Environment

Hudson Bay Mining and Smelting Co., Limited

Lalor Concentrator – Description of a Designated Project under CEAA, 2012

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1. General Information and Contact(s)

1.1 Project Overview

Hudson Bay Mining and Smelting Co., Limited (HBMS) proposes to construct and operate a new ore concentrator ("Lalor Concentrator") within the site currently occupied by the Lalor Advanced Exploration Project ("Lalor AEP") and the future Lalor Mine (*Environment Act* Proposal filed in May, 2012) (the "Lalor site"), on which HBMS has been operating intensively since 2007. The Lalor Mine was not subject to an environmental assessment under the *Canadian Environmental Assessment Act*. This was confirmed by the Canadian Environmental Assessment Agency in their letters dated June 22, 2012 and July 5, 2012. The Lalor site is located in the Snow Lake mining district in Northern Manitoba.

The purpose of a concentrator (or mill) is to process ore into a product that can be further refined for market use. It uses a combination of mechanical (crushing and grinding) and chemical processes (flotation) to extract target metals from the ore. The Lalor Concentrator will process ore taken from Lalor Mine, producing zinc and copper/lead concentrates which will be trucked to HBMS facilities in Flin Flon, Manitoba.

A concentrator requires water to operate and it produces tailings as the waste by-product. The Lalor Concentrator will replace and upgrade the ore processing capacity of the existing Stall Lake Concentrator which is located about 16 km by road from the Lalor site (or 13.2 km from site to site). The new concentrator will use the same water sources and discharge to the same tailings impoundment area used today by the Stall Lake Concentrator. The only components of the proposed project, therefore, are the concentrator itself and pipelines to these existing facilities.

The Lalor Concentrator will have a design capacity of 4,500 tonnes per day (tpd). It is anticipated that it will operate 24 hours per day, 362 days per year, with scheduled downtime for maintenance as required.

Figure 1 displays the general location of the proposed project in Manitoba. **Figure 2** displays the proposed concentrator in context with the Lalor site and existing HBMS facilities in the Snow Lake region.

1.2 Proponent Contact Information

Table 1.1 – Proponent Contact Information

Name of Project	Lalor Concentrator
Name of Proponent	Hudson Bay Mining and Smelting Co., Limited (HBMS)
Address of Proponent	PO Box 1500, #1 Company Road, Flin Flon, Manitoba, R8A 1N9
Chief Executive Officer	**Brad Lantz** Vice-President of Hudbay Minerals Inc. for Manitoba Operations Ph: (204) 687-2331
Principal Contact Person(s) for Project Description	**Stephen West, P. Eng.** Superintendent Environment, Hudson Bay Mining and Smelting Co., Limited PO Box 1500, #1 Company Road, Flin Flon, Manitoba, R8A 1N9 Ph: (204) 687-2229 Email: steph.west@hudbayminerals.com **Jay Cooper** Assistant Superintendent Environment, Hudson Bay Mining and Smelting Co., Limited PO Box 1500, #1 Company Road, Flin Flon, Manitoba, R8A 1N9 Ph: (204) 687-2667 Email: jay.cooper@hudbayminerals.com

1.3 Consulted Parties

The Canadian Environmental Assessment Agency was consulted in preparing this project description. No other jurisdictions or parties were consulted specifically about this project description.

1.4 Other Relevant Information

The proposed Lalor Concentrator will be subject to environmental assessment and licensing under The Environment Act (Manitoba). Therefore an Environment Act Proposal is being submitted to Manitoba Conservation and Water Stewardship for environmental assessment and consideration under section 11 of the Act. It also requires development of a Closure Plan in accordance with Manitoba Mine Closure Regulation 67/99. As shown in Figure 3, a small portion of the Pipeline System will cross an existing transmission line Right of Way (ROW) owned by Manitoba Hydro. In a letter dated March 8, 2013, Manitoba Hydro approved HBMS use of their ROW for the Pipeline System.

No other approvals (Federal or Provincial) are required or will be sought.

The area in which the proposed project lies has not been the subject of a regional environmental study.

2. Project Information

2.1 Need and Objectives

A concentrator will be needed to process ore from the Lalor deposit, which was discovered in the spring of 2007 and has been under intensive development since the discovery. Further to approval by Manitoba Mines Branch dated April 9, 2010, HBMS is developing the Lalor AEP which consists primarily of underground shaft sinking. Following exploration activities, HBMS expects to convert the Lalor AEP into the Lalor Mine. In that regard, HBMS filed an application for an *Environment Act* license with Manitoba Conservation and Water Stewardship in May, 2012.

2.2 Project Planning Process

In its planning process, HBMS considered two options for processing ore from the Lalor deposit:

1. **Refurbishing** the existing Stall Lake Concentrator (approximately 16 km by road from the Lalor site); or
2. Constructing a **new concentrator** within the Lalor site.

Both options included continued use of the following licensed facilities which currently support the Stall Lake Concentrator:

- Tailings will continue to be discharged into the Anderson Tailings Impoundment Area (“Anderson TIA”), which has been permitted and operated since 1978-9 (listed as Item 1 on Schedule 2 to the Metal Mining Effluent Regulations (SOR/2002-222) (MMER)).
- The primary source of process water will continue to be recycled water drawn from the Anderson TIA via the Anderson TIA Reclaim Pumphouse.
- The balance of process water will continue to be fresh water drawn from Snow Lake via the existing Snow Lake Pumphouse.

HBMS chose the **new concentrator** option, which has these economic and environmental advantages:

- It eliminates the 16 km ore haul from the Lalor Mine to the Stall Lake Concentrator and hence reduces:
- traffic and associated greenhouse gas and other emissions;
- potential for accidents along Provincial Roads (PR 395 and 392); and
- the operating cost of hauling the ore itself.
- It provides an opportunity for an increased production rate. The maximum capacity of a refurbished Stall Lake Concentrator would be 3,500 tonnes per day, whereas the new concentrator will be designed for 4,500 tonnes per day.
- It reduces the maintenance costs associated with the Stall Lake Concentrator, given the age of the facility.
- It allows for production of paste backfill, thereby reducing the amount of tailings to be sent to Anderson TIA and improving ore recovery (paste backfill is pumped back underground, filling the spaces left by removal of ore from the mine and forming platforms for further mine development).
- It provides for implementation of newest technologies, including new mill drive systems, process control system and more efficient water use.
- It provides for a reduction in the proportion of freshwater to recycled water use: Stall Lake Concentrator uses 70% recycled and 30% freshwater, whereas the new concentrator will use 81% recycled and only 19% freshwater.

2.3 Context for the Proposed Project

The proposed Lalor Concentrator thus will be located within the site of the existing Lalor AEP/future Lalor Mine. This site has already been cleared and developed. **Photo 1** displays an aerial photo of this site, with an outline of the specific area to be occupied by the new concentrator.

Lalor Concentrator will be connected to the Anderson TIA, Anderson TIA Reclaim Pumphouse and Snow Lake Pumphouse by pipelines laid in or alongside rights of way that have been owned in fee simple by HBMS or occupied by HBMS for mining purposes or by the Province of Manitoba for public purposes for more than 30 years.

2.4 Federal Designated Activity

See ss. 15 (b) of the Regulations Designating Physical Activities (SOR/2012-147), which refers to the "construction, operation, decommissioning and abandonment of a metal mill with an ore input capacity of 4000 t/d or more."

2.5 Components and Activities

The proposed concentrator has two components:

1. the concentrator itself, comprised of the concentrator building, a jaw crusher, a concentrate load-out shed and a paste backfill module (the "Concentrator"). The Concentrator component is located within the existing Lalor site; and
2. a pipeline system, comprised of three pipes laid along approximately 17 km between the Lalor site and the existing facilities (the "Pipeline System").The Pipeline System will be laid in or alongside rights of way that have been owned in fee simple by HBMS or occupied by HBMS for mining purposes or by the Province of Manitoba for public purposes for more than 30 years.

The following boundaries are used in describing the Project Components and Activities:

- **Project Site** – is comprised of Lalor site, the Lalor Access Road, and the proposed ROW for the Pipeline System.
- **Project Area** – is comprised of the an area that is 2 km beyond the Project Site, which is intended to take into account the effects of the project (such as noise, vehicle emissions and traffic).
- **Project Region** – is comprised of an area that is up to 10 km beyond the Project Site, which is intended to take into account the maximum spatial extent of any potential impacts of the Project.

Figure 4 shows the Project Site, Area and Region.

2.5.1 The Concentrator Component

This section discusses the sub-components of the Concentrator component, describing them in the order in which ore will flow through the various processes. **Figure 5** displays a plan of the Lalor site, showing the location of the Concentrator component and its sub-components within the Lalor site.

2.5.1.1 Jaw Crusher Building

- Crushing is the first step in the processing of ore. A jaw crusher building (13 m x 18 m x 22 m) will be constructed to the west of the concentrator building (see site plan in Figure 5). Coarse ore as large as

610 mm (24 inches) will be withdrawn from the Lalor Mine headframe by an apron feeder and transferred to this jaw crusher using a conveyer belt (shown in Figure 5).

- The conveyer belt will be covered with a half roof to protect the ore from wind and precipitation. A wet scrubber will be installed in the jaw crusher building to minimize dust and magnets will provide tramp metal protection. Sump pumps in the annex will collect dust and clean-up for transfer to the Semi Autogenous Grinding (SAG) mill feed chute (described in **Section 2.5.8.1**). Water collected in these pumps will be used as process water for concentrator processes.
- Ore coming out of the jaw crusher will be 100 mm to 150 mm (4 to 6 inches), and will be conveyed to an enclosed stockpile (described below in **Section 2.5.1.2**).

2.5.1.2 Concentrator Building

The total footprint of the concentrator building will be 115,000 m^2. Roof heights in the building will vary from 6m to 21 m. Conveyer belts will carry ore from the stockpile to the concentrator building.

Figure 6 illustrates the layout of the building.

The concentrator building will be comprised of the following:

- A 908 m^2 enclosed ore stockpile (see location of ore stockpile **Figure 5**), with a maximum storage capacity of 10,000 tonnes of ore. At any given time, it is expected that a minimum of 2,000 tonnes of ore will be stored in this stockpile before it is fed to the SAG mill. The ore stockpile will have a 1.5 m high concrete berm around it. The base of the ore stockpile will be lined with a synthetic liner to prevent penetration of leachate. The stockpile will be covered with a “cover-all” fabric, to minimize exposure to wind and precipitation. A belt scale located on the conveyer will measure the concentrator feed tonnage for accounting purposes.
- Modular offices, laboratories, control rooms, a warehouse, a compressor room, an analyzer room and maintenance shops (shown in **Figure 6**).
- A SAG mill feed chute, process and fresh water storage tanks, zinc rougher/scavenger flotation circuit, bulk copper/lead rougher/scavenger flotation circuit, and other miscellaneous equipment to process the ore. These are further described in **Section 2.5.8.**

Operation of the concentrator also will require augmentation of the facilities in the Lalor Mine change house/administration building from 300 to 440 lockers (including 40 lockers for contractors and visitors).

2.5.1.3 Concentrate Load-out Shed

Concentrate produced in the concentrator building will be transferred via a conveyer belt into a fully enclosed concentrate load-out shed, which will have separate areas for zinc and copper/lead concentrate. The load-out shed will be located immediately adjacent to the concentrator building (as shown in **Figure 6**). The shed will have a storage capacity of up to 2,500 tonnes of zinc concentrate (to accommodate an average production rate of 400 dry tonnes per day) and up to 1,000 tonnes of copper/lead (to accommodate an average production rate of 190 dry tonnes per day).

A front end loader will be used to load the filtered concentrate into trucks for transport to Flin Flon. The trucks will be loaded inside the load-out shed to minimize the exposure to wind and precipitation and release of concentrate dust. Before and after loading, each truck will be weighed on a truck scale located in the load-out shed. The trucks will be equipped with retractable covers to minimize dust generation when transporting.

Approximately 12 trucks per day will be required to ship zinc concentrate, and approximately 5 trucks to ship copper/lead concentrate.

2.5.1.4 Paste Backfill Module

A paste backfill module will be located north of the concentrator building (as shown in **Figure 6**). When the Lalor Mine requires backfill, tailings will be mixed with water and cement slurry and pumped underground (described in more detail in **Section 2.5.8.5**).

It is expected that up to 25% of the tailings produced at the Lalor Concentrator will be converted to backfill for the mine, thereby reducing the amount of tailings going to the Anderson TIA.

2.5.1.5 Electrical Yard

An electrical yard will be located east of the concentrator building (as shown in **Figure 6**).

The electrical yard will contain two enclosed 25 kV capacitor banks, each with two steps 1,000 kVAr each for a total of 2,000 kVAr each. Each capacitor bank will have approximate dimensions of 5 m x 2 m x 3 m. Each capacitor bank holds 108 L of liquid contained in individual 9 L capacitor cans. Drip-cans will be provided to contain any spills that may occur.

2.5.2 Pipeline System Component

The purpose of the pipeline system is to bring process water into the concentrator and take tailings away. The Pipeline System will be comprised of three pipes:

- **Pipe 1**: To transport recycled water ("reclaim water") to the concentrator from the Anderson TIA via the Anderson TIA Reclaim Pumphouse (primary source of process water).
- **Pipe 2**: To transport freshwater to the concentrator from Snow Lake via the Snow Lake Pumphouse (supplemental source of process water) ("freshwater pipe").
- **Pipe 3**: To transport tailings from the concentrator to the Anderson TIA ("tailings pipe").

2.5.3 Route of the Pipeline System

This section describes the route for the Pipeline System. The following general routing criteria were used:

- Following existing linear features to allow for gradual bends.
- Avoiding and/or minimizing water crossings, to the extent possible.
- Avoiding rock outcrops to minimize the need for levelling and the use of explosives.
- Using available cleared ROW, where available, to minimize clearing requirements.

