Phase operations in September 2014.
[2]Volumes by source are combined volumes for domestic and industrial purposes.

TABLE 4-2: WATER USE LOCATIONS AUTHORIZED FOR DUST SUPPRESSION*

Site	Source	Proposed Maximum Volume (m3/day)	Restriction
Tote Road	Phillip's Creek	212	None
	Km 32 Lake	364	
	CV128	579.5	
	CV099	110	June – July only during low flow (less than mean flow) years
	CV087	90	
	CV078	75	
	Katiktok Lake	318	None
	BG50	150	
	BG32	120	June – July only during low flow (less than mean flow) years
	CV217	130	None
	Muriel Lake	212	
	David Lake	132	June – July only during low flow (less than mean flow) years
	BG17	75	
	CV233 (Tom River)	135	None
	Camp Lake	86	

*Source: Type 'A' Water Licence (2AM-MRY1325 – Amendment No. 1)

The above water sources have been approved by the Water Board as freshwater sources for dust suppression. Authorization by the Water Board in writing must be obtained prior to withdrawing water at these sources listed above for any purpose other than dust suppression. Streams will not be used as a water source unless authorized and approved by the Board in writing. Additionally, no material shall be removed from below the ordinary High Water Mark of any water body unless authorized. For remote fresh water requirements such as dust suppression, tunnelling, geotechnical and exploration drilling, some water may be drawn by truck from nearby lakes and ponds and used directly.

Water used for the purposes of exploration drilling and domestic camp use at supporting satellite exploration camps will be withdrawn under the authorization of Baffinland's Exploration Type B Water Licence (2BE-MRY1421). Water withdrawn for domestic camp use at satellite exploration camps will be withdrawn from sources proximal to each camp. Total water use for all satellite exploration camps will not exceed 49 cubic metres (m^3) per day. Likewise, drill water will be withdrawn from water source(s) proximal to drilling targets and shall not exceed 250 cubic metres (m^3) per day. Therefore, the volume of water withdrawn for all purposes under this licence will not exceed 250 cubic metres (m^3) per day.

4.3 FRESH WATER SYSTEM PROCESS DESCRIPTION

The following sections describe the fresh water systems at the various Project sites.

Each site also includes a potable water treatment system which produces drinking water for the personnel at the site during construction and operation phases. These systems treat water to meet the Guidelines for Canadian Drinking Water Quality as well as the Ontario Drinking Water Quality Standards.

Minimum process equipment requirements are based upon the Northwest Territories Water Supply System Regulations, NWT Regulation 108-2009, Ontario Design Guidelines for Drinking Water Systems 2008, Ontario Regulation 170/03 – Drinking Water Systems, the Procedure for Disinfection of Drinking Water in Ontario, as well as best management practice.

4.3.1 MILNE PORT

Currently onsite at Milne Port there are two existing camps that support operations and construction activities. These camps include the Port Weatherhaven (PWH) Camp and the Port Site Complex (PSC) Camp. Each camp contains a Potable Water Treatment Plant (PWTP) within or near the camp as well as freshwater tanks to store raw water being delivered. The freshwater demand for construction and operation are shown on drawing Milne Inlet – Water Supply Balance Block Flow Diagram in Appendix C of this plan.

A raw water truck draws water from either 32 km lake (in winter/summer) or Phillips Creek (in summer) and delivers the water to a water storage tank near the camp. Water from this tank will be used to provide fire water as well as meet the fresh water requirements of the site. A stand pipe within the tank ensures that fire water is always available in the tank. The Milne Port camp layout including the potable water related infrastructure is presented in Appendix B.

The potable water treatment scheme consists of coagulation followed by media filtration and disinfection by ultraviolet radiation. The water then undergoes a secondary disinfection by sodium hypochlorite injection to ensure residual chlorine content at the point of use.

4.3.2 MARY RIVER SITE

Currently onsite at the Mine Site there are two camps that support construction, operations and site wide exploration activities. These camps include the Mine Site Weatherhaven (MWH) Camp and the Mine Site Complex (MSC) Camp. Each camp contains a Potable Water Treatment Plant (PWTP) within or near the camp as well as freshwater tanks to store raw water being delivered. The freshwater demand for construction and operation are shown on drawing Mine Site – Water Supply Balance Block Flow Diagram in Appendix C of this plan.

Fresh water supply for the Mary River Mine Site is obtained using an electric pump positioned inside a heated and insulated pumphouse on a raw water jetty, adjacent to the shoreline of Camp Lake. Water is pumped directly from the lake source to water storage tanks located at both camps. Water from these tanks will be used to provide fire water as well as meet the fresh water requirements of the site. A stand pipe within each tank ensures that fire water is always available in the tank. The Mine Site camp layout including locations the potable water related infrastructure is presented in Appendix B of this Plan.

Some fresh water requirements such as road dust suppression, exploration drilling, quarry dust suppression, and concrete and explosives manufacturing will be provided directly from Camp Lake and other nearby lakes using water trucks. Exploration drilling will continue throughout the construction and operation phases of the Project.

The potable water treatment scheme consists of coagulation followed by media filtration and disinfection by ultraviolet radiation. The water will then undergo a secondary disinfection by sodium hypochlorite injection to ensure residual chlorine content at the point of use.

5 SEWAGE TREATMENT

5.1 SEWAGE GENERATION RATE

The estimated generation of sewage is based upon a per capita generation as shown below:

TABLE 5-1: STP AVERAGE SEWAGE FLOW DESIGN BASIS

Parameter	Design Value	Source
Sewage Generation per Capita	300 L/person/day	Design Basis – Sewage Treatment Plant, Doc. No. H337697-4000-10-109-0002 (FEIS, Appendix 3B).

During 2015, actual sewage generated per person ranged from approximately 180 to 220 litres per day.

5.2 SEWAGE DISCHARGE CRITERIA

All sewage generated from relevant Project sites is directed to the Sewage Treatment Facilities or as otherwise approved by the Nunavut Water Board. As per the Type A Water Licence (2AM-MRY1325 – Amendment No. 1) Baffinland is constructing and operating infrastructure and facilities designed to contain, withhold, divert or retain Water and/or Waste in accordance with applicable legislation and industry standards. Effluent will be discharged such that surface erosion is minimized and no additional impacts are created. The quality of the sewage treatment plant effluent discharging to freshwater or directly into the ocean shall be in accordance with the applicable site discharge limits and the approved Type A Water Licence (2AM- MRY1325 - Amendment No. 1) as listed in the following table:

TABLE 5-2: EFFLUENT DISCHARGE QUALITY LIMITS FOR SEWAGE TREATMENT FACILITIES TO FRESHWATER AND TO THE OCEAN *

Parameter	Unit	Maximum Concentration of Any Grab Sample discharging into Freshwater (mg/L) Monitoring Locations: MS-01, MS-01a, MS-MRY-04, MS-MRY-04A	Maximum Concentration of any Grab Sample discharging into Ocean (mg/L) Monitoring Locations: MP-01, MP-01A SP-01, SP-01A,
BOD_5	mg/L	30	100
TSS	mg/L	35	120
Faecal Coliform	cfu/100 mL	1000 CFU /100 ml	10,000 CFU /100 ml
Oil and Grease*	mg/L	No visible sheen	No visible sheen
pH	---	Between 6.0 and 9.5	Between 6.0 and 9.5
Ammonia (NH3-N)	mg/L	4.0	-
Total Phosphorus (MS-01)	mg/L	4.0	-
Total Phosphorus (MS-01a)	mg/L	1.0	-
Toxicity	---	Final effluent not acutely toxic	Final effluent not acutely toxic

*Source: Type A Water Licence (2AM-MRY1325 - Amendment No. 1) Table 4 and 5.

Note, that locations MP-01 and MP-01a discharge directly into the ocean, therefore ocean discharge criteria would apply. In addition, facilities associated with monitoring stations MRY-MP-04 and MRY-MP-04A were decommissioned in 2013 and therefore the stations have been discontinued.

Recycled water and use of reclaimed water from the various Treatment Facilities (MBRs, OWSs, etc.), surface water management ponds and embankment dams and approved discharge locations may be used if waters meet appropriate discharge criteria for those facilities. Sludge generated from Sewage Treatment Facilities or any other facilities shall be incinerated using the Milne Port and Mine Site onsite incinerators or in the landfill with the appropriate approvals from authorities.

5.3 TREATED WASTEWATER GENERATION AND DISCHARGE/OUTFALL LOCATIONS

Treated sewage and wastewater for the Project are discharged to the following locations:

TABLE 5-3: APPROXIMATE TREATED EFFLUENT GENERATION AND DISCHARGE/OUTFALL LOCATIONS*

Camp/Site	Discharge/Outfall Location		Coordinates
	Summer	Winter	
Milne Port	Ocean at Milne Inlet		N: 7976338 E: 503636
Mine Site	Sheardown Lake for Exploration Camp	Storage Pond	N: 7913630 E: 559733
	Discharge 1 to Mary River		N: 7911946 E: 562321
	Discharge 2 to Mary river		N: 7911938 E: 562342
	Discharge 3 to Mary River		N: 7912010 E: 562249
Tote Road Work Sites	Conveyed to Mine Site or Milne Port Sewage Treatment		N/A
Steensby (Port)**	Ocean at Steensby Port		N: 7801412 E: 593378
Ravn River Area**	Conveyed to Mine Site Sewage Treatment		N/A
Mid-Rail Area**	Conveyed to Mine Site Sewage Treatment		N/A
Cockburn Tunnels Area**	Conveyed to Steensby Sewage Treatment		N/A
Cockburn South Camp**	Conveyed to Steensby Sewage Treatment		N/A

Note* Refer to Site Block Flow Diagrams in Appendix C for Milne Port and Mine Site anticipated annual effluent discharge. ** These sites are not expected to be active during 2016.