An additional consideration was that the ROW containing the Pipeline System must be wide enough to accommodate vehicle access. This is needed because the pipes will be subject to daily inspection. Some clearing (or re-clearing) may be required, as described below.

For most of its length, the route will be the same for all three pipes. The only differences occur at the points of terminus/origin of the three pipes.

Figure 2 illustrates the whole of the route. It also shows the route in relation to the Anderson TIA Reclaim Pumphouse, the Anderson TIA and the Snow Lake Pumphouse.

2.5.4 Detailed Characteristics of Pipeline Route and Clearing Requirements

Figure 3 shows the route in six portions, with illustrations of their current use.

2.5.4.1 Portion 1 (all three Pipes)

Portion 1 lies between the concentrator building and PR 395. Portion 1 is inside the ROW which already contains the Lalor Access Road and the water lines which service the Lalor AEP. Please see **Figure 3** which displays a photograph of Portion 1 as it exists today. Portion 1 is gated at the intersection of the Lalor Access Road and PR 395. Access is restricted to HBMS and HBMS authorized persons.

The additional clearing requirements for this portion are about 1,750 m^2, including approximately 400 m^2 within the Lalor site. Given its proximity to industrial operations and traffic, it is highly unlikely that migratory birds are using the area to be cleared.

2.5.4.2 Portion 2 (all three Pipes)

Portion 2 runs approximately one and a half kilometres along PR 395. Portion 2 is inside the ROW which already contains PR 395 and the waterlines which service the Lalor AEP.

Portion 2 will be linked to Portion 3 (described below) by crossing a distance of about 150 m. A Manitoba Hydro transmission line runs beside PR 395, within a cleared ROW. The link between Portions 2 and 3 transects the Manitoba Hydro ROW. Please see **Figure 3**, which illustrates this link.

The additional clearing requirements for Portion 2, including the link to Portion 3, are approximately 6,000 m^2. Given its proximity to PR 395 and exposure to industrial traffic, it is highly unlikely that migratory birds are using the area to be cleared.

2.5.4.3 Portion 3 (all three Pipes)

Portion 3 lies within the ROW for a former rail bed. This ROW is owned by HBMS pursuant to Certificate of Title No. 1701932. Currently, HBMS maintains the rail bed as an access road. It is accessible to car and truck traffic for most of its length and to off-road vehicles for its full length. **Figure 3** contains a photo of the current condition of the rail bed. Access to the rail bed is restricted to HBMS and HBMS authorized persons.

Those portions of the rail bed which have become somewhat overgrown will have to be re-cleared to accommodate the Pipes and the inspection vehicle. As well, there will have to be turnaround bays (described below) to safely accommodate vehicles travelling in opposite directions. These turnarounds also will be within the rail bed ROW owned by HBMS.

2.5.4.4 Portion 4 (Pipe 3 – Terminus of the Tailings Pipe)

Portion 4 runs from the former rail bed into the Anderson TIA. This area is already occupied by HBMS infrastructure associated with the operation of the Anderson TIA. Portion 4 lies behind gates that restrict access to HBMS and HBMS authorized persons.

2.5.4.5 Portion 5 (Pipe 1 – Origin of the Reclaim Water Pipe)

Portion 5 runs from the former rail bed to the Anderson TIA Reclaim Pumphouse. Similarly, this area is already occupied by HBMS infrastructure associated with the operation of the Anderson TIA and lies behind gates that restrict access to HBMS and HBMS authorized persons. Currently, Portion 5 is occupied by an existing water line which delivers (recycle) process water from the Anderson TIA Reclaim Pumphouse to the existing Stall Lake Concentrator.

2.5.4.6 Portion 6 (Pipe 2 – Origin of the Freshwater Pipe)

Portion 6 runs from the former rail bed to the Snow Lake Pumphouse. Currently, this portion contains the water pipe which delivers freshwater from the Snow Lake Pumphouse to the Stall Lake Concentrator. Portion 6 also lies behind gates that restrict access to HBMS and HBMS authorized persons.

The total clearing requirements for Portions 3 through 6 will be approximately 35,700 m^2. The majority of the required clearing will consist of brush overgrowth. These areas can be classified as existing edge habitat, which would have the potential for use by migratory birds. However, the additional clearing that may be required will result in a relocation of edge habitat, rather than a net increase or loss in edge habitat, and thus will have no impact on potential use by migratory birds. In addition, any such clearing will be done outside of the nesting season (April 15 to July 31).

2.5.5 Pipeline Construction and Materials

2.5.5.1 Pipe 1: Reclaim Water Pipe

The reclaim water pipe will deliver recycled water from the Anderson TIA Reclaim Pumphouse to the process water tank located inside the concentrator building (described above in **Section 2.5.1.2**). The pipeline will be composed of 305 mm (12 inch) insulated polyethylene pipe. It will transport approximately 1,299,000 m^3 of reclaim water annually. Its total length will be approximately 17 km.

The reclaim water pipe is shown in **Figure 3**.

2.5.5.2 Pipe 2: Freshwater Pipe

The freshwater pipe will deliver freshwater from the Snow Lake Pumphouse to the concentrator. The pipeline will be composed of 150 mm (6 inch) insulated polyethylene pipe. It will transport approximately 298,000 m^3 of freshwater annually. Its total length will be approximately 14.8 km.

2.5.5.3 Pipe 3: Tailings Line

The tailings line (total length of approximately 17 km) will be comprised of seven pipe segments designed to withstand different pressures encountered along various sections of the line. The first segment (approximately

0.275 km long), will be composed of 254 mm (10 inches) nominal diameter Schedule 40 steel pipe, with ceramic or basalt lining to prevent abrasion.

The next six segments will all be high density polyethylene pipe of varying wall thickness, the first two of which (approximately 7.2 km long) will have an outside diameter of 305 mm (12 inches), and the final four of which (approximately 9.9 km long) will have an outside diameter of 254 mm (10 inches).

Leak detection will be provided by monitoring flow rates using meters located near each end of the line. A rupture in the line would result in a difference between the two flow rates, which will be picked up through the concentrator process control system. In the event of an alarm, site personnel will be dispatched to visually inspect the length of the pipeline to determine if there is a problem.

The pumping system for the tailings line will be designed for the maximum possible pumping distance (approximately 17 km). Two 2-stage pumping systems (one operating and one standby) will be installed in the concentrator building, eliminating the requirement for booster pumps along the tailings line. It is anticipated that using pumping systems instead of booster pumps will significantly reduce the risk of spills.

2.5.5.4 Fill Requirements

Within Portion 3 of the route, design provides for intermittent 10 m wide points to allow for construction of the turnaround bays. These bays will occur at an average of approximately 250 m intervals. The exact location of the turnaround bays will be determined in the detailed design phase of the project, avoiding features such as bedrock outcrops, marsh/bogs, and water crossings.

Fill requirements will be met from non-acid generating (NAG) sources (limestone or quarry) available in the region. Once constructed, the pipes will be covered with a loosely placed cover material (*i.e.,* sand) along the entire route. Approximately 11,560 m^3 of cover material will be required, which will come from a local sand quarry.

2.5.5.5 Culvert Locations

In total, the route of the Pipeline System traverses 20 locations which contain existing culverts. The locations of these culverts are shown on **Figure 3** and their type, length, and diameter are displayed below on **Table 2.1**. No new culverts will be required. The culvert locations fall into two categories, as follows:

Culverts in Drainage Features (17)

These culverts were installed at the time the road or railway was constructed. They were placed in drainage features, either natural or engineered, that traversed that linear feature. Their purpose was and is to prevent surface runoff from ponding along the linear feature. These culverts are merely water control features of the particular linear feature. They are not connected to any potentially fish bearing habitat.

These culverts may be replaced as required in construction of the pipeline system. Even though these culverts are not connected to any potentially fish bearing habitat, culvert replacement will be carried out in accordance with Fisheries and Oceans Canada (DFO)'s Operational Statement on Culvert Maintenance.

Culverts in Streams and Off-take Ditches (3)

These culverts were also installed at the time the road or railway was constructed. They were installed for the purpose of directing the flow of a stream or off-take ditch through the road or railbed so that flow could continue, unimpeded by construction of that linear feature. These three locations consist of streams or off-take ditches which are or may lead to potentially fish bearing waterbodies.

These culverts will not be altered during construction of the pipeline system. However, any activities that occur near these culverts will be carried out in accordance with applicable DFO Operational Statement(s) or other applicable standards.

Table 2.1 – Culvert Features

ID	Number	Type [1]	Diameter (m)	Length (m) [2]	Location	Comment
LR01	2	HDPE	0.9	15	Stream or Off-take Ditch	
LR02	1	HDPE	0.6	15	Drainage Feature	
RB01	1	CSP	0.77	10	Drainage Feature	
RB02	2	CSP	1.63	25	Stream or Off-take Ditch	
RB03	2	CSP	1.95	25	Stream or Off-take Ditch	
RB04	1	CSP	-	10	Drainage Feature	Buried [3]
RB05	1	CSP	0.8	10	Drainage Feature	
RB06	1	CSP	0.7	10	Drainage Feature	
RB07	1	CSP	0.86	10	Drainage Feature	
RB08	1	CSP	0.75	10	Drainage Feature	
RB09	1	CSP	0.56	10	Drainage Feature	
RB10	1	CSP	0.6	10	Drainage Feature	
RB11	1	CSP	0.62	10	Drainage Feature	
RB12	1	CSP	0.8	10	Drainage Feature	
RB13	1	CSP	0.6	10	Drainage Feature	
RB14	1	CSP	0.55	10	Drainage Feature	
RB15	-	-	-	10	Drainage Feature	Buried [3]
RB16	1	CSP	0.95	10	Drainage Feature	
RB17	1	CSP	0.7	10	Drainage Feature	
AB03	1	CSP	0.9	10	Drainage Feature	

Notes:
1. CSP - Corrugated Steel Pipe; HDPE - High Density Polyethylene
2. Length is approximate
3. Diameter was not measured since the feature was buried.

2.5.6 Continued Use of Existing Approved Facilities

2.5.6.1 Sewage

The Lalor Concentrator will rely on existing and future sewage facilities built for Lalor AEP/future Lalor Mine. No separate sewage facility is planned.

2.5.6.2 Snow Lake Pumphouse

The existing Snow Lake Pumphouse is operated under Manitoba Water Rights Licence No. 2011-110. Under this licence, HBMS is permitted to withdraw 1150 dam^3/year of water from Snow Lake, not exceeding a withdrawal rate of 1300 L/s.

The only modification to the Snow Lake Pumphouse will take place at the pumphouse building. The existing pumps will be upgraded and a 15/0.6 kV, 0.2 MVA outdoor oil-filled transformer will be installed. The new pumps will be capable of maintaining a constant flow rate over a longer distance. The upgrade is required because the distance from Snow Lake to the Lalor Concentrator is greater than the distance from Snow Lake to the Stall Lake Concentrator.

This work will occur inside and immediately adjacent to the pumphouse building. It will not involve the water intake and it will not entail any physical activity at or below the Snow Lake high water mark.

When operation of the Lalor Concentrator replaces operation of the Stall Lake Concentrator, the amount of freshwater drawn from this pumphouse will decrease, even though the throughput of the new Lalor Concentrator will be greater than the throughput of the existing Stall Lake Concentrator.

2.5.6.3 Anderson TIA

The Anderson TIA has been used for sub-aqueous disposal of tailings since commissioning of the Stall Lake Concentrator in 1979. It is operated in accordance with the MMER and Manitoba CEC Order No. 766. The MMER-regulated final discharge point is a decant pipe passing through Anderson Dam into Anderson Creek. The tailings line from Lalor Concentrator will discharge into the Anderson TIA, which will continue to operate in accordance with these approvals.

2.5.6.4 Anderson TIA Reclaim Pumphouse (reclaim water source)

The current purpose of the Anderson TIA Reclaim Pumphouse is to recycle water from the Anderson TIA to the Stall Lake Concentrator. It pumps only reclaimed water drawn from the TIA. It does not relate to any freshwater source. Its purpose is to draw water from the Anderson TIA to be used as process water in the concentrator. Using water from the Anderson TIA in this manner allows for a reduction in freshwater use.

Eventually, the existing pumphouse will be decommissioned and a new pumphouse will be built at a location within 100 m of the existing location. The new Anderson TIA Reclaim Pumphouse will be equipped with larger units capable of maintaining the current maximum flow rate of 233 m^3/h (1200 USgpm). As with the Snow Lake Pumphouse, this upgrade is required because of the need to maintain a constant flow rate over a longer distance.

2.5.6.5 Use of Other Existing Facilities

- The existing access road from the Lalor site to PR 395 will be used for construction and operation of the proposed Lalor Concentrator.
- Lalor Concentrator will be connected to water distribution lines already on the Lalor site (for supply of water for domestic use).
- Equipment used in construction and operation of Lalor Concentrator will connect to fuel facilities constructed for the Lalor AEP/future Lalor Mine.

- The parking lot constructed for Lalor Mine also will be used by employees working at the proposed Lalor Concentrator.
- The communication tower on the Lalor Site currently provides wireless phone services and internet access. No separate communications facility will be required for Lalor Concentrator.
- An underground power line from the electrical room in the Concentrator building will tie into the electrical grid at the Lalor Mine.
- The new Chisel Electrical Substation will also supply power to the proposed Lalor Concentrator.

2.5.7 Production Capacity

The Lalor Concentrator will be designed to have a production capacity of 4,500 tonnes per day.

2.5.8 Production Processes

This section outlines the steps involved in the ore production process within the concentrator building after it has been crushed by the jaw crusher (described above in **Section 2.5.1.1**) and stockpiled (discussed in **Section 2.5.1.2**).

Figure 7 provides an illustration of these steps.