Treated wastewater effluent will be discharged at a distance of least thirty-one (31) metres above the Ordinary High Water Mark of any Water body, where direct flow into the Water body is not possible, such that surface erosion is minimized and no additional impacts are created.

5.4 SEWAGE TREATMENT PROCESS DESCRIPTION

The process description for the sewage treatment systems at each site are described in the sections that follow. Note that for design purposes originally a per capita sewage generation rate of 344L/person/day had been considered which is higher than the per capita potable water consumption rate (300L/person/day). This was to ensure that the sewage treatment systems would have a higher design allowance. For consistency 300L/person/day will now be used for both potable water consumption and sewage generation. During 2015, actual sewage generated per person ranged from approximately 180 to 220 litres per day. In addition, actual camp occupancy can be optimized based on potable water conservation measures that can be implemented to reduce per capita water consumption and reduce overall sewage generation from current rates.

5.4.1 MILNE PORT

The onsite STP for Milne Port is a Membrane Biological Reactor (MBR)) facility that was installed in 2014. Raw sewage generated at the PSC camp is pumped directly via lift stations and sewage lines to the MBR facility at Milne Port. Raw sewage generated at the PWH camp is stored in a raw sewage bladder until it is transported using a vacuum truck to the Milne Port MBR for treatment.

Treated effluent from the MBR sewage treatment plant is stored in a series of treated effluent tanks which collectively have a hydraulic retention time of 8 hours (at minimum) based upon nominal flows. It is designed such that the effluent tank will be at a low level during operation. This design allows for delay of discharge should sampling indicate that the effluent quality does not meet the applicable criteria. Such delay allows the effluent to be mixed, retreated, and retested before discharge. Once sampling indicates that effluent is meeting discharge criteria the treated effluent stream is directed to discharge via truck or pipeline to the overland outfall discharge location (See Table 5-3 for coordinates). The discharge location at Milne Inlet is shown on the Milne Port Site Layout (refer to Appendix B).

Should discharge be necessary from the treated effluent tanks due to volume, the off-spec effluent will be stored in the Milne Port polishing waste stabilization pond (PWSP). The off-spec effluent will be removed by vacuum truck and fed into the new sewage plant feed tank for re-processing or treated by means of a pond treatment system (i.e. DAF system) Should there be high volumes of off-spec effluent greater than the capacity of the existing PWSP, the Type A (2AM-MRY1325 – Amendment 1) allows for the construction of a second PWSP to be built at Milne Port. This second PWSP (No. 2) would work in parallel with the existing PWSP and be treated in the same manner.

In the event that there is an electrical power outage that causes the sewage treatment plant to be completely inoperable, raw sewage will be diverted temporarily, trucked to the PWSP, until the sewage plant is operating again. At that time, partially or untreated sewage from the PWSP(s) will be trucked back to the treatment plant for treatment or treated using an in situ pond treatment system and discharged to the ocean outfall (Refer to Appendix F - PWSP Effluent Discharge Plan).

The sludge generated by the MBR is dewatered using a mechanical dewatering device, a filter press, and then incinerated. Sludge is stored in an animal proof secure area. Odour generation is limited because the sludge is aerobically digested, dewatered and incinerated regularly such that the sewage cake is not stored for significant periods. Odour control carbon vents are installed where deemed necessary. The incinerator design considered the solids content of the sludge from the dewatering device. Note that there is a potential option to dispose of dewatered sludge in the Mine Site landfill with the appropriate approvals from authorities.

The sewage treatment system basis as described above will be applicable for current and future construction and operations requirements. The site layout showing the location of camp, sewage treatment and ancillary facilities is presented in Appendix B.

5.4.2 MARY RIVER MINE SITE

The onsite STP for the Mine Site is a Membrane Biological Reactor (MBR)) facility that was installed in 2014. The Rotating Biological Contactor (RBC) type Sewage Treatment Plant (STP) (Seprotech manufactured), previously used to treat sewage from the Mine Site Weatherhaven camp, will eventually be decommissioned however in the interim it is being used as a temporary holding facility/ surge tank for the Mine Site Weatherhaven camp. Raw sewage is transported from the RBC by vacuum truck to the MBR for treatment. In the meantime, there would be the option to start this plant up again if the need arises since it remains permitted.

Treated effluent from the new MBR sewage treatment plant is stored in a series of treated effluent tanks which collectively have a hydraulic retention time of 8 hours (at minimum) based upon nominal flows. It is designed such that the effluent tanks will be at a low level during operation. This design allows for delay of discharge should sampling indicate that the effluent quality does not meet the applicable criteria. Such delay allows the effluent to be mixed, retreated, and retested before discharge. Once sampling indicates that effluent is meeting discharge criteria the treated effluent stream is directed to discharge via pipeline to the Mary River discharge locations (See Table 5-3 for winter and summer discharge co-ordinates). The discharge locations at Mine Site is shown on the Mine Site Layout presented in Appendix B.

Rip rap has been used at the discharge locations to reduce sedimentation and erosion at the discharge location and along the drainages upstream of Mary River. Specific discharge locations into Mary River can be seen on the Mine Site Layout found in Appendix B. The discharge strategy will be reviewed annually and optimized as necessary.

In the event that there is an electrical power outage that causes the sewage treatment plant to become inoperable, raw sewage will be temporarily trucked to local existing polishing waste stabilization ponds until the sewage plant comes on line again. Partially or untreated sewage from the PWSPs from this event will either be trucked back to the treatment plant for treatment/reprocessing or treated in situ at the pond location (Refer to Appendix F - PWSP Effluent Discharge Plan).

The sludge generated at the new MBR is dewatered using a mechanical dewatering device, a filter press, and then incinerated. Sludge cake is stored in an animal proof secure area. Odour generation will be limited because the sludge will be aerobically digested, dewatered and incinerated regularly such that the sewage cake is not stored for significant periods. Odour control carbon vents are installed where deemed necessary. The incinerator design considered the solids content of the sludge from the dewatering device.

The MBR sewage treatment plant is designed to also process raw or partially treated sewage from Ravn and Mid-Rail camps in the event these facilities have been constructed. The sewage could be transported to the Mary River permanent sewage treatment facility by vacuum truck.

The sewage treatment system basis as described above is adequate for current construction and operations requirements. The modular nature of the plants makes it very simple to add containerized plants for increased sewage treatment capacity. The site layout showing the location of camp, sewage treatment and ancillary facilities is presented in Appendix B.

6 OILY WATER/WASTEWATER TREATMENT

There are two sources of potentially oily water that have been identified at Milne Port and the Mine Site. There is the wash-water generated at the vehicle maintenance facilities, waste management building, emergency response garage and truck wash and then there is water that collects within the bulk fuel storage berms and Landfarm facilities at Project sites. Based on the different nature of these two wastewater sources, distinct discharge criteria (and treatment plans) have been developed for each.

6.1 OILY WATER TREATMENT DISCHARGE CRITERIA

All discharge from the Oily Water/Wastewater Treatment Facilities for monitoring stations MP-02, MS-02, and SP-02 will not exceed the following Effluent quality limits provided in Table 6-1 below.

TABLE 6-1: EFFLUENT DISCHARGE QUALITY LIMITS FOR OILY WATER TREATMENT FACILITIES*

Parameter	Maximum Concentration of Any Grab Sample (mg/L)
pH	6 – 9.5
TSS	35
Ammonia	4
Phosphorous	4
Benzene	0.370
Ethylbenzene	0.090
Toluene	0.002
Oil and Grease	15 and no visible sheen
Arsenic	0.50
Copper	0.30
Lead	0.20
Nickel	0.50
Zinc	0.50

*Source: Type A Water Licence (2AM-MRY1325 – Amendment No. 1) Table 6.

All discharge from Bulk Fuel Storage Facilities will not exceed the following effluent quality limits outlined in Table 6-2. Applicable Monitoring Stations include MP-03, MP-MRY-7, MS-03, MS-04, MS-MRY-6, SP-04 and SP-05.

TABLE 6-2: EFFLUENT DISCHARGE QUALITY LIMITS FOR THE BULK FUEL STORAGE FACILITIES*

Parameter	Maximum Concentration of any Grab Sample (mg/L)
Benzene	0.370
Toluene	0.002
Ethylbenzene	0.090
Lead	0.001
Oil and Grease	15 and no visible sheen

*Source: Type A Water Licence (2AM-MRY1325 Amendment No. 1) Table 8

All discharge from Landfarm Facilities, including the Contaminated Snow Containment Berms, will not exceed the following effluent quality limits outlined in Table 6-3. Applicable Monitoring Stations include MP-04, MS-05 and SP-06.