2.5.8.1 Grinding

Crushed ore will be withdrawn from the base of the stockpile by apron feeders and belt-conveyed to the Semi Autogenous Grinding (SAG) mill feed chute. Crushed ore will be slurried with process water and ground in the SAG mill, which will operate in closed circuit with a vibrating screen. Oversize from the vibrating screen will be circulated back to the SAG mill by gravity. Undersize from the screen will go to a pump box feeding a cluster of primary cyclones. Cyclone overflow at a target particle size of 80 microns (P_{80}) will flow to the flotation circuit. Cyclone underflow will flow to a ball mill operating in closed circuit with the cyclones. A sump pump in the grinding area will collect clean-up and return it to the SAG mill screen feed pump box.

2.5.8.2 Bulk Copper/Lead Flotation

Flotation feed will be conditioned with reagents (including lime slurry for pH control, Methyl isobutyl carbinol (MIBC) frother, 3418A flotation collector and Carboxyl Methyl Cellulose (CMC) depressant solution) in an agitated tank and then fed by gravity to the bulk copper/lead rougher/scavenger flotation circuit consisting of six 30 m^3 tank cells in series. Scavenger concentrate will be recycled to the conditioning tank while scavenger tailings will be pumped to the zinc flotation circuit. Rougher flotation concentrate along with the flash flotation cell concentrate will be reground to a target particle size of 30 microns (P_{80}) in a regrind mill operating in closed circuit with cyclones. Additional lime slurry, 3418A and zinc sulphate solution will be added to the regrind mill to condition the feed for cleaner flotation. Reground bulk concentrate will be cleaned in a closed three-stage tank flotation circuit. The first cleaner tails will be pumped back to the conditioning tank. The third cleaner concentrate will be pumped to the copper/lead dewatering circuit. A sump pump in the area will collect clean-up and send it back to the regrind cyclones feed pump box.

2.5.8.3 Zinc Flotation

Zinc flotation feed will be conditioned with reagents (including lime slurry, MIBC frother, Sodium Isopropyl Xanthate (SIPX) zinc mineral flotation collector solution and copper sulphate mineral activator solution) in an agitated tank and then fed by gravity to the zinc rougher/scavenger flotation circuit consisting of six 30 m^3 tank cells in series. Scavenger concentrate will be recycled to the conditioning tank while scavenger tailings will be pumped to the flotation tailings thickening circuit. Zinc rougher concentrate will be cleaned in a closed two-stage tank cell flotation circuit. The first cleaner tails will be pumped back to the conditioning tank. The second cleaner concentrate will be pumped to the zinc dewatering circuit. A sump pump in the area will collect clean-up and send it back to the conditioning tank.

2.5.8.4 Concentrate Dewatering

This step of the process involves dewatering of two types of concentrate: Copper/Lead concentrate and Zinc concentrate.

Copper/Lead Concentrate

Flocculated bulk copper/lead concentrate will be pumped to a dedicated high-rate thickener. To reduce freshwater consumption, thickener overflow will be pumped to the process water storage tank for further use. Underflow, at a target density of 70% solids, will be pumped to an agitated stock tank capable of holding 12 hours of production capacity. Using a pressure filter, thickened copper/lead concentrate will be further dewatered to approximately 8% moisture, producing a filter cake. To prevent loss of fine solids and increase recycle water, filtrate will be recycled to the bulk copper/lead concentrate thickener. The filter cake will be gravity-fed to a storage bin in the concentrate load-out shed (described above in **Section 2.5.1.3**).

Zinc Concentrate

Flocculated zinc concentrate will be pumped to a dedicated high-rate thickener. Overflow will be recycled to the process water storage tank. Underflow, at a target density of 70% solids, will be pumped to an agitated stock tank capable of holding 12 hours of production capacity. Using a vacuum filter, thickened zinc concentrate will be further dewatered to approximately 8% moisture, producing a filter cake. To prevent loss of fine solids and increase recycle water, filtrate will be recycled to the zinc concentrate thickener. The filter cake will be gravity-fed to a storage bin in the concentrate load-out shed (described above in **Section 2.5.1.3**).

A sump pump located near each thickener will collect any clean-up and send it back to the appropriate thickener feedwell.

2.5.8.5 Paste Backfill

Flocculated flotation tailings will be pumped to a high-rate thickener located in the paste backfill module (described in **Section 2.5.1.4**). Thickener overflow will be pumped to the process water storage tank for recycle in the milling process. Underflow, at a target density of 50% solids, will be pumped to a splitter box located in the paste backfill preparation area. A sump pump located near the tailings thickener will collect any clean-up and send it back to the thickener feedwell. When paste backfill is not required in the mine, the thickened tailings will be diverted at the splitter box to the tailings pump box and pumped to the Anderson TIA via the tailings line (described in **Section 2.5.4.4)**.

When the mine requires paste backfill, the thickened tailings will be pumped to a cyclone in the paste plant to remove fines. The fines in the cyclone overflow will gravity-flow via the splitter box overflow to the tailings pump box. The cyclone underflow stream containing the coarse tailings material will gravity-flow to a filter feed tank with one hour storage capacity. Coarse tailings will be vacuum filtered to a target density of 88% solids and belt conveyed to a twin screw mixer. Water (referred to as “trim water”) and cement slurry will next be added to achieve a target paste slump and final backfill strength. A positive displacement pump will be used to pump the paste underground via boreholes located adjacent to the paste backfill module. A sump pump located in the paste plant area will collect any clean-up and send it to the tailings pump box, from where this clean-up will be pumped along with the tailings to Anderson TIA.

2.5.8.6 Water Requirements

The water requirements for the Lalor Concentrator are provided in the water flow diagram presented in **Figure 8**.

2.5.8.6.1 Process Water

The process water system will be designed to minimize the use of fresh water to the extent possible by using water from Anderson TIA as the primary source (reclaim water) and by reusing this water internally within the concentrator building.

A small amount of fresh water will be required in the concentrator for certain applications (such as reagent mixing, fire suppression and seal water for pumps) for which the quality of reclaim water is not adequate. This freshwater will be supplied from the Snow Lake Pumphouse located at Snow Lake (described above in **Section 2.5.6.2**).

A freshwater tank will store freshwater for use in the concentrator and for fire suppression, should it be needed. The freshwater tank is designed in such a way that there will always be sufficient water in the tank to provide water for fire suppression. Both an electric and a backup diesel fire water pump will be provided.

2.5.8.6.2 Potable Water

Potable water, sourced from the water treatment system in the Town of Snow Lake, will be hauled to the Lalor site in portable jugs.

2.5.8.6.3 Domestic Water

Domestic water for sanitary usage in the concentrator building will be pumped from the freshwater treatment system at the Lalor Mine to a water distribution system in the concentrator facility.

2.5.8.7 Air

Two plant air compressors will supply dry compressed air throughout the concentrator building and associated annexes and modules, at a pressure of 700 kPa (100 psi). Air for the tank flotation cells will be provided by a pair of low pressure blowers.

2.5.8.8 Employees

The proposed Lalor Concentrator will engage 70 people during operation, with most of the workers employed at the existing Stall Lake Concentrator transferring over to the new facility. As the Lalor site is only 8 km away from the Town of Snow Lake, it is expected that workers will take up available accommodations in the Town of Snow Lake.

2.5.8.9 *Materials*

The Lalor Concentrator will utilize reagents that are commonly used throughout the mining industry, including HBMS existing base metal concentrators in Flin Flon and Snow Lake. Areas where reagents are handled will be equipped with containment berms and clean-up sump pumps to minimize the risk of spills and prevent the escape of fugitive dusts into the main concentrator building or the environment.

Table 2.2 provides a summary of consumption requirements, while specific functions of these materials, addition rates, and dispositions are provided in the sections that follow.

Table 2.2 - Summary of Reagents and Additives Required for the Proposed Lalor Concentrator

Reagent Material	Quantity Required (tonnes per year)
Flocculant	15
Methyl Isobutyl Carbinol (MIBC)	82
3418A	41
Carboxy Methyl Cellulose	164
Zinc Sulphate	99
Copper Sulphate	411
Sodium Isopropyl Xanthate	58
Lime	3,285
Cement and Flyash	13,150

Flocculant

Flocculant is used in the bulk copper/lead concentrate, zinc concentrate and final tailings thickeners to promote the settling of solid particles and produce a clear overflow suitable for recycling via the process water system.

Flocculant will be received in 25 kg bags, mixed to a 0.2% solution with fresh water and added to each thickener feed well as required. Flocculant will report preferentially with the solids in the thickener underflow stream. Sump pumps in each flocculant preparation area will collect any clean-up and send it to the tailings pumpbox.

Methyl Isobutyl Carbinol (MIBC)

MIBC will be used as a frother to promote the formation of a stable froth layer on the surface of the slurry in the flotation cells. It will be used in both the bulk copper/lead and the zinc flotation circuits. Consumption of MIBC will be approximately 0.05 kg per tonne of ore milled, or 82 tonnes per year. MIBC will be received in 859 kg returnable totes and added without dilution to various locations in the circuits. MIBC will report primarily to the concentrates, with residual quantities reporting to the tailings stream.

3418A

3418A is a proprietary flotation reagent for the collection of copper minerals into the bulk copper/lead flotation circuit concentrate. It will be received in returnable 1,000 kg totes and added without dilution to various locations in the grinding and flotation circuits. 3418A will report preferentially to the copper/lead concentrate, with residual quantities reporting to the tailings stream. The estimated total consumption of this reagent will be 0.025 kg per tonne of ore milled, or approximately 41 tonnes per year.

Gangue Depressant (Carboxy Methyl Cellulose)

Depressant will be used in the bulk copper/lead flotation circuit to inhibit the flotation of unwanted gangue minerals. The estimated consumption of depressant will be approximately 0.10 kg per tonne of ore milled or 164 tonnes per year. Depressant will be received in 25 kg bags, mixed with fresh water to a 1% solution and added to the copper flotation circuit in various locations as required. Depressant will report ideally to the tailings stream, with residual quantities recycling with process water. A sump pump in the area will collect any clean-up and send it to the tailings pumpbox.

Zinc Sulphate

Zinc sulphate will be used in the bulk copper/lead flotation circuit to inhibit the flotation of zinc minerals. Zinc sulphate will report primarily to the zinc concentrate, with residual quantities recycling with process water. Zinc sulphate will be received in bulk 1,000 kg bags, mixed to a 25% solution with process water and added to the copper flotation circuit in various locations as required. The estimated consumption will be approximately 0.06 kg per tonne of ore milled or 99 tonnes per year. A sump pump in the area will collect any clean-up and recycle it to the mixing tank.

Copper Sulphate

Copper sulphate is used in the zinc flotation circuit to activate the zinc minerals which had been depressed in the bulk copper/lead flotation circuit. Estimated consumption will be approximately 0.25 kg per tonne of ore milled or 411 tonnes per year. Copper sulphate will be received in bulk 1,000 kg bags, mixed to a 15% solution with process water and added to the zinc flotation circuit conditioning tank as required. Copper sulphate will report primarily to the zinc concentrate, with residual quantities recycling with process water. A sump pump in the area will collect any clean-up and recycle it to the mix tank.

Sodium Isopropyl Xanthate (SIPX)

SIPX is used in the zinc flotation circuit as a collector which adheres selectively to the surface of the zinc minerals, enabling them to float and be recovered into the froth product. SIPX consumption will be approximately 0.035 kg per tonne of ore milled or 58 tonnes per year. SIPX will report primarily to the zinc concentrate, with residual quantities reporting to the tailings stream. SIPX will be received in bulk 500 kg bags, mixed to a 10% solution with fresh water and added to the zinc flotation circuit in various locations as required. A sump pump in the area will collect any clean-up and recycle it to the holding tank.

Lime

Pebbled quicklime (CaO) will be trucked to the concentrator in trailers and unloaded pneumatically into a 100 tonne capacity silo located outdoors beside the main concentrator building. The silo will be equipped with a dust collector to minimize particulate emissions to the environment. The quicklime will be fed from the silo into a slaking mill, utilizing process water to produce milk-of-lime slurry at 15% solid, stored temporarily in a holding tank and metered into the process at various locations as required.

Slaked lime (calcium hydroxide) slurry will be used throughout the milling circuits to control the pH in the process to the levels required for optimum flotation performance. The estimated total lime consumption will be 2.0 kg per tonne of ore milled, or approximately 3,285 tonnes per year. Most of the used lime will report to either the tailings stream or the paste backfill stream.

A sump pump in the area will collect any clean-up and recycle it to the holding tank.

Grinding Balls

Steel grinding balls in various sizes will be received by truck and stored in bulk bins. An overhead crane and ball transporter will be used to charge the grinding balls as required for use in the SAG mill and ball mill.

Cement and Flyash

Portland cement and possibly flyash will be used in the production of the cemented paste backfill for use underground. Cement and flyash will be trucked separately to the concentrator by trailer and off-loaded pneumatically into dedicated silos located outdoors beside the main concentrator building. Each 250 tonne silo will be equipped with a dust collector to minimize particulate emissions to the environment.

The estimated total cement and flyash consumption will be 30 kg per tonne of paste produced, or approximately 13,150 tonnes per year. The cement and flyash will report to the paste backfill stream. The cement and flyash will be fed from the silos into a colloidal mixer, utilizing fresh water to produce a 69% solids slurry. This slurry will be stored temporarily in a holding tank and metered into the twin screw paste mixer as required. A sump pump in the area will collect any clean-up and forward it to the paste plant sump pump.

Lubricants and Fuel

Diesel fuel for the emergency power generator and the backup diesel fire water pump will be stored in double-walled tanks. These will be located on pads, adjacent to the main concentrator building.

Lubricating oils will generally be received in 20 L plastic containers or 200 L barrels. These will be placed in a dedicated storage area equipped with spill containment berms and fire suppression. Used oil will be temporarily stored in a double-walled tank, then removed from the site by a licensed contractor.

2.5.8.10 Equipment Use

Table 2.3 presents the equipment use expected during construction of the proposed Lalor Concentrator.

Table 2.3 – Equipment Use during Construction of the Proposed Lalor Concentrator

Equipment	Units	Duration of Use
Forklift	1	18 months
Zoom Boom	1	18 months
30t RT Crane	2	One for 18 months, one for 3 months
50t Crane	1	2 weeks
100t Crane	1	12 months
Air Compressors	2	Two for 18 months
JLG® Manlift	1	18 months
Welders	8	18 months
Light Stands	4	18 months
Construction Crew/Supervisor Trucks	6	18 months
Front End Loader	2	One dedicated to Lalor site for 18 months, and one specifically for winter

Equipment	Units	Duration of Use
		snow removal for 8 months
Bobcat	2	18 months
Caterpillar dozer	2	One for 3 months, one for 2 weeks
Generator	1	3 months
Construction Heaters	8	8 months
Excavator	2	One for 3 months, one for 6 months
Dump Trucks	4	2 for 3 months, 2 for 6 months
Crushing Plant	1	2 months

2.5.8.11 Traffic

Table 2.4 presents the estimated daily traffic volumes expected during construction and operation of the proposed Lalor Concentrator.

Table 2.4 – Estimated Daily Traffic Volumes [1]

Vehicle	Construction							Operation				
	2013		2014				2015				2016	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Trucks – concrete	40	40	40	-	-	-	-	-	-	-	-	-
Trucks – equipment[2]	-	1	2	2	2	2	1	1	1	1	1	1
Trucks – delivery warehouse[3]	-	-	-	-	-	-	-	1	1	1	1	1
Trucks – delivery mill[4]	-	-	-	-	-	-	-	1	2	2	2	2
Trucks - concentrate	-	-	-	-	-	-	-	17	17	17	17	17
Cars – pick-ups	10	20	20	20	20	20	20	12	12	12	12	12
Bus	4	4	4	4	4	4	4	4	2	2	2	2
Total Lalor Concentrator Traffic	54	65	66	26	26	26	25	36	35	35	35	35

Notes:
[1] Numbers are based on per day, one way.
[2] Trucks-equipment: includes steel, equipment components that would be an average per day during the quarter.
[3] Trucks-delivery warehouse: includes fuel, propane, deliveries to warehouse, sewage pump-out truck.
[4] Trucks – delivery-mill: reagents, grinding media, cement (paste fill)

2.5.9 Project Activities

See **Section 2.5**

2.6 Emissions, discharges and waste

2.6.1 Atmospheric Emissions

Atmospheric emissions associated with Lalor Concentrator will be greenhouse gases, dust and particular matter and exhaust emissions, which is typical of industrial activity.

2.6.1.1 *Greenhouse Gas Emissions*

Sources of greenhouse gas (GHG) emissions for the proposed project are: vehicles, exhausts from diesel construction equipment (general vehicle movement on site, using equipment for grading, placing materials etc.) and combustion of propane in propane heaters.

The GHG generating consumption expected for construction and operation of the proposed Lalor Concentrator is presented in **Table 2.5**.

Table 2.5 – GHG Generating Consumption

Fuel Type	**Construction** (Quantity/year)	**Operation** (Quantity/year)
Diesel (Stationary)	0	11.7 kL
Diesel (Mobile)	758.6 kL	20.1 kL
Propane	0	58.6 kL
Limestone [1]	0	3,258 t
Electricity [2]	0	77,378 MWh

Notes:
[1] The limestone may contain a small fraction of impurities that could contribute to the GHG emissions
[2] Electricity will be obtained from Manitoba Hydro's electrical grid, which is primarily produced from hydroelectric sources.

Using the emission factors referenced from the *National Inventory Report 1990-2010* (Environment Canada 2012) and based on the fuel consumption during construction phase provided in **Table 2.6**, the CO_2 emission projection is provided in **Table 2.7**.

Table 2.6 – CO_2 Emission Projection – Construction Phase

Fuel	**Quantity**		**CO2**		**CH4**		**N2O**	
			Factor	Tonnage	Factor	Tonnage	Factor	Tonnage
Heavy Oil	0	kL	3.124	0	0.000120	0.000	0.000064	0.000
Gasoline	0	kL	2.289	0	0.000240	0.000	0.000580	0.000
Diesel (Stationary)	0.0	kL	2.663	0	0.000133	0.000	0.000400	0.000
Diesel (Mobile)	758.6	kL	2.663	2,020	0.000140	0.106	0.000082	0.062
Propane (Heating)	0.0	kL	1.510	0	0.000024	0.000	0.000108	0.000
Limestone	0	t	0.003	0	-	-	-	-
ODS (R-22)	0.000	t	1700	0	-	-	-	-
Electricity	0	MWh	0.003	0	0.0000001	0.000	0.0000001	0.000
CO2 Equivalency Factor			1	2,020	21	2	310	19
Total CO2e Emission				2,042 tonnes				
Total CO2e Emission (excluding Electricity)				2,042 tonnes				

Total CO_2 emission projection for the operation phase is provided in **Table 8.**

Table 2.7 – CO_2 Emission Projection – Operation Phase

Fuel Type	**Quantity**		**CO2**		**CH4**		**N2O**	
			Factor	Tonnage	Factor	Tonnage	Factor	Tonnage
Heavy Oil	0	kL	3.124	0	0.000120	0.000	0.000064	0.000
Gasoline	0	kL	2.289	0	0.000240	0.000	0.000580	0.000
Diesel (Stationary)	11.7	kL	2.663	31	0.000133	0.002	0.000400	0.005
Diesel (Mobile)	20.1	kL	2.663	54	0.000140	0.003	0.000082	0.002
Propane (Heating)	58.6	kL	1.510	88	0.000024	0.001	0.000108	0.006
Limestone	3,258	t	0.003	11	-	-	-	-
ODS (R-22)	0.000	t	1700	0	-	-	-	-
Electricity	77,378	MWh	0.003	232	0.0000001	0.008	0.0000001	0.008
CO2 Equivalency Factor			1	416	21	0	310	6
Total CO2e Emission				423 tonnes				
Total CO2e Emission (excluding Electricity)				188 tonnes				

Using the 20,300,000 tonnes of GHG emissions reported in 2011 for the Province of Manitoba (Environment Canada, 2011), an addition of 2,042 tonnes in total (or approximately 764 tonnes/year) during construction represent a negligible increase of 0.004% in GHG emissions. Further, an addition of 423 tonnes per year during operation represents a negligible increase of 0.002% in GHG emissions.

However, operation of the Lalor Concentrator is intended to replace operation of the existing Stall Lake Concentrator. CO_2e emissions from the existing Stall Concentrator in 2012 amounted to 731 tonnes CO_2e per year. As shown above in Table 7, the proposed Lalor Concentrator will result in only 423 tonnes CO_2e. This represents a 42% decrease in CO_2e tonnes with the newer facility while significantly increasing the overall tonnes of ore processed.

2.6.1.2 Dust and Particulate Matter

Sources of dust include activities such as blasting, clearing, levelling, crushing, movement of traffic on roads, stockpiling materials, etc. Dust occurs primarily during summer and fall, with greater likelihood for an increase in dust during dry and windy conditions.

All clearing, levelling and blasting at the Lalor site will have been completed before construction of the Concentrator. The potential for generation of dust during construction of the Concentrator component therefore is limited to vehicular use and will be minimal. Dust may be produced along the Pipeline System ROW during construction (clearing, blasting, and laying down the pipes, stockpiling, and general use of construction equipment). Blasting is only anticipated to occur within a small portion of the ROW (area south of PR 395, and only once during spring of 2014). Therefore, dust from blasting during construction is expected to be minimal.

During operation, dust will be generated in the jaw crusher building (during operation of the jaw crusher) and by vehicle and equipment movement on site and along the Lalor Access Road and the Pipeline System ROW. **Section 2.5.8.11** outlines traffic volumes expected during the operation phase. The concentrate trucks will travel along the Lalor Access Road to PR 395 to PTH 39 to PTH 10. Since PTH 39 and PTH 10 are both paved roads, dust generation from concentrate haul trucks along these roads is expected to be minimal.

During closure, activities such as levelling, contouring, excavating and hauling materials and soils to the site will generate some dust.

To reduce dust generation at the Project Site and within the Project Area, the following mitigation measures will be implemented:

- The jaw crusher building is equipped with a wet scrubber (dust collection system) as described in **Section 2.5.1.1**.
- If required, dust suppression activities such as the use of approved dust control agents, will be undertaken for the Lalor Access Road and the Pipeline System ROW.
- The Lalor site has a speed limit of 20 km/hr, which will continue to be imposed.
- The Lalor Access Road has a speed limit of 40 km/hr, which will continue to be imposed. The same speed limit (or less) will apply to the Pipeline System ROW.
- Concentrate trucks going to Flin Flon will be covered to minimize dust coming off loads.

These planned mitigation measures are believed to be sufficient to reduce the dust generated to an amount that will produce negligible effects.

2.6.1.3 Exhaust Emissions

During construction, exhaust emissions will be generated during delivery of materials to the site, laying foundations, erecting buildings and other operation of vehicles. Emissions will also be generated during construction of the Pipeline System (using diesel-fuelled equipment, clearing, blasting, grubbing, laying pipes, etc.).

During closure, emissions will be generated during hauling, excavating, grading, and placing materials. Approximately five pieces of equipment (excavator, bulldozer, haul trucks, and miscellaneous equipment) are anticipated to be required for closure-related activities (some of these may be used in conjunction with closure activities at the Lalor Mine, depending on the timing of closure). Emissions from these are anticipated to be limited to the Project Site and the Project Area and mainly occur during summer months over the three years during which closure activities are being undertaken.

The following mitigation measures will be implemented:

- Vehicles and equipment will be well maintained
- Vehicle idling will be kept to a minimum

During operation, sources of exhaust emissions include: vehicle and equipment use and propane combustion (to heat the concentrator building). As indicated in **Section 2.5.8.11**, it is expected that, during construction, a maximum of 66 vehicles and, during operation, a maximum of 25 vehicles will access public roads in vicinity of the Lalor Concentrator. **Table 2.8** presents the percentage changes associated with these numbers.

Table 2.8 – Traffic Changes

	PR 395	PR 392	PTH 39	PTH 10
AADT (MIT, 2011)[1]	520	270 to 510	310 to 390	1180 to 2490
Maximum Vehicles - Construction Phase	66	66	26	26
Percentage Change	13%	13% to 24%	7% to 8%	1% to 2%
Maximum Vehicles - Operation Phase	25	25	25	25
Percentage Change	5%	5 to 9%	6% to 8%	1% to 2%

Notes:
[1] The numbers presented represent the range of AADT along the route between the Lalor Concentrator and the City of Flin Flon.

While the increase in traffic during construction along PR 395 and PR 392 is greater than 10%, this increase is temporary, and exhaust emissions as a result of this increase are negligible in relation to air quality in the Project Region. Also, any increases in traffic due to the Lalor Concentrator will be offset by traffic reductions due to ore from Lalor Mine being processed at Lalor Concentrator instead of the Stall Lake Concentrator (*i.e.,* 24 trucks). All vehicles used for the Lalor Concentrator will comply with Environment Canada's On-Road Vehicle and Engine Emission Regulations as required.

The second source of exhaust emissions is propane heaters that will be used to heat the Concentrator. The combustion process associated with these propane heaters will generate pollutants which may include nitrogen oxides (NOx), carbon monoxide, sulphur dioxide, particulate matter, or greenhouse gases (discussed above in **Sections 2.6.1.1**). However, in order to mitigate any adverse effects on air quality (and hence ensure good air quality), the following measures will be implemented:

- The heating system has been equipped with low NOx burners
- HBMS will maintain ongoing compliance with *The Workplace Safety and Health Act*.

These measures are believed to be sufficient to mitigate any adverse air quality effects during the construction, operation and closure phases of the proposed project. Following closure, air quality is expected to return to pre-project conditions. Therefore, potential effects are considered reversible and not significant.

2.6.2 Liquid Discharges

There is no liquid discharge associated with the proposed Lalor Concentrator, since sewage facilities will be provided by Lalor AEP/Lalor Mine.