TABLE 6-3: EFFLUENT DISCHARGE QUALITY LIMITS FOR THE LANDFARM FACILITIES*

Parameter	Maximum Concentration of any Grab Sample (mg/L)
pH range	Between 6.0 and 9.0
Total Suspended Solids	15
Oil and Grease	15 and no sheen
Total Lead	0.001
Benzene	0.370
Toluene	0.002
Ethylbenzene	0.090

*Source: Type A Water Licence (2AM-MRY1325 - Amendment No. 1) Table 9

6.2 OILY WATER/WASTEWATER TREATMENT PROCESS DESCRIPTION

Oily water and wastewater generated by the Project shall be treated at the Oily Water/Wastewater Treatment Facilities allowed under the scope of the Licence. The process description for both oily water/wastewater treatment systems at each site are described in the sections that follow.

6.2.1 MILNE PORT

Oily water may be generated at the Milne Port from the following sources (this neglects minor oily water generated from accidental spills which will be handled by the Spill Contingency Plan):

- Vehicle maintenance and wash facilities (i.e. truck wash, snow/ice melt, equipment and floor wash down water).
- Bulk fuel storage facility (tank farm).
- Concrete sumps in buildings such as Maintenance Shops, Waste Management Building, Emergency Response Building, etc.
- Lined containment facilities/berms (i.e. hazardous waste, product storage).

All possible sources listed above are shown in the Milne Port layout presented in Appendix B.

Any oily water generated from the Milne Port Bulk Fuel Storage Facility or other lined containment facilities is collected in sump(s) within each facility. The water is then treated directly by the prefabricated mobile oily water separator (OWS) contained within a 40’ seacan. The prefabricated mobile OWS uses a series of skimmers, filters, clay and activated carbon to capture and remove hydrocarbons from oily water.

Wash and melt water generated at the vehicle maintenance facilities, waste management building and emergency response garage collects in each buildings designated sump(s) by gravity flow. Suspended material in the wastewater settles out in the sump. All sump water collected in these buildings is collected and stored at the Milne Port Contaminated Snow Containment Berm until the water can be treated during the open water season using the mobile OWS system. Following treatment by the mobile OWS, the treated effluent will be pH adjusted, if required, and resampled to ensure effluent water quality meets the applicable discharge criteria before the effluent is finally discharged to the receiving environment.

All effluent discharges of treated oily water/wastewater to the receiving environment will meet effluent discharge criteria outlined in Section 6.1. Depending on the situation, treated oily water effluent may be blended with treated sewage and discharged, or discharged directly based on sampling.

6.2.2 MARY RIVER SITE

Oily water may be generated at the Mine Site from the following sources (this neglects minor oily water generated from accidental spills which will be handled by the Spill Contingency Plan):

- Vehicle maintenance and wash facilities (i.e. truck wash, snow/ice melt, equipment and floor wash down water).
- Bulk fuel storage facility (tank farm).
- Emulsion plant wash water
- Concrete sumps in buildings such as Maintenance Shops, Waste Management Building, Emergency Response Building, etc.
- Lined containment facilities/berms (i.e. hazardous waste, product storage).

All possible sources listed above are shown in the Mine Site layout presented in Appendix B.

Wash and melt water generated at the vehicle maintenance facilities, truck wash, waste management building and emergency response garage collects in each buildings designated sump(s) by gravity flow. Suspended material in the wastewater settles out in the sump. All sump water collected in these buildings will be transferred to the Truck Wash Facility for treatment using the facility's oily water treatment plant, once it is fully commissioned. Prior to commissioning the Truck Wash Facility or in the event of a breakdown of that facility process, sump water will be transferred to Totes that will be stored in hazardous containment lined facilities. The water in these Totes will discharged and treated in lined berms utilizing the mobile OWS system or shipped off site for disposal at an accredited treatment facility.

The Truck Wash Facility at the Mine Site will be commissioned in 2016. The facility is equipped with an oily water treatment plant as well as trays and a sump to capture all wash water generated at the facility, allowing it to recycle up to 90% of the water used. Wash water produced in the truck wash facility (truck washing, equipment and floor wash down) will flow by gravity and be collected in the trays and a local sump. Suspended material in the wastewater is removed using a series of sumps, settling tanks (de-muck tank) and filters. Free and emulsified oil in the wastewater is removed by the facility's oily water treatment plant which utilizes a series of skimmers, activated carbon and filters in order to substantially reduce oil levels in the recycled wastewater. The water is then reused by the facility to wash down equipment and vehicles. Should there need to be a discharge from the facility to the receiving environment, the wastewater is further treated with the facility's reverse osmosis unit and pH controller to ensure the final effluent meets all discharge criteria outlined in the Type A Water Licence.

Treated effluent from the truck wash's oily water treatment plant will be pumped to the discharge outfall at the Mary River or other on land location as agreed to by the Water Licence Inspector. Most water is recycled and reused within the facility. The separated waste oil will be stored in a local tank. Periodically, the oil from the tank will be drained and shipped off site or incinerated. Accumulated suspended solids will be periodically removed by bucket loader vehicle and sent to the Landfarm Facility for treatment if contaminated with hydrocarbons or the landfill if demonstrated to be non-hazardous.

Collected stormwater run-off from the Mine Site Bulk Fuel Storage Facility and/or other lined containment facilities (i.e. hazardous waste berms, etc.) will be treated using the mobile OWS system

and discharged directly to the adjacent land surface. As mentioned prior, the mobile OWS system is a prefabricated mobile oily water separator contained within a 40' seacan. The mobile OWS system uses a series of skimmers, filters, clay and activated carbon to capture and remove oils and hydrocarbons from wastewater. Effluent from the mobile OWS will sampled regularly to ensure effluent quality meets the applicable discharge criteria outlined in the Type A Water Licence.

Depending on the situation, effluent from either the mobile OWS system or the Truck Wash Facility may be blended with treated sewage and discharged, or discharged directly based on sampling.

The emulsion plant is equipped with its own wastewater treatment plant which utilizes an evaporation system to evaporate the water leaving solid residue and oil. This residue will be tested for toxicity and if necessary will be taken off-site for disposal at a licensed facility, otherwise the waste will be landfilled.

7 SEDIMENTATION PONDS

The sedimentation ponds described in the sections below were constructed in 2015 to retain runoff water from the Milne Port ore stockpile pad and the Mine Site crushing pad and waste rock stockpile. The following activities are planned for 2016:

- Complete contouring and ditching of stockpile and crushing pads at Project sites to effectively direct runoff from stockpile and crushing areas to their respective sedimentation ponds;
- Construction of the permanent waste rock stockpile pond at the Mine Site; and
- Decommission temporary Mine Site waste rock stockpile pond used during the 2015 open water season.

Water in these ponds will be monitored as part of the site drainage monitoring strategy to meet applicable effluent quality criteria as shown below.

7.1 DISCHARGE CRITERIA

All discharge from the Exploration Phase Bulk Sample monitoring stations (MS-MRY-09, MS-MRY-10, MS-MRY-11, MP-MRY-12) as well as the sedimentation ponds (MS-06, MS-07, MS-08, MS-09 and SP-07) associated with the Project's mining operations (crushing, ore and waste rock stockpiles) will not exceed the following effluent quality limits provided in Table 7-1. As the new pit was developed during 2014 and 2015, the Exploration Phase Bulk Sample monitoring stations have been decommissioned. New sampling locations will be selected in cooperation with the Water Licence Inspector during 2016 to effectively monitor any surface runoff from the current mine pit infrastructure.

In addition, effluent discharged from sedimentation ponds at the Mine Site (MS-06, MS-07, MS-08, MS-09) will not exceed the effluent quality limits within the Metal Mining Effluent Regulations (MMER) provided in Table 7-2. When the maximum limit for a parameter differs between the MMER and Water Licence discharge criteria, the more conservative (lower) limit for the parameter will be adopted.

7.1.1 TYPE A WATER LICENCE – NUNAVUT WATER BOARD

TABLE 7-1: EFFLUENT DISCHARGE QUALITY LIMITS FOR OPEN PIT, STOCKPILES, AND SEDIMENTATION PONDS (NWB)*

Parameter	Maximum Concentration of Any Grab Sample (mg/L)
Total Arsenic	0.50
Total Copper	0.30
Total Lead	0.20
Total Nickel	0.50
Total Zinc	0.50
Total Suspended Solids	15
Oil and Grease	No visible sheen
Toxicity	Not acutely toxic
pH	6.0 – 9.5

*Source: Type A Water Licence (2AM-MRY1325 – Amendment No. 1) Table 10.

7.1.2 METAL MINING EFFLUENT REGULATIONS – ENVIRONMENT CANADA*

TABLE 7-2: EFFLUENT DISCHARGE QUALITY LIMITS FOR OPEN PIT, STOCKPILES, AND SEDIMENTATION PONDS (EC)*

Parameter	Mean Monthly Limit (mg/L)[1]	Maximum Concentration of Any Grab Sample (mg/L)
Total Arsenic	0.50	1.00
Total Copper	0.30	0.60
Total Lead	0.20	0.40
Total Nickel	0.50	1.00
Total Zinc	0.50	1.00
Total Suspended Solids	15	30
Radium-226	0.37 Bq/L	1.11
pH	6 – 9.5	6 – 9.5
Toxicity	Not acutely toxic	Not acutely toxic

*Source: Metal Mining Effluent Regulations, Schedule 4

[1] Parameters listed above are sampled weekly.