2.6.3 Waste and Waste Disposal

2.6.3.1 Tailings

Table 2.9 outlines the total tailings that will be produced, tailings that will be used to generate paste for Lalor Mine backfill and tailings that will be deposited at the Anderson TIA**.**

Table 2.9 – Tailings Management

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Total
Ore Milled - Total Tonnes	106,377	322,156	540,500	1,039,175	1,228,910	1,448,000	1,629,000	1,629,000	1,629,000	1,629,000	1,629,000	1,629,000	1,629,000	1,629,000	1,629,000	1,629,000	1,603,995	1,651,871	1,102,235	683,513	26,016,731
Au (g/tonne)	2.268	1.864	1.864	2.176	2.453	2.384	2.666	2.468	2.440	2.332	2.236	2.509	2.543	2.651	2.837	2.740	2.823	3.220	3.321	3.234	2.603
Ag (g/tonne)	22.428	19.483	19.902	22.397	24.512	23.846	23.699	23.944	24.985	22.785	22.374	24.239	22.092	22.343	20.677	19.051	21.041	20.607	22.435	20.390	22.380
Cu (%)	0.72	0.62	0.61	0.63	0.67	0.62	0.59	0.56	0.57	0.58	0.78	0.89	1.03	0.88	0.88	0.77	0.71	0.64	0.44	0.40	0.70
Zn (%)	6.16	7.14	7.33	6.52	6.30	6.09	5.07	5.20	5.53	5.03	5.60	5.48	5.95	5.13	4.59	4.22	3.58	2.82	2.74	2.08	4.98
Pb (%)	0.14	0.14	0.13	0.17	0.22	0.21	0.18	0.22	0.25	0.20	0.20	0.25	0.21	0.18	0.20	0.19	0.21	0.19	0.23	0.23	0.21
Cu Conc - Total Tonnes	3,691	9,293	15,531	30,934	39,328	42,652	45,571	42,742	44,059	44,730	61,065	70,501	82,153	70,069	70,283	61,149	55,357	51,756	22,926	13,110	876,901
Au (g/tonne)	42.6	40.7	40.8	47.2	50.6	53.2	64.0	62.2	59.5	55.6	38.7	38.5	33.5	41.4	44.8	49.3	55.6	72.0	112.8	118.3	51.6
Ag (g/tonne)	429.8	426.7	440.8	500.0	527.3	551.2	575.4	622.4	640.9	555.1	396.5	383.9	289.6	344.9	309.2	318.1	395.8	423.8	717.3	682.4	441.2
Cu (%)	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44	19.44
Zn (%)	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19	3.19
Pb (%)	3.53	4.19	4.13	5.27	6.33	6.62	6.06	7.71	8.69	6.83	5.02	5.33	3.86	3.80	4.31	4.77	5.67	5.48	10.36	11.10	5.64
Zn Conc - Total Tonnes	11,938	42,303	72,970	124,033	141,444	160,919	149,291	153,286	163,787	148,003	164,988	160,591	174,721	149,729	132,825	121,464	100,174	79,324	51,887	23,564	2,327,241
Au (g/tonne)	1.81	1.21	1.18	1.61	1.95	1.95	2.73	2.41	2.22	2.32	1.97	2.35	2.19	2.70	3.33	3.48	4.32	6.71	7.13	9.40	2.71
Ag (g/tonne)	15.8	10.6	10.7	14.8	17.9	17.7	21.2	21.1	21.2	20.0	17.4	20.5	16.1	19.2	18.9	18.1	25.5	32.0	37.7	43.8	19.7
Cu (%)	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.30	0.27	0.27	0.27	0.27	0.27	0.27
Zn (%)	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15	52.15
Pb (%)	0.06	0.05	0.05	0.07	0.09	0.09	0.10	0.12	0.13	0.11	0.10	0.13	0.10	0.10	0.12	0.13	0.17	0.19	0.25	0.33	0.12
Tailings - Total Tonnes	90,748	270,560	451,999	884,208	1,048,138	1,244,429	1,434,137	1,432,972	1,421,153	1,436,267	1,402,946	1,397,908	1,372,125	1,409,201	1,425,892	1,446,386	1,448,465	1,520,791	1,027,422	646,839	22,812,589
Au (g/tonne)	0.69	0.63	0.64	0.68	0.71	0.70	0.71	0.69	0.70	0.68	0.68	0.71	0.73	0.72	0.72	0.71	0.70	0.70	0.69	0.68	0.71
Ag (g/tonne)	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75	5.75
Cu (%)	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.023
Zn (%)	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233	0.233
Pb (%)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Total Tailings - Tonnes	90,748	270,560	451,999	884,208	1,048,138	1,244,429	1,434,137	1,432,972	1,421,153	1,436,267	1,402,946	1,397,908	1,372,125	1,409,201	1,425,892	1,446,386	1,448,465	1,520,791	1,027,422	646,839	22,812,589
Tailings - Paste to U/G - Tonnes	0	0	0	221,052	262,035	311,107	358,534	358,243	355,288	359,067	350,736	349,477	343,031	352,300	356,473	361,597	362,116	380,198	256,856	161,710	5,499,820
Tailings - to TIA - Tonnes	90,748	270,560	451,999	663,156	786,104	933,322	1,075,603	1,074,729	1,065,865	1,077,200	1,052,209	1,048,431	1,029,094	1,056,901	1,069,419	1,084,790	1,086,348	1,140,593	770,567	485,129	17,312,768
Tailings to TIA (m3)	116,679	347,863	581,143	852,628	1,010,706	1,199,983	1,382,921	1,381,796	1,370,398	1,384,971	1,352,841	1,347,981	1,323,122	1,358,871	1,374,969	1,394,730	1,396,736	1,466,479	990,726	623,739	22,259,276

Notes:
Tonnages reported in years 2028 through 2031 are based on inferred mineral resources and as such do not meet NI 43-101 reporting requirements for mineral reserves.
These numbers are shown as potential production for the purpose of tailings storage planning only.
Assumes Lalor Mine start-up in Q3, 2014

As noted above, all tailings discharged as waste will be deposited in the existing licensed Anderson TIA.

2.6.3.2 Solid Wastes

All domestic and non-hazardous waste generated at the Lalor Concentrator will be disposed of at HBMS present and future licensed facilities. HBMS will make arrangements with a licensed hazardous waste handler with respect to any hazardous wastes produced (for example used oil, oily rags, chemical delivery containers, etc.).

2.7 Project Phases and Proposed Scheduling

Table 2.10 – Project Phases and Proposed Scheduling

Project Phases and Activity	Proposed Schedule (subject to the results of Regulatory review)
CONSTRUCTION	
Bringing Materials and Equipment to Site (excavating, hauling, stockpiling, storing fuels)	June 2013
Preparing Construction Site (Clearing vegetation, blasting, installing utilities)	August, 2013 – September, 2013
Constructing Concentrator Building and Associated Facilities (erecting buildings, installing equipment, grading, backfilling)	September 2013 – September 2014
Preparing Pipeline ROW (clearing vegetation, stripping topsoil, blasting, excavating)	August 2014 – September 2014
Installing Pipeline (laying pipes, grading, compacting, installing)	August 2015 – October 2015
Upgrading support infrastructure at Snow Lake	July 2015
OPERATION	
Processing Ore (crushing, stockpiling, chemical/mechanical processing, concentrate dewatering, pumping reclaim water)	October 2015 - 2027
Transporting, Storing and Handling Materials	October 2015 - 2027
Handling Process Wastes (treating sewage, recycling process water, removing sludge)	October 2015 - 2027
Maintaining Concentrator component & Pipeline	October 2015 – 2027 (as required)
CLOSURE	
Removing all buildings, foundations, storage tanks, site refuse	2027 - 2030
Scarifying Pipeline System ROW.	2027 - 2030
Testing, removing, and remediating any contaminated soils.	2027 - 2030
Re-grading and contouring	2027 - 2030
Re-vegetating disturbed areas	2027 - 2030

2.7.1 Concentrator Closure Plan

Following the closure and decommissioning of the Lalor Concentrator, the site will be returned to its natural state (to the extent possible). This will be accomplished through the implementation of the Lalor Concentrator Closure Plan, which will be completed and submitted for approval to the Director of Mines in accordance with Manitoba Mine

Closure Regulation 67/99. The Lalor Concentrator Closure Plan, including the information required to calculate the financial assurance to be paid to Manitoba, can be prepared as soon as construction has been completed. In accordance with the Manitoba Mine Closure Regulation 67/99, the Lalor Concentrator will not be commissioned until the closure plan has been accepted.

The Lalor Concentrator Closure Plan will include the following:

- Removing all buildings and foundations.
- Removing and appropriately disposing of any miscellaneous infrastructure such as power lines, generators, transformers, pipelines pumps, water storage tanks etc.
- Removing and appropriately disposing of site refuse.
- Scarifying Pipeline System ROW.
- Removing all fuel storage tanks.
- Testing, removing and/or remediating any contaminated soils.
- Re-grading and contouring stockpile pads, concentrator haul road and parking area.
- Re-vegetating disturbed areas in order to restore landscape to the extent possible to their native appearance.

It is anticipated that the end-use of the site will be a natural space with no planned residential, commercial or industrial development at the site. Based on HBMS closure experience in the Snow Lake region the growth of grasses and mosses is apparent within the first few years following closure, whereas trees and shrubs take longer to establish.

3. Project Location

3.1 Project Coordinates

Center of site for Concentrator Component
Latitude: 54°52'28.785080" NORTH
Longitude: 100°09'00.489356" WEST

Start of Pipeline
Latitude: 54°52'29.082190" NORTH
Longitude: 100°08'57.628008" WEST

End of Pipeline
Latitude: 54°51'15.411538" NORTH
Longitude: 99°57'58.207475" WEST

All coordinates are listed in the GRS80 (NAD83, WGS84) ellipsoid.

3.2 Site Maps and Plans – Project Components and Activities

Figure 1 displays the general location of the Lalor site in Manitoba.

Figure 2 displays the locations of the components of the proposed project in relation to existing HBMS licensed facilities.

3.3 Maps Showing Other Land Features

Figure 9 shows the watercourses and waterbodies in the Project Region. The Project Region is the geographical boundary for this figure because it takes into account the maximum spatial extent of potential impacts of the project.

Figure 10 shows the linear and other transportation components within the Project Region, including railways corridors, transmission lines, and highways.

Figure 11 shows known existing and past land uses within the Project Region, including heritage resources, mining and other development activities, and residential and recreational areas.

Figure 12 displays the location of the Federal lands (Indian Reserves) closest to the Project Region. There are no Federal lands in the Project Region. **Figure 12** also shows the Registered Trap Line (RTL) zones recognized by Manitoba, some of which are associated with First Nation/Aboriginal communities. Based on Government of Manitoba and Federal sources, there is no Indian Reserve, Registered Trap Line (RTL) zone associated with First Nation/Aboriginal community use or other Aboriginal interest located within the Project Region.

During the latter half of 2010, Mathias Colomb Cree Nation (MCCN) began to suggest that its traditional lands encompass a large portion of northwestern Manitoba, including the entire Snow Lake mining district, in which the Lalor projects, including the proposed Lalor Concentrator, are located. HBMS therefore entered into environmental information sharing with MCCN and Manitoba commenced a Crown consultation process in relation to HBMS' proposed Lalor Mine. Information sharing has included the proposed Lalor Concentrator. As well, HBMS and Manitoba funded a traditional use and knowledge study by an expert of MCCN's choice so that the information sharing process could be completed on the basis of current information about MCCN traditional use. However, MCCN has instructed its expert to stop work before completing the report of the study.

The RTL Zone associated with MCCN is not in the Project Region.

The nearest community to the Project Region is the Town of Snow Lake. Other larger population centres in the general region include the City of Flin Flon, Cranberry Portage, Thompson and The Pas (See Figure 1).

Figure 13 shows permanent, seasonal and temporary residences in the Project Region.

Figure 14 shows fisheries and fishing areas in the Project Region.

There are no environmentally sensitive areas in the Project Region.

3.4 Photographs of Work Location

Appendix B provides the following photos:

Photo 1 shows an aerial view of the Lalor site, looking northwest, with an arrow indicating the location of the proposed Lalor Concentrator.

Photo 2 shows the location of the proposed Lalor Concentrator, looking north.

Photo 3 shows the corridor of the Pipeline System (along the Lalor Access Road from Lalor site to PR 395).

Photo 4 shows the corridor of the Pipeline System (along the former rail bed).

Photo 5 shows the Snow Lake Pumphouse.

Photo 6 shows the Anderson Tailings Impoundment Area.

3.5 Legal Description

The Lalor Concentrator Site is located within a portion of NW-9-68-18W1

The Pipeline System lies within portions of: Sections 31 and 32 of 67-17W1, Sections 35 and 36 of 67-18W1, Sections 3 through 5 of 68-17W1, Sections 1 through 3 and 9 through 11 of 68-18W1.

3.6 Proximity to Residences, Traditional Territories and Federal Lands

Figure 13 displays all the areas within the Project Region in which known permanent, seasonal or temporary residences are located, which are comprised of the Town of Snow Lake, five cabins on Cook Lake, and cottage subdivisions on Berry Bay, Taylor Bay, Anderson Bay and Bartlett's Landing, all on Wekusko Lake. Cabins on Cook Lake are seasonal, while the majority along Wekusko Lake are all season.

With respect to traditional territories, see **Section 3.3** above.

3.1 Land Ownership and Property Rights

All surface and sub-surface rights required for the development of the proposed project are held by the proponent as follows:

3.1.1 The Concentrator Component

The concentrator component will be constructed within the boundaries of Mineral Lease ML-334 obtained on March 29, 2012 from the Mines Branch, Government of Manitoba. This lease was converted from mineral claims which have been held since 1960 (see **Figure 15**).

3.1.2 Pipeline System

The greater extent of the Pipeline System will be laid in land that is held by the proponent in fee simple. **Figure 15** displays Portion 3 of the route of the Pipeline System, which is owned by HBMS pursuant to Certificate of Title No. 1701932.

The proponent holds the rights to the remainder of the land required for the Pipeline System by means of mineral and/or surface leases shown in **Table 3.1** and **Figure 15**. These leases were converted from claims which have been held since 1960. These leases permit use and occupation of the land for the purpose of prospecting, exploring for, developing, mining or production of minerals on, in, or under the land. Certain portions of the Pipeline System lie within areas for which HBMS has Surface Leases as well as Mineral Leases.

Table 3.1 – Mineral and/or Surface Leases Associated with Lalor Concentrator

M5779	M7238	M7359	M7493
M5780	M7239	M7360	M7494
M5730	M7240	M5808	M5719
M5731	M7241	M5809	M7298
M7307	M7242	M5741	M7297
M5732	M7243	M5740	M7299
M5726	M7286	M5739	M5745
M7276	M7285	M5810	M5744
M7266	M5784	M5812	M5749
M5725	M5789	M5813	M5751
M5724	M5803	M5721	M5750
M7309	M7333	M7491	M7383
M5776	M5806	M7515	M7374

3.2 Land and Water Use

There is no water user in or near the Project Site other than the proponent. The project site crosses three RTLs owned by Martin McLaughlin, Jim Schollie and Russell Bartlett. None of these trap lines is associated with an Aboriginal community.

The project does not require access to, use or occupation of, or the exploration, development and production of lands and resources currently used for traditional purposes by Aboriginal peoples. All elements of the proposed Lalor Concentrator will be on land which HBMS holds under lease or in fee simple, and is occupied and used by HBMS for mining purposes as follows:

- The concentrator component lies within the Lalor site, which has been developed for the Lalor AEP/future Lalor Mine Project. It lies on land that has been under continuous use for mining purposes since at least 2007.
- Portion 1 of the Pipeline System, which follows the Lalor Access Road, lies on land which is controlled by gated access, and which has been under continuous use by HBMS for mining purposes since at least 2007.
- Portion 2 of the Pipeline System tracks PR 395, which is in daily use for industrial traffic. In addition, Provincial regulations prohibit hunting within 300 m of roadways.
- Portion 3 of the Pipeline System falls within the ROW for a former rail bed, which is owned by HBMS pursuant to Certificate of Title No. 1701932.This is private land to which Aboriginal peoples do not have a right of access.
- Portions 4, 5, and 6 of the Pipeline System are located on land which the proponent has used for mining purposes since the late 1970's. These portions lie behind the gates of existing HBMS projects, which excludes users other than the proponent, on land that has been taken up for mining purposes for over 30 years.

4. Federal Involvement

4.1 Financial Support

Funding for the project will be provided solely by HBMS.

4.2 Federal Lands

No Federal lands will be used for the purpose of carrying out the designated project. Environmental planning for the Lalor Concentrator Project has defined the broadest spatial boundary of potential impact to be an area of up to 10 km beyond the site of the concentrator component and the Pipeline System (the Project Region). No Federal lands lie within the Project Region.

4.3 Legislative Requirements

No Federal permits or approvals will be required or sought for the proposed Lalor Concentrator.

Federal regulatory requirements applicable to existing support facilities are:

- The Anderson TIA is operated in accordance with the MMER.

5. Environmental Effects

5.1 Approach

A detailed environmental assessment has been undertaken as a part of the licence application to be submitted to Manitoba Conservation and Water Stewardship for consideration under *The Environment Act* (Manitoba). This project description summarizes potential effects as they relate to Federal jurisdiction.

Potential environmental interactions between the proposed Lalor Concentrator and environmental components were identified within the following geographic boundaries:

- **Project Site** – is comprised of Lalor site, the Lalor Access Road, and the proposed ROW for the Pipeline System.
- **Project Area** – is comprised of the an area that is 2 km beyond the Project Site, which is intended to take into account the effects of the project (such as noise, vehicle emissions and traffic).
- **Project Region** – is comprised of an area that is up to 10 km beyond the Project Site, which is intended to take into account the maximum spatial extent of any potential impacts of the Project.

The Project Site, Project Area and Project Region are shown in **Figure 4**.

5.2 Environmental Setting

In 2007, baseline terrestrial and aquatic investigations were commenced in anticipation that discoveries in the region of the Lalor Mine could lead to future development. The investigations dealt broadly with aquatic and terrestrial resources that could be affected by future development, including local geology, soil, vegetation and wildlife, and fish and fish habitat. Aquatic investigations included bathymetry, water and sediment quality, aquatic invertebrates, fish community and testing for metals in fish.

These baseline investigations that were carried out in 2007, 2008, 2010, 2011 and 2012 are reported on in the *Proposed Lalor Mine Environmental Baseline Assessment* (AECOM, 2012), which was filed with the Lalor Mine EAP, and the *Proposed Lalor Concentrator Environmental Baseline Assessment* (AECOM, 2013). The baseline reports are the primary source for the physical, terrestrial and aquatic environment provided in this section.

5.2.1 Physical Setting

The Project Region is found within the Reed Lake Ecodistrict of the Churchill River Upland Ecoregion. It is characterized by broken, hilly to rolling bedrock, which controls relief of the area. The bedrock is partially covered by unconsolidated mineral and organic materials. Areas to the east of Lalor Lake contain extensive lacustrine deposits, while the remainder contains a mixture of; lacustrine sediments, till deposits, rock exposed areas, and peatlands.

Dystric Brunisols are the dominant soils in the Reed Lake Ecodistrict. These soils have developed over glacial till overlying the bedrock and consist of shallow, sandy, and stony veneers. Peat-filled depressions with very poorly drained Typic and Terric Fibrisolic and Mesisolic Organic soils can be found throughout this ecodistrict. These soils are overly loamy to clayey glaciolacustrine sediments. Eutric Brunisols and Gray Luvisols can be found on sandy bars, beaches, and exposed clayey deposits.

Specific measurements of air quality in the Project Region are not available. However, it is expected that the air quality in this area is considered very good compared with larger cities and commercial and industrial areas in Manitoba.

The regional shallow groundwater flow is likely controlled by the topography and bedrock surface in the region. There are 13 registered groundwater wells in use within the Project Region, but none within the Project Site. These wells are located within the property development around Wekusko Lake (Taylor Bay, Berry Bay and along PR 392), the Town of Snow Lake, and Wekusko Falls Provincial Park. Bedrock groundwater wells, when present, are likely connected to fractures or discontinuities that are connected to the local water table and are not likely regionally interconnected. Hydrogeological testing of the bedrock near the Lalor deposit has determined that hydraulic conductivity is low.

Because of varying topography created by hummocky bedrock surfaces, drainage conditions vary considerably over short distances. Regionally the terrain falls at about 0.6 m to 1.0 m per km. As found in much of the Boreal Shield Ecozone, contiguous and isolated bogs cover between 20% and 40% of the Project Region. Bogs are widespread and stagnant in the region.

5.2.2 Terrestrial Setting

The Project Region is characterized by naturally dense boreal forest, primarily Black Spruce interspersed with Jack Pine and hardwoods, with limited understory growth. Sphagnum forms the dominant ground cover. Baseline terrestrial surveys carried out in 2007, 2010, 2011 and 2012 included a review of local geology, soil, vegetation, wildlife, flowering plants, and migratory birds in the Project Area. No rare or endangered plant species were encountered and there are no indications that this area contains unique plant habitat. In general, the Project Site is typical for this region.

No specific critical wildlife habitat was observed on the Project Site (such as calving or over-wintering areas) and, based on site conditions and limited field observations, it is expected that there is no critical wildlife value in the Project Area. At both the site of the Concentrator component and along the route of the Pipeline System, the low diversity of plant communities and extremely dense Black Spruce stand offer a very restricted habitat for wildlife.

5.2.3 Aquatic Setting

Hydrology in the Project Area covers a number of localized and two regional watersheds. The Project Site is located within the Snow Lake local watershed. Snow Lake also receives water from the south via Tern Creek and Tern Lake. Tern Creek is the drainage for two medium sized lakes, Ghost Lake and Threehouse Lake. Most of the small lakes along the route of the Pipeline System have no defined drainage features and watershed mapping suggests they are contributing to Snow Lake.

Nutt Lake and the Anderson TIA are within the Wekusko Lake local watershed. Wekusko Lake is the downstream receptor for the Snow Lake watershed as well, but Anderson Creek and Stall Creek drain into Wekusko Lake directly. Lakes to the west of the site of the Concentrator component generally drain south through Tramping Lake before draining into Wekusko Lake.

During 2011 and 2012, investigations were carried out to establish baseline conditions in the Project Area with respect to: water quality; sediment quality; and fish and fish habitat. These investigations included all of the locations of existing culverts on the route of the Pipeline System and any waterbodies connected to those crossings, as well as the waterbody that is downstream of the final discharge point for the Anderson TIA.

The route of the Pipeline System lies entirely within areas that have been developed and/or are currently occupied for mining purposes. There are 20 locations which contain existing culverts along the route. Of these crossings, 17 are classified as **No Fish Habitat**, due to lack of connectivity to fish-bearing water ways and shallow water that will likely freeze to bottom in winter. Three sites are classified as **Marginal Fish Habitat** because they provide sufficient conditions to support forage fish but are unlikely to support large-bodied fish.

Habitat along the shoreline of Snow Lake in the area adjacent to the pumphouse is classified as **Important Fish Habitat**.

5.2.4 Socio-Economic Setting

The Project Site is located inside the municipal boundaries of the Town of Snow Lake. The Snow Lake Mining District has been developed for mining purposes for over 50 years. The Project Region lies within an area that is zoned as Limited Development, Unsurveyed Lands. There are no national or provincial parks in the Project Site or the Project Area. Wekusko Falls Provincial Park falls within the Project Region.

Information from the Historic Resources Branch of Manitoba Culture, Heritage and Tourism indicates that there are no known historic or heritage resources in the Project Site or the Project Area.

5.3 Environmental Effects

5.3.1 Fish and Fish Habitat (*Fisheries Act*)

5.3.1.1 At the site of the Concentrator Component

There is no Fish or Fish Habitat at the site of the Concentrator component.

The nearest water body to the site of the Concentrator component is Lalor Lake. Risks to this waterbody consist of dust and the potential for acid rock drainage (ARD) at the ore stockpile. However, the plan for operation of the Lalor Concentrator appropriately mitigates the potential to generate ARD. Any ARD that is generated at the ore stockpile will be collected and pumped back to the concentrator to be used as process water.

Potential impact from dust is expected to be insignificant because: the jaw crusher will be enclosed, confining any dust to the building itself; the wind direction is essentially away from Lalor Lake; and there is a vegetative buffer between the Lalor site and Lalor Lake.

Further, since Lalor Lake only provides marginal habitat which does not support large-bodied fish, the impact on Fish and Fish Habitat from the Concentrator component is expected to be insignificant.

5.3.1.2 Along the Route of the Pipeline System

As described above, the route of the Pipeline System traverses a total of 20 locations which contain existing culverts. Two of these locations are in Portion 1 (on Lalor Access Road). The other 18 locations are in Portion 3 of the route (in the railbed).

As described above, only three of the 20 culverts are in water crossings located in streams or off-take ditches which are or may lead to potentially fish bearing waterbodies. These three, which contain marginal fish habitat, will not be altered during construction of the project. However, any activities that occur near these culverts will be carried out in accordance with applicable DFO Operational Statement(s) or other applicable standards. As well, all rock used to widen the existing rail bed will be non-acid generating.

The other 17 culverts are merely water control features installed in the particular linear feature to keep surface run-off from ponding near that feature. These 17 locations are not connected to any potentially fish bearing habitat. Several of these 17 culverts may be subject to replacement. Even though there is no connection to fish habitat, such culvert replacement will be carried out in accordance with DFO's Operational Statement on Culvert Maintenance.

As well, the leak detection system built into the design of the Tailings Pipe will mitigate the risk of any spill from occurring. Any spill that does occur will be addressed with appropriate spill containment and management procedures in accordance with the HBMS ISO 14001 Environmental Management System.

Habitat along the shoreline of Snow Lake in the area adjacent to the pumphouse is classified as **Important Fish Habitat**. However, upgrades to the Snow Lake Pumphouse will not involve any physical activities along the Snow Lake shoreline at or below the high water mark. The pipe and water intake structure will not be affected by the upgrades. Fish habitat therefore is not affected.

5.3.1.3 Downstream of Anderson TIA

Tailings from the Lalor Concentrator will be managed in the Anderson TIA, which has been in operation since 1979 and where tailings are deposited sub-aqueously to prevent the generation of ARD. Throughout its life, discharge at the final discharge point of the Anderson TIA has been in compliance with all provincial and Federal regulatory criteria. Discharge from the Anderson TIA enters into Anderson Creek, which then flows into Anderson Bay of Wekusko Lake. Studies of Anderson Bay have been carried out pursuant to regulatory requirements over 34 years of operation. These studies have confirmed that water quality downstream of the Anderson TIA continues to support high species diversity.

The proposed project does not entail any physical activity that could affect fish habitat downstream of the Anderson TIA. The phytoplankton community in Anderson Bay of Wekusko Lake is balanced, suggesting that the phytoplankton community is Anderson Bay is healthy. For zooplankton, while abundance of species is low, the species diversity is similar to other waterbodies in the Project Region, suggesting that effluent from Anderson TIA has not adversely impacted aquatic resources downstream.

Since any discharge from Anderson TIA will continue to be monitored and will be in compliance with MMER criteria, the potential effect of the project on fish and fish habitat downstream of the Anderson TIA, as defined in the *Fisheries Act,* is expected to be negligible.

5.3.2 Migratory Birds

5.3.2.1 At the site of the Concentrator Component

The concentrator component will lie within a cleared and developed site and does not provide any habitat suitable for migratory birds.

5.3.2.2 Along the Pipeline System

Physical activities that will be carried out during construction of the project are not expected to adversely impact migratory birds for the following reasons:

Nesting birds that may make use of the edge habitat available along the route of the Pipeline System will be able to continue to use this habitat following development of the project. Despite clearing along the Pipeline System, there will be no net loss of edge habitat. In addition, any clearing and blasting will be done outside the nesting season (April 15 to July 31).

As observed during field investigations conducted for the proposed project, water crossings along Portion 1 (at culvert location LR01), and Portion 3 (at culverts RB02 and RB03) of the Pipeline System offer potential brooding areas for waterfowl. Due to the proximity of these brooding areas to potential nesting areas (edge habitat) this is suitable waterfowl habitat. However, no brooding areas will be affected by project activities, and as described above, there will be no net loss of edge habitat so the amount of suitable waterfowl habitat will remain.

5.3.2.3 Downstream of Anderson TIA

Open water lakes such as Anderson Bay of Wekusko Lake provide some nesting habitat in shoreline areas and brood water along the shoreline of lakes. However, the proposed project does not involve any activities that would affect such habitat.

Therefore, the potential effect of the project on migratory birds is expected to be negligible.

5.3.3 Flora Species

Although the Lalor Concentrator will result in loss of vegetation in the Project Site, vegetation communities that will be lost are common throughout the Project Region. Further, a majority of the planned facilities will be utilizing areas that are already disturbed. During closure, the Project Site will be re-vegetated and returned to native conditions to the extent that is practical. Therefore, the loss of vegetation to the Lalor Concentrator footprint is not considered significant.

5.3.4 Fauna Species

No habitat of specific or critical value to wildlife was observed at the Project Site (such as calving or over-wintering areas), and based on site conditions and limited field observations during the terrestrial investigations, it is expected that there is no critical wildlife value in the Project Area. Although, the Lalor Concentrator will result in a loss of habitat due to clearing in the Project Site, the type of habitat that will be lost is common in the Project Region. There will be some noise disturbance during construction and operation, but it is anticipated that wildlife in the general area are accustomed to these noise levels, given other development activity in the region. During closure, the Project Site will be restored to native conditions to the extent practical. For these reasons, the potential effect on fauna is expected to be insignificant.