Additional parameters including sub-lethal toxicity, aluminum, cadmium, iron, mercury, molybdenum, ammonia, nitrate, hardness, alkalinity and specific conductance are also required under MMER, however these parameters do not have a maximum water quality discharge limit but instead are used to provide additional information to assist in interpreting toxicity results and identifying potential effects on the receiving environment. For additional information on the MMER requirements pertaining to the Project refer to Appendix H.

7.2 MILNE PORT STOCKPILE SEDIMENTATION PONDS

The two (2) Milne Port stockpile sedimentation ponds (east and west) were constructed to temporarily retain the runoff water from the Milne Port ore stockpile and crushing/screening area and to contain the sediment load. During normal operation, runoff from the stockpile area drains to the stockpile sedimentation ponds. The ponds were designed with sufficient retention time to ensure the sediment would gravity-settle to the bottom of the pond and allow the runoff to be tested before the water reaches the overflow weirs. The ponds are equipped with overflow weirs designed to allow the unloaded surface water to drain through a controlled discharge to Milne Inlet. Alternatively, the pond can be pumped out using a portable pump arrangement.

In the case that the sedimentation pond effluent quality does not meet the discharge criteria outlined in the Type A Water Licence by means of sediment gravity settling alone, additional treatment methods (i.e. flocculants, GAC, clay, filters, etc.) will be employed to ensure effluent compliance.

The ponds were designed to fit within the foreshore areas north of the stockpile area and do not encroach near the shoreline.

Construction activities during 2016 will include grading the stockpile pad and installing drainage ditches to effectively direct and carry runoff from the ore stockpile pad to the sedimentation ponds.

7.3 MINE SITE ORE CRUSHER PAD SEDIMENTATION POND

The Mine Site ore crusher pad sedimentation pond was completed in 2015. This pond is designed to temporarily retain the runoff water from the Mine Site crusher pad area and contain the sediment load, particularly during seasonal freshet activities. During normal operation, runoff from the crusher area drains to the sedimentation pond (west of the crusher pad). The pond is equipped with an overflow weir designed to allow, for extreme weather periods (e.g. greater than a 1 in 10 year, 24 hour design storm), the unloaded surface water to drain through a controlled discharge to Sheardown Lake. The ponds were designed with sufficient retention time to ensure the sediment would gravity-settle to the bottom of the pond before the water reaches the overflow weir.

The pond is also equipped with a pump pad on the northwest side. The normal operation of the pond will be to test the water quality for MMER requirements and when on spec, pump out the water using a portable pump arrangement. The pump arrangement connects into the treated effluent discharge pipeline for discharge to Mary River.

In the case that the sedimentation pond effluent quality does not meet the applicable discharge criteria by means of sediment gravity settling alone, additional treatment methods (i.e. flocculants, GAC, clay, filters, etc.) will be employed to ensure effluent compliance.

7.4 MINE SITE WASTE ROCK STOCKPILE POND

A temporary waste rock stockpile sedimentation pond was constructed in 2015. The permanent waste rock stockpile sedimentation pond (east) for the Mine Site is planned to be constructed in 2016. The temporary pond will be decommissioned during 2016, when the permanent pond is commissioned. Both the temporary pond and permanent pond are designed to temporarily retain the runoff water from the Mine Site waste rock dump area and contain the sediment load. During normal operation, runoff from the stockpile area drains to the waste rock sedimentation pond (north of the waste rock dump area). The pond is equipped with a pump pad on the north side. The pond will be routinely tested to ensure the water meets MMER requirements and then pumped out seasonally using a portable pump arrangement. The pump arrangement discharges to the same discharge diversion channel accessed by the overflow weir. The diversion channel drains into a small natural drainage which then in turn discharges to the Mary River at a location designated in the AEMP.

In high rainfall periods (e.g. greater than a 1 in 10 year, 24 hour design storm), the pond is also equipped with an overflow weir on the north side designed to allow the unloaded surface water to drain through a controlled discharge diversion channel, also to Mary River. The pond was designed with sufficient retention time to ensure the sediment would gravity-settle to the bottom of the pond before the water reaches the overflow weir.

In the case that the sedimentation pond effluent quality does not meet the applicable discharge criteria by means of sediment gravity settling alone, additional treatment methods (i.e. flocculants, GAC, clay, filters, etc.) will be employed to ensure effluent compliance.

8 LANDFILL

8.1 DISCHARGE CRITERIA

All runoff and seepage from the Landfill Facilities at Monitoring Stations MS-MRY-13A, MS-MRY-13B and SP-08 will not exceed the following Effluent quality limits presented in the table below:

TABLE 8-1: EFFLUENT DISCHARGE QUALITY LIMITS FOR THE LANDFILL FACILITIES*

Parameter	Maximum Concentration of Any Grab Sample (mg/L)
pH range	Between 6.0 and 9.5
Total As	0.5
Total Cu	0.3
Total Pb	0.2
Total Ni	0.5
Total Zn	0.5
TSS	15
Oil and Grease	No visible sheen

*Source**:** Type A Water Licence (2AM-MRY1325 - Amendment No. 1) Table 7

8.2 MINE SITE LANDFILL

The Mine Site Landfill Facility is located just south of the NE Basin of Sheardown Lake. Both of facility's monitoring stations, MS-MRY-13A and MS-MRY-13B, are sampled monthly during the open water season and are situated on a small stream down gradient of the Landfill Facility. The small stream drains into the NE Basin of Sheardown Lake on its southern shoreline. Refer to the Mine Site Layout presented in Appendix B for the exact location of the monitoring stations and Landfill Facility.

9 OPERATIONS AND MAINTENANCE (O & M)

The project specific O & M Manual for Sewage Treatment Systems is provided by Newterra Ltd in Appendix D. Sample plans for operation and maintenance of the potable water and oily water systems are given below. These plans were provided by the vendors of potable and oily water treatment systems.

9.1 POTABLE WATER TREATMENT SYSTEM O & M PLAN

9.1.1 REGULAR MAINTENANCE SCHEDULE

The potable water system is fully automatic, and only requires limited supervision and regular maintenance.

The following maintenance schedule is subject to regulations from local government, and instructions from original equipment manufacturers.

The following maintenance schedule is common for all potable treatment plants.

TABLE 9-1: RECOMMENDED MAINTENANCE SCHEDULE- POTABLE TREATMENT PLANTS

Items	Description
Daily	• Alarm check. • Chemical storage level check. • Controller time check. • Pressure gauge check. • Total and free chlorine testing. • Turbidity check.
Monthly	• Turbidity analyzer check/calibration. • Residual chlorine/pH analyzer check/calibration.
Annual	• Filter media level check, and refill if required. • UV lamp replacement.

9.1.2 MONITORING PLAN

The monitoring plan is subject to local regulations of drinking water and other related codes. The following instruments will be provided to monitor the operation and performance of system.

- Inlet flow meter: to monitor feed flow, backwash flow, rinse flow and filtered flow.
- Effluent turbidity analyzer: to monitor turbidity in produced water.

- Effluent pH/residual chlorine analyzer: to monitor pH and residual chlorine of produced water.

The PLC system in control panel will totalize raw water, produced water, backwash water, chemical injection, pump running time etc.

Periodically sampling and lab test for raw water and treated water will be applied to ensure the treated water meeting drinking water standards. The frequency of the sampling and testing will be determined by the ministry and outlined in the certificate of approval.

9.2 MOBILE OILY WATER SEPARATOR (OWS) SYSTEM

9.2.1 SYSTEM OVERVIEW

The mobile OWS is a prefabricated system (Newterra Ltd.) housed in a 40' foot seacan and is designed to remove oil, grease and BTE compounds from hydrocarbon contaminated water. The unit includes an API type separator to remove free product, a bag filter for solids removal and three adsorption units (one clay, two granular activated carbon) for oil/grease and BTE removal. In the event that the contaminated water has lead concentrations that exceed the discharge limits outlined in Baffinland's Type 'A' Water Licence, additional treatment barrels containing lead removal media are added to the end of the mobile OWS unit. Figure 9-1 shows the Process Flow Diagram for the OWS. The OWS (Newterra Ltd. model OWS-24) is sized for a water temperature of 7°C, specific gravity of 0.88 (diesel/furnace oil), TOG concentration of 50mg/L and flow rate of 50 gpm.