5.3.5 Land and Resource Use

Potential environmental effects on aquatic and terrestrial components are expected to be minor to negligible in magnitude. Therefore, the consequential effects on any natural resource harvesting, trapping, and fishing (recreational, subsistence and commercial) are expected to be insignificant. HBMS will continue to work with the local trappers to ensure that access to their trap lines is not impacted by the proposed development.

5.3.6 Aesthetics

During construction, the Project Site will be kept tidy. The Project Site is accessed by a 3 km long access road and is surrounded by dense vegetation, minimizing the visual impact of the project in the Project Area and Project Region. During the closure phase, the Project Site will be re-vegetated and returned to native conditions to the extent that is practical. Therefore the aesthetics of the region are not expected to significantly change as a result of the proposed Lalor Concentrator.

5.4 Interprovincial or International Effects

The proposed project will not result in any environmental effects that would be measurable at the provincial level, and therefore no interprovincial or international effects are expected to occur.

5.5 Effects on Aboriginal Peoples

HBMS has operated in the Snow Lake district for over 50 years. It has been in continuous occupation of the site of the Concentrator component since 2007. The route of the proposed Pipeline system is adjacent to a highway used for industrial traffic or is on land that has been under use, occupation and control by HBMS for decades. Much of it is on land owned in fee simple by HBMS.

Based on Government of Manitoba (Manitoba Conservation and Water Stewardship, 2002) and Federal sources (Government of Canada, 2013) and as shown on **Figure 12**, there is no Indian Reserve, Registered Trap Line (RTL) zone associated with First Nation/Aboriginal community use or other Aboriginal interest located within the Project Region.

The project does not require access to, use or occupation of, or the exploration, development and production of lands and resources currently used for traditional purposes by Aboriginal peoples. All elements of the proposed Lalor Concentrator will be on land which HBMS holds under lease or in fee simple, and is occupied and used by HBMS for mining purposes as follows:

- The concentrator component lies within the Lalor site, which has been developed for the Lalor AEP/future Lalor Mine Project. It lies on land that has been under continuous use for mining purposes since at least 2007.
- Portion 1 of the Pipeline System, which follows the Lalor Access Road, lies on land which is controlled by gated access, and which has been under continuous use by HBMS for mining purposes since at least 2007.
- Portion 2 of the Pipeline System tracks PR 395, which is in daily use for industrial traffic. In addition, Provincial regulations prohibit hunting within 300 m of roadways.
- Portion 3 of the Pipeline System falls within the ROW for a former rail bed, which is owned by HBMS pursuant to Certificate of Title No. 1701932. This is private land to which Aboriginal peoples do not have a right of access.
- Portions 4, 5, and 6 of the Pipeline System are located on land which the proponent has used for mining purposes since the late 1970's. These portions lie behind the gates of existing HBMS projects, which excludes users other than the proponent, on land that has been taken up for mining purposes for over 30 years.

During the latter half of 2010, Mathias Colomb Cree Nation (MCCN) began to suggest that its traditional lands encompass a large portion of northwestern Manitoba, including the entire Snow Lake mining district, in which the Lalor projects, including the proposed Lalor Concentrator, are located. HBMS therefore entered into information sharing with MCCN and Manitoba commenced a Crown consultation process in relation to HBMS' proposed Lalor Mine. HBMS information sharing also has included Lalor Concentrator.

As well, HBMS and Manitoba funded a traditional use and knowledge study by an expert of MCCN's choice, but MCCN has instructed the expert to stop work on the report of the study. Therefore it is not known if there are any traditional uses by MCCN in the Project Region. However, any resource that currently is being used for trapping, fishing or hunting in the Project Region will be unaffected by construction or operation of the Lalor Concentrator project.

With respect to commercial trapping, although the potential effect on trapping activities is assessed to be insignificant, HBMS is committed to working with trappers in the area to ensure that access to their trap lines is not impacted by the proposed development. None of these trappers is associated with an Aboriginal community.

For all these reasons, the Lalor Concentrator is not expected to cause any environmental effects that would lead to consequential effects on Aboriginal peoples.

6. Proponent Engagement and Consultation with Aboriginal Groups

6.1 Interested Aboriginal Group(s)

Baseline environmental surveys in the general area of HBMS's Lalor projects began in 2007, when HBMS commenced intensive drilling on the Lalor site. The environmental impact assessments of HBMS's Lalor projects have taken into account all known Aboriginal lands and traditional territories. Based on Government of Manitoba sources, there are no Indian Reserves, Registered Trap Line (RTL) zones associated with First Nation use or any other Aboriginal interests located within the Project Region.

HBMS applied for approval of the Lalor AEP in March 2010. In the report submitted in support of that application, HBMS concluded that, based on HBMS long-term (more than 50 years) mining experience in the Snow Lake region, there was no First Nation or Aboriginal hunting, fishing, trapping or other traditional use that could be affected.

During the latter half of 2010, Mathias Colomb Cree Nation (MCCN) alleged that its traditional lands encompassed a large portion of northwestern Manitoba, including the entire Snow Lake mining district, in which the Lalor projects are located.

In 2011, HBMS began to share environmental information with MCCN concerning its projects. This information sharing process is described in the sections below.

The contact information for MCCN is as follows:

Chief Arlen Dumas
Mathias Colomb Cree Nation
PO Box 135
Pukatawagan, Manitoba
R0B 1G0

6.2 Summary of Discussions with MCCN

6.2.1 MCCN Meeting #1 – May 9-10, 2011

On May 9-10, 2011, HBMS met with Chief Dumas and 7 representatives of the MCCN (Sherman Lewis, Floyd North, Ken Bighetty, Hanson Dumas, Gordie Bear and Jimmy Colomb) regarding potential cooperation between HBMS and MCCN with respect to education and training, employment and business opportunities. In the course of these discussions, MCCN made the statement that Flin Flon and the Snow Lake mining district are in areas which MCCN considers to be traditional lands.

HBMS presented information about construction of the Lalor AEP; project descriptions for future HBMS projects, including the Lalor and Reed Mine Projects; and the trade-off study then underway to help HBMS decide whether to refurbish the existing Stall Lake Concentrator or build a new concentrator on the Lalor site.

MCCN were advised that the trade-off study then underway included consideration of whether a gold plant and use of cyanide will be required. MCCN expressed concerns about potential use of cyanide during ore concentrating. Since that discussion, the gold plant and use of cyanide have been eliminated from the Lalor Concentrator project description. Notes of the meeting are provided in **Appendix C**.

6.2.2 MCCN Meeting #2 – January 10-12, 2012

Following the May 2011 meeting, HBMS contacted Chief Dumas to schedule a meeting to share environmental information about HBMS Projects. A meeting was scheduled with MCCN for September 12, 2011 but was cancelled by MCCN on September 9, 2012.

The meeting was rescheduled and held in Flin Flon on January 10-12, 2012. The three-day visit included site tours of the Lalor project, including the Lalor site and some ancillary facilities.

Chief Arlen Dumas, Elder Marcel Caribou, Councilor Jimmy Colomb and legal counsel, Larry Sloan, represented MCCN. Topics of discussion included training and employment opportunities, Lalor project description, environmental impact assessment, and First Nation experience in the region.

HBMS advised that the trade-off study had been completed and a decision made to build a new concentrator at the site of the Lalor Mine. Information was provided about how the Lalor project would link to existing previously-licensed and operating facilities. There was some discussion about the technical aspects of planning for a new concentrator. HBMS explained that the decision to build the Lalor Concentrator at the same location as the mine allows the mine to use paste backfill, which will reduce the number of trucks on the highway from 60 trucks per day to approximately 16 trucks per day.

AECOM gave a presentation explaining the environmental assessment process and presenting their conclusions about expected environmental effects. They also outlined mitigation measures that they recommended be followed in constructing, operating and ultimately closing the Lalor project.

Most of MCCN's comments and questions were posed by MCCN legal counsel and related to regulatory process in Manitoba, waste rock management for Lalor Mine and the existing operation of the Anderson TIA.

Further questions dealt with Manitoba requirements for the archaeological, cultural and heritage assessment performed by AECOM, the continuing use of existing water rights licenses, and timing for application for *Environment Act* licenses for the Lalor Mine and Lalor Concentrator, which at that time were expected in the spring of 2012 summer/fall of 2012, respectively.

During the course of the meeting, MCCN elders shared experiences they had on similar sites. For example, Councilor Colomb shared memories of his work in the open pit mine in Leaf Rapids with HBMS's Tony Butt who also had worked at the Ruttan Mine, but at a time later than Councilor Colomb.

Chief Dumas stated that there are many trappers operating in the area directly north of Reed Lake. Elder Caribou remembered that when trap lines were first registered, not all individuals were included in the registration process. In reply, AECOM indicated that they had contacted registered trappers in the area that would be affected.

Mr. Samoiloff from AECOM was asked whether, during the terrestrial review, AECOM had sought input from First Nations, particularly with respect to plants that can be used for traditional medicines. He replied that baseline studies had commenced in September of 2007 and were carried out over multiple years during different growing seasons. Exploration drilling was carried on continuously during that time. HBMS and AECOM were not aware of any First Nation presence on and around the Lalor site. MCCN did not assert a traditional connection to the Snow Lake district until the latter part of 2010.

It also was explained that the Lalor site is a rocky knoll, with little soil cover, quite typical of many kilometers of terrain in the region. When there is soil cover, HBMS practice is to save it for use in reclamation. The team of AECOM scientists carried out a vegetation assessment in a one-kilometer buffer zone around the Lalor site and access road. This survey produced a catalogue of species observed, which was compared with Provincial records concerning vegetation in the region and information about plant species that are known to have been identified as potentially having medicinal or cultural importance. AECOM's work had not identified any plant or animal that would be unique to the area that has been or potentially will be affected by the Lalor developments.

AECOM was asked whether there is a way to verify that the environmental review includes plants that First Nations consider to be traditional medicines. In reply, AECOM and HBMS requested any comments that MCCN elders or resource harvesters might have about the vegetation on the AECOM list or any other knowledge they may have about the area. HBMS and AECOM invited MCCN elders and resource harvesters to return to the site with AECOM scientists and walk the area together, to determine if there are any environmental sensitivities that AECOM's assessment may need to include. For example, if a resource harvester or elder knows of any plant or animal special habitat that may have been affected by the Lalor development, this information should be factored into the assessment. HBMS committed to paying the costs association with such work on the site by as many elders or resource harvesters as, in the Chief's judgment, may have an interest in this work.

At the end of the meeting, HBMS also offered to attend in Pukatawagan with AECOM to facilitate participation by elders and resource harvesters. HBMS took the view that First Nation elders and resource harvester be retained to participate with HBMS's consultants in the collection of environmental information and share traditional knowledge about resources that could be affected by HBMS's projects. Mr. Sloan disagreed and took the position that the information sharing process would have to include a formal traditional knowledge study.

Detailed notes of the meeting were prepared and shared with MCCN and their counsel (included in **Appendix C**). HBMS sent a complete record of environmental and permitting documentation pertinent to current HBMS project planning to Mr. Sloan on January 20, 2012, with a view to facilitating further discussion. On February 10, 2012, HBMS wrote to follow up on the January meeting with further offers, both with respect to business cooperation and sharing information relevant to the potential for effects of the proposed project on traditional activities.

6.2.3 Correspondence and Meetings with MCCN Legal Counsel – January – September, 2012

On January 27, 2012, HBMS's environmental lawyer received a letter from MCCN's new lawyers, Robert Freedman and Mark Gustafson, of Janes Freedman Kyle (JFK). Over the next several months, correspondence was exchanged between counsel and further meetings were held to discuss how to facilitate further information sharing.

MCCN took the position that MCCN would require HBMS and/or Manitoba to fund: a study of traditional knowledge and use to be carried out by the consultant of their choice, who was identified as Dr. Craig Candler of the Firelight Group; and a third party review of HBMS's environmental impact assessments to be performed by an environmental expert of their choice, Dr. Ginger Gibson (also of the Firelight Group). MCCN provided a preliminary technical memorandum by Firelight on MCCN traditional uses and proposals for the two studies.

Meetings were held in Winnipeg on May 3, 2012 and July 5, 2012. At these meetings and in subsequent telephone conferences, HBMS, Manitoba and MCCN agreed on the terms of reference for the studies that had been proposed by MCCN. Firelight committed to share their report on traditional knowledge and use within six months. The work was to include interviews of First Nation members, followed by mapping and written reports on the First Nation's traditional uses.

MCCN, HBMS and Manitoba committed to return to the table to discuss the results of the studies and any comments prepared by Dr. Gibson. Dr. Gibson was to help the MCCN membership respond to the environmental information presented by HBMS.

The work on both studies began in October, 2012. AECOM worked with Drs. Candler and Gibson to assemble the materials they would need to carry out both pieces of work, including providing assistance with digital mapping of background information needed by Dr. Candler for his work in mapping traditional uses.

AECOM sent their environmental studies concerning the Lalor and Reed Projects directly to Dr. Gibson and reviewed them with her in telephone conferences.

6.2.4 MCCN Meeting #3 – November 23, 2012

On November 23, 2012, HBMS and AECOM held a meeting in Pukatawagan with members of MCCN to discuss the proposed Lalor Concentrator and other HBMS mining projects. The meeting was attended by Stephen West, Jay Cooper and Pam Marsden from HBMS; Clifton Samoiloff, Alison Weiss and Shawna Kjartanson from AECOM; and Dr. Ginger Gibson and Stephen DeRoy from the Firelight Group.

Fifteen (15) members of MCCN were in attendance, including Chief Arlen Dumas and various Council members and elders. AECOM prepared the presentations for that meeting based on direction provided by Dr. Gibson.