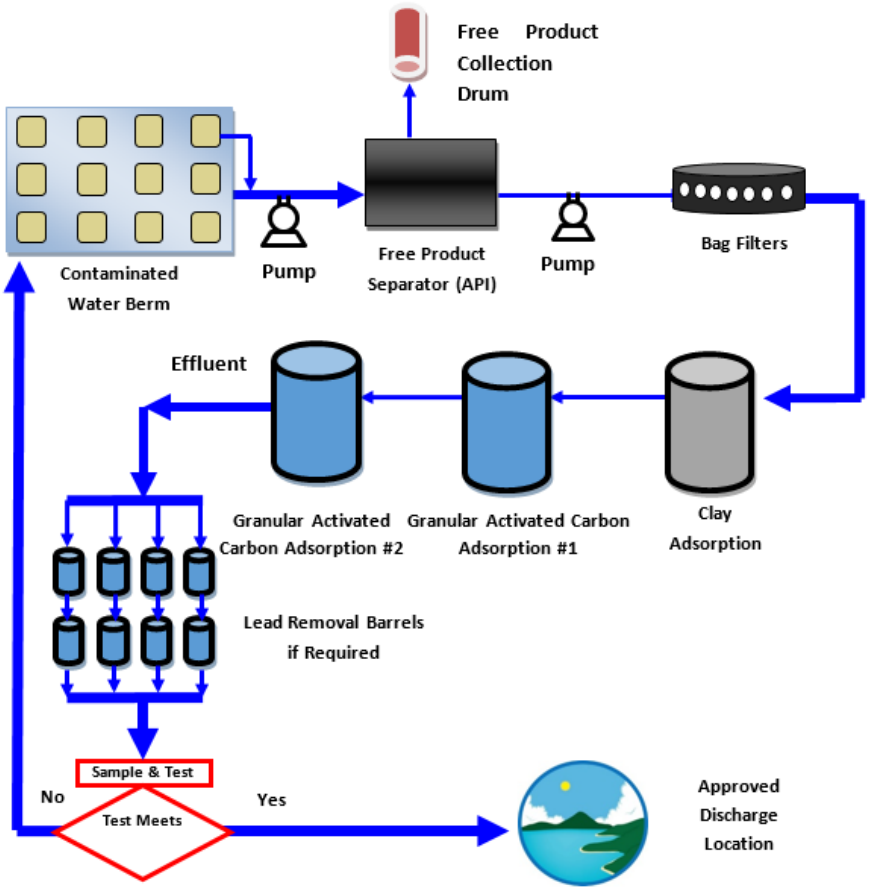

FIGURE 9-1 – MOBILE OWS FLOW PROCESS DIAGRAM

9.2.2 OPERATION AND MAINTENANCE PLAN

For the O&M procedures and schedule relating to the mobile OWS unit, refer to the Baffinland Mobile Oily Water Separator (OWS) Manual provided in Appendix G.

9.3 OILY WATER TREATMENT PLANT (FOR VEHICLE WASH WATER) O & M PLAN

9.3.1 REGULAR MAINTENANCE AND MONITORING SCHEDULE

Regular system maintenance entails routine inspection of mechanical and electrical components. It is recommended that the system be inspected weekly to ensure that components are in good working order. Spare parts lists will be included with the Operations and Maintenance Manuals, with critical spare parts and system expendables highlighted. Recommended stock quantities will also be given.

Operational maintenance is mainly comprised of waste removal and expendable replacement in addition to some preventative maintenance on mechanical components. Maintenance activities, locations and their recommended frequencies are given below.

TABLE 9-2: MAINTENANCE ACTIVITIES, LOCATIONS AND THEIR RECOMMENDED FREQUENCIES

Maintenance Task	Location	Frequency
Sludge/sediment removal	De-muck tank	Twice/week
Oil Removal	Waste oil storage	Weekly
Media change out	CMAFU-2	TBD
Media change out	DPL30	TBD
Filter change out	Reverse Osmosis Unit	TBD
Membrane cleaning	Reverse Osmosis Unit	TBD
Media change out (plates)	Oil Coalescing System	TBD
Pump seals	Various	Annually

Additional, non-routine maintenance will be required throughout the life of the equipment. The recommended spare parts list and appropriate site stock levels are designed to keep the system running continuously with only scheduled downtime.

In addition to maintenance, monitoring the system performance and effluent quality are also necessary. It is further recommended that a flow totalizer be used at the effluent discharge to accurately summate the volume of treated water being released. This in conjunction with the quality data from the various system flows will allow forecasting for media and consumable change-out as well as waste oil and sludge/sediment generation. Residual contaminants below the regulatory limits can also be used in conjunction with treated volumes to determine area loadings over certain periods of time.

Monitoring tasks, locations and frequencies are listed in the table below. The prefix, GI, in the task column denotes “General Inspection”. The Truck Wash Facility layout and component O & M manuals are presented in Appendix I.

TABLE 9-3: MONITORING TASKS, LOCATIONS AND FREQUENCIES

Monitoring Task	Location	Frequency
GI – solids/liquid separators (levels, appearance, pump operation)	De-muck system, CMAFU-2	Daily
Sample – solids/liquid separator effluent	CMAFU-2 effluent	TBD
GI – OWS (levels, appearance, dosing pump)	OWS room	Daily
Sample – OWS Inlet	CMAFU-2 effluent	TBD
GI – Chemical Treatment (tanks, totes, levels, appearance, mixers, dosing pumps, effluent pump, pressures)	Chemical room	Daily
GI – Filtration (units, pressures)	Reverse Osmosis Unit	Daily
GI – Media Vessels (units, pressures, backwash pump, treated water storage)	OCS Tank, DPL30	Daily
Sample – OWS outlet	DPL30 effluent	Quarterly/Monthly
Sample – Reverse osmosis effluent	Reverse Osmosis Unit effluent	Quarterly/Monthly
GI – Miscellaneous (vertical heaters, air compressors, air dryers, controls)	Various	Daily

A joint maintenance/monitoring log should be kept to ensure that operational data and changes/responses are properly documented.

The monitoring guidelines are recommended as a minimum to ensure proper operation, health, safety and protection of the surrounding environment. If corporate or regional policies in effect or enacted require more stringent monitoring, the scope and schedule should be adjusted to meet these requirements.

10 CONTINGENCY MEASURES

Design criteria for the potable, sewage and oily water treatment systems have been reviewed and revised to provide additional safety factor.

The sewage treatment systems are set back sufficiently from surface water bodies and are fully enclosed units. In the event of a spill of untreated or partially treated sewage from these facilities, Baffinland will follow the procedures in its Spill Contingency Plan. Sewage spills are treated the same as more immediately hazardous hydrocarbon based spills.

11 SAMPLING, MONITORING, AND REPORTING

Generally, sampling and monitoring of the potable and wastewater treatment systems will include the following:

- Regular sampling of sewage and wastewater discharge in accordance with water licence requirements.
- More frequent internal process sampling (minimum once per week) and monitoring (daily) to identify potential upset conditions early that could lead to non-compliance.
- Record of volumes of sewage and wastewater effluent discharged and sludge generated in accordance with water licence requirements.
- Completion of daily checklists related to the O & M requirements for the facilities and the reporting of any upset conditions that require action.
- Aquatic effects monitoring program to confirm/validate environmental predictions.

The monitoring program will identify upset conditions related to the sewage treatment plants which will be immediately reported to the COO and Environmental Manager for corrective action.

11.1 POTABLE WATER SYSTEM MONITORING

Untreated freshwater will be sampled at active take locations and/or from the raw water tank at the potable treatment plants. Treated potable water will be sampled from the potable treatment plant effluent as well as several locations throughout the distribution.

Samples shall be collected at every active water take location for select analyses at frequencies specified in applicable regulations/guidelines. A typical list of parameters to be tested includes the following:

Calcium, Magnesium, Sodium, Potassium, Aluminum, Arsenic, Boron, Barium, Cadmium, Chromium, Cobalt, Copper, Iron, Lead, Manganese, Molybdenum, Nickel, Selenium, Silver, Strontium, Thallium, Vanadium, Zinc, Tin, pH, Conductivity, Alkalinity as CaCO3, TDS (COND-CALC), TSS (total suspended solids), Turbidity, Phenols, N-NH3, SO4, Cl, Br,N-NO2, N-NO3, NO2 + NO3 as N, Mercury, Hardness as CaCO3, COD (chemical oxygen demand), Oil and Grease

A comparison of the sampling results to the Guidelines for Canadian Drinking Water Quality (GCDWQ) will be completed.

11.2 SEWAGE TREATMENT SYSTEM MONITORING

Treated sewage effluent will be monitored and sampled at proposed locations specified in the Aquatic Effects Monitoring Program, BAF-PH1-830-P16-0039, (June 2014), and Type 'A' Water Licence (2AM-MRY1325 – Amendment No. 1). The effluent discharge criteria was summarized in Table 5-3.

11.3 OILY WATER TREATMENT SYSTEM MONITORING

Treated oily water effluent will be monitored and sampled at proposed locations specified in the Aquatic Effects Monitoring Program, BAF-PH1-830-P16-0039, (June 2014), and Type A Water Licence (2AM-MRY1325 – Amendment No. 1). The applicable effluent discharge criteria oily water was summarized in Section 6.1 of this plan.

12 ENVIRONMENTAL RESPONSIBILITIES

12.1 ROLES AND RESPONSIBILITIES

The Baffinland Environmental Team is organised into two parts, on site as well as off site. The organisational structure for the Mary River Project in relation to the environment discipline is shown in the **Error! Reference source not found.** below. Communication channels are described as liaisons in the ables outlining the responsibilities and accountabilities in the following sections.

12.1.1 ENVIRONMENTAL PROJECT TEAM

12.1.1.1 THE BAFFINLAND ENVIRONMENTAL TEAM

The Baffinland Environmental Team will oversee environmental and community works on and off site. The Baffinland Corporate Environmental Team responsibilities are summarized in **Error! Reference ource not found.**.

TABLE 12-1: BAFFINLAND IRON MINES CORPORATION SENIOR MANAGEMENT

Baffinland Iron Mines Corporation Senior Management	
Position	**Responsibilities and Accountabilities**
Chief Operations Officer (COO)	- Reports to Baffinland's CEO - Overall accountability for the operation of the Project - Allocation of resources (human and financial) for the implementation of Baffinland's commitments and objectives related to health, safety and environment during operation - Accountable for on-site environmental, health and safety performance during operation
VP Sustainable Development, Health, Safety and Environment	- Reports to the CEO - Accountable for external communication (Governments, media, NGO, others) related to Baffinland's press release and overall communication of site incidents/events - Establish corporate environmental policies and objectives - Monitors and reports on Baffinland's performance related to environmental, health and safety policies and objectives - 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
Chief Procurement Officer	- Reports to the COO - Accountable for procurement and purchasing - Ensure that environmental commitments, policies and objectives are included in all contract documents

The Baffinland on-site Environmental Team will oversee all environmental activities on site. These responsibilities on site are outlined in **Error! Reference source not found.**.

TABLE 12-2: BAFFINLAND IRON MINES CORPORATION ON-SITE MANAGEMENT TEAM

Baffinland Iron Mines Corporation On-Site Environmental Team	
Position	**Responsibilities and Accountabilities**
Environmental Manager	- Reports directly to VP Sustainable Development, Health, Safety and Environment and Indirect reporting and coordination with COO and Director of Sustainable Development - Overall accountability for environmental staff and performance at site - Coordinates implementation and monitors the performance of the Environmental Management System at site - Liaises with the senior management, regulators and stakeholders - Ensures effective monitoring and auditing of environmental performance of departments and contractors on site and identifies opportunities for improvement - Monitors compliance with permits, licenses and authorizations - Ensures all regulatory environmental monitoring and reporting requirements (monthly, annual) are met - Leads and coordinates site permitting requirements. - Initiates and oversees environmental studies - Oversees investigations and reporting of environmental incidents to regulatory bodies, stakeholders and senior management - Reviews and updates environmental management plans
Environmental Superintendent	- Reports to Environmental Manager - Specific accountabilities for environmental monitoring and reporting - Leads investigations and reporting of environmental incidents onsite - Serves as the liaison for regulators during onsite inspections and visits - Provides ongoing environmental education and environmental awareness training to all employees and contract workers - Oversees environmental database management - Prepares updates for management plans
Environmental Coordinator	- Reports to the Environmental Superintendent and Manager - Specific accountabilities for environmental monitoring and reporting - Provides day to day direction to Environmental staff onsite - Serves as a liaison for regulators during onsite inspections and visits. - Provides ongoing environmental education and environmental awareness training to all employees and contract workers - Assists with environmental database management
Environmental Monitor and Technician	- Reports to the Environmental Superintendent or designate - Assists with environmental database management - Assists with monitoring and sampling activities as per the Project's management plans
QIA Monitor	- Works alongside the Baffinland Environment Department to ensure the proper implementation of all environmental management and

Baffinland Iron Mines Corporation On-Site Environmental Team	
Position	**Responsibilities and Accountabilities**
	monitoring plans - Acts as the QIA liaison for onsite environmental matters
Environmental Support Groups (Consultants, etc.)	- Assists with sampling, monitoring and reporting activities as required by permits, licenses and environmental management plans - Provides technical expertise to various environmental studies

12.2 TRAINING AND AWARENESS

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

Operations superintendents and contractor supervisors will be provided with this Management Plan, and will receive additional orientation with respect to the requirements outlined in this Plan. In addition, supervising level staff and sub-contractors will be provided with the Operational Standards (found in the Environmental Protection Plan) as a written guidance 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. These will be delivered in the form of toolbox/tailgate meetings or other means as appropriate.

The content of the environmental component of the site induction will include at a minimum:

a. Location of environmental sensitivities.
b. Location of additional information on environmental matters.
c. Due diligence responsibilities.
d. Responsibilities related to waste management, minimizing noise as necessary, road traffic rules, etc.
e. Principles and necessary steps to avoid encounters with bears or other wildlife and what to do if one such encounter occurs.

12.3 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 Senior Management and the Environmental Manager.

12.4 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 through various means including regular meetings, public notices and radio announcements as appropriate. Baffinland will maintain Community Liaison Offices to assist in this regard.

12.5 CONSTRUCTION

During the construction phase of the Project, the Baffinland Environmental Manager will be responsible for implementing this Plan. This Management Plan will be updated to take into account the numerous construction sites, and types of construction equipment utilized.

12.6 OPERATION AND CLOSURE

For the operations and closure phases, Baffinland will revise its organizational structure to reflect the realities of the operation. The Environmental Manager will be responsible for subsequent updates and implementation of the Plan.

12.7 MARY RIVER PROJECT ORGANIZATIONAL CHARTS

For further information regarding the Mary River Projects organizational structure in relation to the environment discipline, please refer to the **Error! Reference source not found.**Organization Chart Figure 12.1) below:

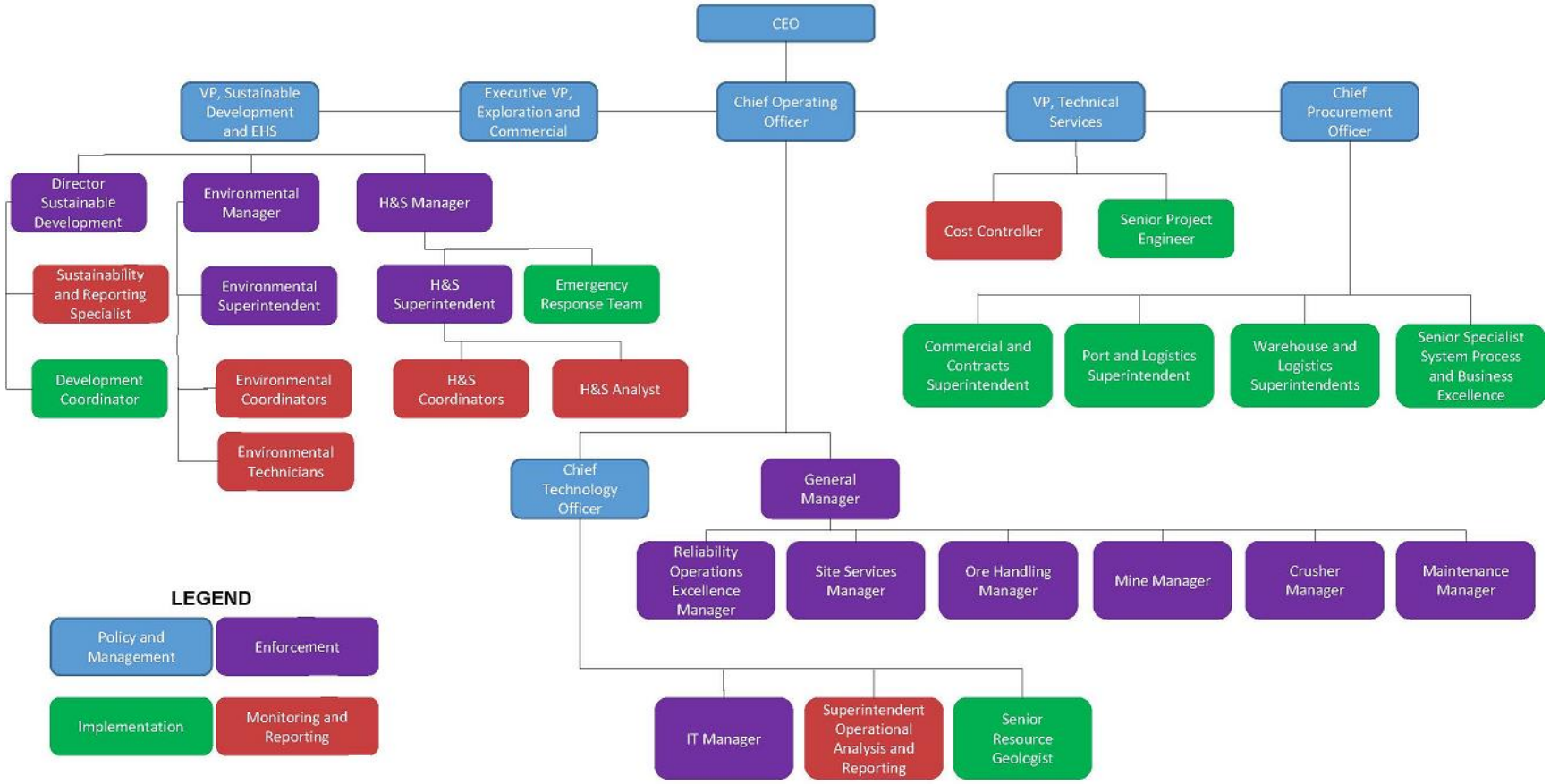

FIGURE 12-1: ORGANIZATIONAL CHART

Appendix A -
Table of Concordance with Type A Water Licence (2AM-MRY1325 - Amendment No. 1) Terms and Conditions

Table A-1 shows the Part, number and Condition of the Type A Water Licence (2AM-MRY1325 - Amendment No 1 and the location where the condition is located within the Freshwater Supply, Sewage and Wastewater Management Plan.

TABLE A-1: CONCORDANCE TABLE - TYPE A WATER LICENCE 2AM-MRY1325 AMENDMENT NO 1

Part	Number	Condition	Section/Commitment
B	11	The Licensee shall post signs in the appropriate areas to inform the public of the location of infrastructure and/or facilities designed to contain, withhold, divert or retain Water and/or Waste. All signs must be in English, Inuktitut, and French.	Signage, written in English, Inuktitut, and French, will be posted inform the public of the location of infrastructure and/or facilities designed to contain, withhold, divert or retain Water and/or Waste.
D	2	The Licensee shall submit to the Board for review and acceptance, at least sixty (60) days prior to construction or in a timeframe otherwise approved by the Board in writing, final design and for-construction drawings, stamped and signed by a Professional Engineer, for all infrastructure and/or facilities designed to contain, withhold, divert or retain Water and/or Waste, as authorized under the Licence.	60 days prior to construction. If more immediate timeline required, Baffinland will issue letter to NWB with early drawings.

<table>
<tr><th>Part</th><th>Number</th><th>Condition</th><th>Section/Commitment</th></tr>
<tr><td></td><td>17</td><td>The Licensee shall submit a Construction Summary Report to the Board, within ninety (90) days following the completion of any structure designed to contain, withhold, divert or retain Waters or Wastes, as authorized by the Board. The construction summary report shall be prepared by an Engineer(s) in accordance with Schedule D, Item 1.</td><td>90 days following the completion of any structure designed to contain, withhold, divert or retain Waters or Wastes, as authorized by the Board.</td></tr>
<tr><td>D</td><td>23</td><td>The Licensee shall construct and operate all infrastructure and Facilities authorized by the Board that are designed to contain, withhold, divert or retain Water and/or Waste, in accordance with all applicable legislation and industry standards.</td><td>Demonstrated and outlined by this plan.</td></tr>
<tr><td>E</td><td>3</td><td>The Licensee shall obtain all fresh Water for domestic camp use and industrial purposes, during the Construction Phase of the Project, in amounts and from the sources described in Table 2, or from sources otherwise approved by the Board in writing. In addition to the source-specific limits prescribed in Table 2, the Licensee is authorized to use up to one thousand eight hundred and eighty-eight (1,888) cubic metres of Water per day, to a maximum of six hundred and eighty-nine thousand (689,000) cubic metres of Water annually, during the Construction Phase of the Project.
Table 2: Water Use Authorized for Domestic and Industrial Purposes during Project Construction Phase
<table>
<tr><th>Site</th><th>Source</th><th>Volume (m^3/day)</th><th>Combined Volume (m^3/year)</th></tr>
<tr><td rowspan="2">Milne Port (Milne Inlet)</td><td>Phillips Creek (summer)</td><td rowspan="2">367.5</td><td rowspan="2">~ 134,000</td></tr>
<tr><td>Km 32 Lake (winter)</td></tr>
<tr><td>Mine Site (Mary River)</td><td>Camp Lake</td><td>657.5</td><td>240,000</td></tr>
<tr><td rowspan="2">SteensbyPort (Steensby Inlet)</td><td>ST 347 Km Lake</td><td rowspan="2">435.8</td><td rowspan="2">155,400</td></tr>
<tr><td>3 km Lake</td></tr>
<tr><td>Ravn River</td><td>Camp Lake</td><td>145.2</td><td></td></tr>
<tr><td rowspan="2">Mid-Rail</td><td>Nivek Lake (summer)</td><td rowspan="2">79.5</td><td rowspan="2"></td></tr>
<tr><td>Ravn Camp Lake (winter)</td></tr>
<tr><td>Cockburn North (Tunnels Camp)</td><td>Cockburn Lake</td><td>101.4</td><td></td></tr>
<tr><td>Cockburn South Camp</td><td>Cockburn Lake</td><td>111.1</td><td></td></tr>
<tr><td colspan="2">Annual Total</td><td colspan="2">~ 689,000 m^3/Annually</td></tr>
</table></td><td>Table 4-1</td></tr>
<tr><td>E</td><td>5</td><td>The Licensee may recycle water and use reclaimed water from the various Treatment Facilities, surface</td><td>5.2</td></tr>
</table>

Part	Number	Condition	Section/Commitment
		water management ponds and embankment dams and approved discharge locations under the licence if such waters meet appropriate discharge criteria for those facilities.	

Part	Number	Condition	Section/Commitment
E	6	The Licensee shall equip all Water intake hoses with screens of an appropriate mesh size, consistent with the requirements of Fisheries and Ocean Canada's (DFO) Freshwater Intake End-of-Pipe Fish Screen Guidelines (1995), to prevent the entrainment of fish are and shall withdraw Water at a rate such that fish do not become impinged on the screen.	4.1.1.2
E	8	Streams cannot be used as a water source unless authorized and approved by the Board in writing.	4.2
E	9	The Licensee shall notify the Inspector and the Board at least ten (10) days in advance of using Water from any sources not identified in the Application or requiring approval as per Part E, Item 8.	10 days in advance of using Water from any sources not identified in the Application or requiring approval.
E	10	The Licensee shall update or revise annually following the commencement of the Operations Phase and/or the Early Revenue Phase, the Project Blockflow Diagram Water Supply Balance information for the various Project sites, provided with the Application and submit for review of the Board. The submission shall be included with the Annual Report under Part B, Item 4.	The Plan is updated to include the planned construction numbers as well as the 2016 Work Plan. Updates will be provided as required to include the Operations Phase.
E	11	The Licensee shall carry out weekly inspections of all structures designed to contain, withhold, divert or retain Waters or Wastes during periods of flow and maintain records of the inspections and findings, for review upon the request by the Board or an Inspector.	8
E	12	The Licensee shall not remove any material from below the ordinary High Water Mark of any water body unless authorized.	4.2
E	25	The Licensee is authorized to withdraw up to 1,500 m3 / day to a maximum of 547,500 m3 annually of Water specifically for use in dust suppression or control along the Tote Road during the Early Revenue Phase (ERP) of the Project. Water for dust suppression or control shall	Table 4-2

<table>
<tr><th>Part</th><th>Number</th><th>Condition</th><th>Section/Commitment</th></tr>
<tr><td></td><td></td><td>be obtained from the sources in accordance with thresholds established in Table 2-3.
Table 2-3: Water use Authorized for Dust Suppression
<table>
<tr><th>Site</th><th>Source</th><th>Prosed Maximum Volume (m^3/day)</th><th>Restriction</th></tr>
<tr><td rowspan="14">Tote Road</td><td>Phillip's Creek</td><td>212</td><td rowspan="3">None</td></tr>
<tr><td>Km 32 Lake</td><td>364</td></tr>
<tr><td>CV128</td><td>579.5</td></tr>
<tr><td>CV099</td><td>110</td><td rowspan="3">June –July only during low flow(less than mean flow) years</td></tr>
<tr><td>CV087</td><td>90</td></tr>
<tr><td>CV078</td><td>75</td></tr>
<tr><td>Katiktok Lake</td><td>318</td><td rowspan="2">None</td></tr>
<tr><td>BG50</td><td>150</td></tr>
<tr><td>BG32</td><td>120</td><td>June –July only during low flow(less than mean flow) years</td></tr>
<tr><td>CV217</td><td>130</td><td rowspan="2">None</td></tr>
<tr><td>Muriel Lake</td><td>212</td></tr>
<tr><td>David Lake</td><td>132</td><td>June –July only during low flow(less than mean flow) years</td></tr>
<tr><td>BG17</td><td>75</td><td></td></tr>
<tr><td>CV233 (Tom River)</td><td>135</td><td>None</td></tr>
<tr><td>Camp Lake</td><td>86</td><td></td></tr>
</table></td><td></td></tr>
<tr><td>E</td><td>26</td><td>The Licensee shall obtain authorization from the Board in writing prior to using Water authorized under Part E, Item 25, for purposes other than that authorized in Part E, Item 25.</td><td>4.2</td></tr>
<tr><td>F</td><td>9</td><td>The Licensee shall treat oily water and wastewater generated by the Project at the Oily Water/Wastewater Treatment Facilities authorized under the scope of the Licence.</td><td>6.3</td></tr>
<tr><td>F</td><td>11</td><td>The Licensee shall provide at least ten (10) days' notice to the Inspector prior to planned Discharges from any Waste Management Facility, Oily Water/Wastewater Treatment Facilities, Sewage Treatment Facilities, and any other relevant facilities associated with the Project. The notice shall include the estimated volume proposed for Discharge and the location and description of the receiving environment.</td><td>10 days prior to the commencement of any treated effluent discharge.</td></tr>
<tr><td>F</td><td>12</td><td>The Licensee shall, unless otherwise approved by the Board in writing, discharge effluent at a distance of least thirty-one (31) metres above the Ordinary High Water Mark of any Water body, where direct flow into the Water body is not possible, such that surface erosion is minimized and no additional impacts are created.</td><td>Section 5.3</td></tr>
</table>

Part	Number	Condition	Section/Commitment
F	14	The Licensee shall direct all Sewage generated from the relevant Project sites to the Sewage Treatment Facilities or as otherwise approved by the Board in writing.	5.2
F	15	The Licensee shall treat all Sewage waste generated at the Ravn River and Mid-Rail camps and Sewage generated at the Cockburn North and Cockburn South camps at either the Mine Site Sewage Treatment Facility or the Steensby Port Sewage Treatment Facility, unless otherwise approved by the Board in writing.	Appendix E

<table>
<tr><th>Part</th><th>Number</th><th>Condition</th><th>Section/Commitment</th></tr>
<tr><td>F</td><td>16</td><td>The Licensee shall provide to the Board for review, at least sixty (60) days prior to installation, detailed specifications and operational requirements for the Sewage storage tanks proposed for the Railway camps.</td><td>60 days prior to installation</td></tr>
<tr><td>F</td><td>17</td><td>All discharge from the Sewage Treatment Facilities including the Polishing Waste Stabilization Ponds directly into fresh Water bodies at Monitoring Stations MP-01, MP-01a, MP-MRY-04, MP-MRY-04a, MS-01, MS-01a, MS-MRY-04, MS-MRY-04a, and/or from monitoring stations as otherwise approved by the Board in writing, must not exceed the following Effluent quality limits:
Table 4: Effluent Quality Discharge Limits for Sewage Treatment Facilities to Freshwater Receiving Environment
<table><tr><th>Parameter</th><th>Maximum Concentration of Any Grab Sample (mg/L)</th></tr><tr><td>BOD_5</td><td>30</td></tr><tr><td>Total Suspended Solids</td><td>35</td></tr><tr><td>Faecal Coliform</td><td>1000 CFU/100 mL</td></tr><tr><td>Oil and Grease</td><td>No visible sheen</td></tr><tr><td>pH</td><td>Between 6.0 and 9.5</td></tr><tr><td>Ammonia (NH3-N)</td><td>4.0</td></tr><tr><td>Total Phosphorous (MS-01)</td><td>4.0</td></tr><tr><td>Total Phosphorous (MS-01a)</td><td>1.0</td></tr><tr><td>Toxicity</td><td>Not acutely toxic</td></tr></table>(Note that treated effluent discharge from MP-01 and MP-01a is directed to the ocean, therefore ocean discharge criteria (F18) would therefore apply)</td><td>Table 5-2</td></tr>
<tr><td>F</td><td>18</td><td>All discharge from the Sewage Treatment Facilities including the Polishing Waste Stabilization Ponds at Monitoring Stations SP-01, SP-01a, and/or from monitoring stations as otherwise approved by the Board in writing, directly into the ocean or to ditches flowing into the ocean shall not exceed the following Effluent quality limits:
Table 5: Effluent Quality Discharge Limits for Sewage Treatment Facilities to the Ocean
<table><tr><th>Parameter</th><th>Maximum Concentration of Any Grab Sample (mg/L)</th></tr><tr><td>BOD_5</td><td>100</td></tr><tr><td>Total Suspended Solids</td><td>120</td></tr><tr><td>Faecal Coliform</td><td>10,000 CFU/100 mL</td></tr><tr><td>Oil and Grease</td><td>No visible sheen</td></tr><tr><td>pH</td><td>Between 6.0 and 9.5</td></tr><tr><td>Toxicity</td><td>Not acutely toxic</td></tr></table>(Note that treated effluent discharge from MP-01 and MP-01a is directed to the ocean, therefore the above ocean discharge criteria are applied for these locations)</td><td>Table 5-2</td></tr>
</table>

<table>
<tr><th>Part</th><th>Number</th><th>Condition</th><th>Section/Commitment</th></tr>
<tr><td>F</td><td>19</td><td>Sludge generated from the Sewage Treatment Facilities or any other facilities shall be confirmed to be non-hazardous and the results provided to the Board for review prior to disposal at any Landfill Facility or as otherwise approved by the Board in writing.</td><td>5.2</td></tr>
<tr><td>F</td><td>20</td><td>All discharge from the Oily Water/Wastewater Treatment Facilities at Monitoring Stations MP-02, MS-02, SP-02 must not exceed the following Effluent quality limits:
Table 6: Effluent Quality Discharge Limits for Oily Water Treatment Facilities
<table>
<tr><th>Parameter</th><th>Maximum Concentration of Any Grab Sample (mg/L)</th></tr>
<tr><td>pH</td><td>Between 6.0 and 9.5</td></tr>
<tr><td>TSS</td><td>35</td></tr>
<tr><td>Ammonia</td><td>4.0</td></tr>
<tr><td>Phosphorous</td><td>4.0</td></tr>
<tr><td>Benzene</td><td>0.370</td></tr>
<tr><td>Ethylbenzene</td><td>0.090</td></tr>
<tr><td>Toluene</td><td>0.002</td></tr>
<tr><td>Oil and Grease</td><td>15 and no visible sheen</td></tr>
<tr><td>Arsenic</td><td>0.50</td></tr>
<tr><td>Copper</td><td>0.30</td></tr>
<tr><td>Lead</td><td>0.20</td></tr>
<tr><td>Nickel</td><td>0.50</td></tr>
<tr><td>Zinc</td><td>0.50</td></tr>
</table></td><td>Table 6-1</td></tr>
<tr><td>F</td><td>21</td><td>All discharge from the Landfill Facilities at Monitoring Stations MS-MRY-13a, MS-MRY-13b and SP-08 must not exceed the following Effluent quality limits:
Table 7: Effluent Quality Discharge Limits for the Landfill Facilities
<table>
<tr><th>Parameter</th><th>Maximum Concentration of Any Grab Sample (mg/L)</th></tr>
<tr><td>pH</td><td>Between 6.0 and 9.5</td></tr>
<tr><td>Total As</td><td>0.5</td></tr>
<tr><td>Total Cu</td><td>0.3</td></tr>
<tr><td>Total Pb</td><td>0.2</td></tr>
<tr><td>Total Ni</td><td>0.5</td></tr>
<tr><td>Total Zn</td><td>0.5</td></tr>
<tr><td>Total Suspended Solids</td><td>15</td></tr>
<tr><td>Oil and Grease</td><td>No visible sheen</td></tr>
</table></td><td>Table 5-4</td></tr>
</table>

<table>
<tr><th>Part</th><th>Number</th><th>Condition</th><th>Section/Commitment</th></tr>
<tr><td>F</td><td>22</td><td>All discharge from the Bulk Fuel Storage Facilities at Monitoring Stations MP-03, MP-MRY-7, MS-03, MS-04, MS-MRY-6, SP-04 and SP-05 must not exceed the following Effluent quality limits:

Table 8: Effluent Quality Discharge Limits for the Bulk Fuel Storage Facilities
<table><tr><th>Parameter</th><th>Maximum Concentration of Any Grab Sample (ug/L)</th></tr><tr><td>Benzene</td><td>370</td></tr><tr><td>Toluene</td><td>2</td></tr><tr><td>Ethylbenzene</td><td>90</td></tr><tr><td>Lead</td><td>1</td></tr><tr><td>Oil and Grease</td><td>15,000 and no visible sheen</td></tr></table></td><td>Table 5-5</td></tr>
<tr><td>F</td><td>23</td><td>All discharge from the Landfarm Facilities at Monitoring Stations MP-04, MS-05 and SP-06 must not exceed the following Effluent quality limits:

Table 9: Effluent Quality Discharge Limits for the Landfarm Facilities
<table><tr><th>Parameters</th><th>Maximum Concentration of Any Grab Sample (mg/L)</th></tr><tr><td>pH</td><td>Between 6.0 and 9.0</td></tr><tr><td>Total Suspended Solids</td><td>15</td></tr><tr><td>Oil and Grease</td><td>15 and no sheen</td></tr><tr><td>Total Lead</td><td>0.001</td></tr><tr><td>Benzene</td><td>0.370</td></tr><tr><td>Toluene</td><td>0.002</td></tr><tr><td>Ethylebenzene</td><td>0.090</td></tr></table></td><td>Table 5-6</td></tr>
<tr><td>F</td><td>24</td><td>All Discharge from the Bulk Sample Open Pit, Bulk Sample Weathered Ore Stockpile, Bulk Sample Processing Stockpile Area and Bulk Sample Stockpile Area Seepage and runoff from the at Milne Inlet at Monitoring Stations MS-MRY-09, MS-MRY-10, MS-MRY-11, MP-MRY-12 and/or monitoring stations as otherwise approved by the Board shall not exceed the following Effluent quality limits:

Table 10: Effluent Quality Discharge Limits for Open Pit, Stockpiles, and Sedimentation Ponds
<table><tr><th>Parameter</th><th>Maximum Concentration of Any Grab Sample (mg/L)</th></tr><tr><td>Total Arsenic</td><td>0.50</td></tr><tr><td>Total Copper</td><td>0.30</td></tr><tr><td>Total Lead</td><td>0.20</td></tr><tr><td>Total Nickel</td><td>0.50</td></tr><tr><td>Total Zinc</td><td>0.50</td></tr><tr><td>Total Suspended Solids</td><td>15.0</td></tr><tr><td>Oil and Grease</td><td>No visible sheen</td></tr><tr><td>Toxicity</td><td>Not acutely toxic</td></tr><tr><td colspan="2">The waste discharge shall have a pH of between 6.0 and 9.5</td></tr></table></td><td>Table 5-7</td></tr>
<tr><td>F</td><td>26</td><td>All discharge from the Ponds associated with the Run of</td><td>5.3 and Table 5-7</td></tr>
</table>

Part	Number	Condition	Section/Commitment
		Mine Ore Stockpile, Ore Stockpile, West and East Sediment Ponds at Monitoring stations MS-06+, MS-07, MS-08 MS-09 and SP-07 shall not exceed the Effluent quality limits of Part F, Item 25	