The presentation included the environmental assessment and description of the proposed Lalor Mine, Lalor Concentrator and Reed Copper Projects. The only issues raised by MCCN that relate to potential impacts of the Lalor Concentrator were the use of chemicals in the concentrator and spatial distribution of effects of those chemicals and the assessment of waterfowl in the area. HBMS explained that the reagents that will be used in the concentrator are standard chemicals that have been in use for 30 years. With respect to spatial distribution of chemicals, the concern related to their prior experience with the smelter. HBMS explained that a concentrator is very different from a smelter and chemicals from the concentrator will not be dispersed in the air. With respect to waterfowl, AECOM stated that flora and fauna were assessed as a part of the environmental assessment, and confirmed that waterfowl are included in that group.

HBMS answered all the concerns raised that day and promised to facilitate any follow-up requested by Dr. Gibson, including visits by First Nation elders or resource harvesters to the existing HBMS sites in the Snow Lake area.

Notes of the meeting are provided in **Appendix C**.

6.2.5 Completion of Information Sharing Process – December, 2012 – April, 2013

By end of March, 2013, Firelight's work should have concluded. During February, 2013, HBMS, through legal counsel, attempted to set dates for the three-party meetings to resume, in the expectation that information sharing could be continued with the benefit of the completed studies. To the best of HBMS's knowledge, Dr. Candler and his team completed the interviews needed to map MCCN traditional uses. HBMS paid Firelight's invoices, as had been agreed. However, MCCN's legal counsel was unable to obtain instructions to resume the three-party meetings. Subsequently, MCCN terminated its relationship with legal counsel.

On March 26, 2013, HBMS wrote to Dr. Candler to seek information on completion of Firelight's work. On April 4, 2013, Dr. Candler replied that Firelight's work was "on hold based on a request from MCCN received earlier this year." Dr. Candler further indicated that Firelight would require written authorization from MCCN before "picking up pens again."

6.2.6 Conclusion

None of the information provided by MCCN to date, including Dr. Candler's technical memo and the comments made by MCCN members at the meetings of May 2011, January 2012 and November 2012, demonstrates that there is traditional activity currently practiced in the areas which are or could be affected by the proposed Lalor Concentrator project.

On April 16, 2013, both Manitoba and HBMS wrote to MCCN to inquire whether Firelight's work would be completed. HBMS advised that if, at any time, a link is demonstrated between adverse effects of proposed projects and activities practiced by a member(s) of MCCN, HBMS would do all that is necessary to avoid, mitigate or compensate for any loss so occasioned. Manitoba advised of the steps it intends to take to complete its consultation process. Copies of these letters are provided in **Appendix C**.

7. Consultation with the Public and Other Parties

Since 2007, HBMS has been involved in formal and informal discussions with other regional stakeholders on the Lalor Projects, including the Lalor Mine, the Lalor Concentrator, other support infrastructure, and potential expansion of the Anderson TIA. Some of these events include:

- Town Hall presentation on Lalor Mine – Snow Lake, April 13, 2011
- Open House for realignment of PR 392 (led by MIT) – Snow Lake, May 17, 2011
- Interview with local trapper – Snow Lake, June 6, 2011
- Interviews with Snow Lake area residents – Snow Lake, June 7, 2011
- Open House on Lalor Mine – Snow Lake, June 8, 2011
- Interview with local trapper – Snow Lake, October 25, 2011
- Meetings with local trappers – Snow Lake, May 7, 2012 and February 12, 2013
- Town Hall presentation on Lalor Concentrator – Snow Lake, June 26, 2012
- Open House on Lalor Concentrator – Snow Lake, August 8, 2012
- Meeting with Snow Lake Cabin Owners Association – Snow Lake, August 8, 2012
- Meeting with Snow Lake Sno-Drifters snowmobiling cub – Snow Lake, December 7, 2012

It was determined that the Town of Snow Lake would benefit from additional participation in the public involvement process as the project will occur near the Town of Snow Lake, will directly and indirectly employ residents, provide local economic benefits and will utilize existing infrastructure in the Snow Lake area.

Public engagement specific to the Lalor Concentrator project has included a Town Hall presentation, a public Open House event in the Town of Snow Lake, a formal meeting with members of Mathias Colomb Cree Nation in the community of Pukatawagan, and interviews with residents and resource users in the Town of Snow Lake. A summary of the public involvement that has been undertaken for the Lalor Concentrator Project is included in the following sections.

7.1 Proponent Lead Public Involvement

7.1.1 Town Hall Presentation in the Town of Snow Lake

On June 26, 2012, HBMS held a Town Hall presentation in the Town of Snow Lake, which was attended by 12 people. The presentation covered the proposed Lalor Concentrator Project in detail and the development plan for the Lalor Concentrator. HBMS representatives held a question and answer period following the presentation. Area residents had questions related to building size and orientation, Anderson TIA and tailings management, roads, and impact to water quality in Wekusko Lake. HBMS provided answers to questions and committed to holding a Public Open House in Snow Lake to provide additional information on the project and present the environmental studies conducted for the project. Overall, Town Hall attendees were interested in the project and were either neutral or positive towards the project.

7.1.2 Public Open House in the Town of Snow Lake

On August 8, 2012, a public Open House was held in the Town of Snow Lake by HBMS and AECOM to provide information about the Lalor Concentrator, including the findings of environmental baseline studies and the environmental assessment, and allow for the public to provide the project team with feedback regarding the project.

The Open House was held at the Snow Lake Community Hall and 15 attendees participated in the event. The Open House consisted of a formal presentation with a question and answer period followed by informal discussions with attendees and representatives from AECOM and HBMS.

A number of questions and comments were tabled at the conclusion of the presentation, with the majority focussing on management of tailings at Anderson TIA, roads and traffic, and impact to water quality in Wekusko Lake, access to trap lines and snowmobile trails, and fate of the existing concentrator.

7.2 Other Local Stakeholders

7.2.1 Trappers

The Manitoba Conservation office in Snow Lake has confirmed that there are three registered trap lines (RTLs) that overlap with the Project Region (in the area of Cook Lake, Lalor Lake, the Pipeline System ROW, Anderson TIA, and Anderson Creek). These lines are RTL 23, RTL 14 and RTL 13 that are owned by Martin McLaughlin, Jim Schollie, and Russell Bartlett respectively. Manitoba Conservation records indicate that Mr. McLaughlin has been the owner of this trap line since at least 1968.

On June 6, 2011, AECOM conducted a telephone interview with Mr. McLaughlin to discuss the Lalor Project and identify his concerns with the project. Mr. McLaughlin indicated that his primary trapping area is currently located around Cook Lake, but indicated that he used to trap along the east bank of Lalor Lake. Trapping consists primarily of lynx, mink and marten.

Mr. McLaughlin indicated that he had no major concerns with the project, and realizes that any impacts that could potentially occur are expected to be temporary. He indicated that previous line cutting that occurred during exploration in the Lalor area had the most significant impact on his trap lines to date, and that his only concern with the construction and operation of the mine is the possibility of restricted access to his trap lines (due to fencing associated with the Lalor Mine). He also expressed an interest in speaking with HBMS to discuss issues associated with trap line access. Mr. McLaughlin was notified of the Open House, but indicated that he was unable to attend. HBMS is committed to working with Mr. McLaughlin to ensure access to trap lines is not impacted by the Lalor projects.

Manitoba Conservation has also confirmed that the area of Anderson Creek and Wekusko Bay is registered as RTL 13. This trap line is owned by Russell Bartlett (assisted by Greg Foord). On October 25, 2011, AECOM contacted Mr. Bartlett to discuss any concerns he may have about HBMS developments that may affect his trap line. Mr. Bartlett was on his trap line at the time and was not able to be interviewed at length. AECOM informed him that they were interested in his opinion and encouraged him to contact AECOM to discuss any concerns at his convenience. No further communication was initiated by Mr. Bartlett.

On May 7, 2012, HBMS contacted Mr. Bartlett to discuss any concerns he may have about the Lalor Concentrator project. The discussion focused on access to trap lines, trails, and roadways, which are important to Mr. Bartlett's trapping activities. HBMS indicated to Mr. Bartlett that they were committed to working with him to ensure that access to trap lines is not impacted by the Lalor Concentrator project. This included that ensuring that trails are left in good condition and access to them is not obstructed or hindered. HBMS also indicated that, once construction has been approved and scheduled, they intend to provide notice and details such Mr. Bartlett can remove traps or snares located in the Project Area to prevent accidental damage.

HBMS had a follow-up meeting with Mr. Bartlett in Snow Lake on February 12, 2013, with an update on the status of the Lalor Concentrator project and the realignment of PR 392. HBMS also provided Mr. Bartlett with an opportunity to express any concerns he had with either project. Mr. Bartlett indicated that he did not have any concerns, and expressed his appreciation for the additional information.

7.2.2 Cottages or Remote Residences

The closest cottages to the Lalor site are five cabins located on the west shore of Cook Lake, approximately 2 km from the Project Site. In a brief interview with one of the cabin owners during the September 2007 field study, it was indicated that these cabins have only been on the lake in the last 15 years and that five cabins is the maximum allotted to Cook Lake by Manitoba Conservation. Cabin subdivisions are also on Berry Bay, Taylor Bay, and Bartlett's Landing, approximately 13 km southeast of the Lalor Concentrator site.

On August 8, 2012, HBMS and AECOM met with Marcy Bast from the Snow Lake Cabin Owners Association at the Wekusko Fall Lodge near Snow Lake to discuss any concerns the Association may have with the Lalor Concentrator project. The discussion was focussed primarily on the potential impact to water quality in Anderson Bay in Wekusko Lake, where most of the cottages are located, and Ms. Bast was interested in hearing about the results of any environmental studies conducted on Anderson Bay. HBMS discussed the ongoing EEM studies which have been taking place in Anderson Bay since 2004, and also discussed the environmental baseline assessments conducted for both the Lalor Mine and Lalor Concentrator which have been taking place since 2007. HBMS provided copies of the EEM studies and offered to provide copies of the environmental baseline assessments for review. A summary of these EEM reports has been posted on the Association's website at *http://www.slcoa.com/envmonitor.php*.

Ms. Bast was invited to attend the public Open House for the project taking place in Snow Lake that evening, but she indicated that she was unable to attend. At the conclusion of the meeting, Ms. Bast indicated that she did not have any concerns with the project, and expressed her appreciation for having an opportunity to meet.

7.2.3 Lodge Owners

There are five lodges located in the Snow Lake region. The Diamond Willow Inn & Willow House is located in the Town of Snow Lake at 200 Lakeshore Drive and is approximately 9 km east of the Concentrator site. Wekusko Falls Lodge and Tawow Lodge Ltd. (Herb Lake Landing) are located approximately 18 km and 35 km southeast of the Concentrator site, respectively. Burntwood Lodge is a fly in fishing lodge located on Burntwood Lake and is estimated to be approximately 60 km northwest of the Lalor Site. Grass River Lodge is located on Reed Lake and is approximately 23 km southwest of the Lalor Site with outpost cabins on Dolomite Lake (50 km southwest of the Lalor Site) and Moody Lake (40 km northwest of the proposed Lalor Site).

7.2.4 Snowmobilers

On December 7, 2012, HBMS met with Chris Chell and Robert Stoupe from the Snow Lake Sno-Drifters club in Snow Lake to discuss any concerns the club may have with the Lalor Concentrator project. Although Mr. Chell and Mr. Stuope were in attendance at the August 8, 2012 Open House, they indicated that this was the first official meeting with HBMS to discuss how the project may impact the club. The discussion was focussed on the Pipeline System and construction activities and how their existing snowmobile routes will be affected at the Lalor Access Road, along the rail bed (Pipeline System ROW), portions of Anderson TIA, and the dams/ spillway locations at the east end of Anderson TIA. The club had also indicated that they are very interested in staying informed on construction activities in order to allow them time to update signage or develop new routes.

The process of developing new routes or modifying existing routes was discussed. Mr. Chell and Mr. Stuope indicated that the club is responsible for the condition of the trails, which are used by locals and visitors from southern Manitoba. These visitors may not be familiar with mining activities in the area and are using the maps provided by Manitoba Conservation and Water Stewardship. For this reason they indicated that it is important to provide enough lead time for the club to update maps. Visitors using the trails do not notify the local club or typically ask about changes or hazards that may be present.

Although exiting snowmobile trails use by the Snow Lake Sno-Drifters club may need to be closed and relocated, HBMS is committed to working with the club to ensure recreational snowmobiling in the Snow Lake area is not impacted by the Lalor Concentrator project.

7.2.5 Forestry

The Cormorant Provincial Forest is located approximately 80 km southwest of the proposed Lalor Mine site and covers an area of 1,479 km^2. Provincial forests are Crown Lands managed by Manitoba Natural Resources on a sustainable yield basis. A licence or permit allows harvesting of trees on Crown Lands and also indicates the quantity of each type of trees that can be harvested. Large companies must regenerate forest lands that they have harvested according to their Forest Management License. A forest renewal fee is paid by individuals or small companies for reforestations (Manitoba Conservation, 2011a).

Tolko Industries Ltd. (Manitoba Solid Wood Division, Woodlands), located in The Pas, Manitoba has three Forest Sections in Manitoba (Highrock, Nelson River and Saskatchewan River) where wood is harvested. These Forest Sections include areas surrounding Snow Lake, Flin Flon and Grass River Provincial Park (Tolko Industries Ltd., 2011a).

As part of the planning process and as documented in their *Annual Harvest and Renewal Plan*, public consultation has been undertaken with Pukatawagan (Mathias Colomb Cree Nation) and Snow Lake as well as other surrounding communities regarding the proposed harvest plan. According to Tolko Industries Ltd.'s record of the public consultation events in Pukatawagan and Snow Lake, no concerns regarding unique vegetation areas were identified to Tolko Industries Ltd. representatives. (Tolko Industries Ltd. 2011b)

7.3 Additional Public Notification and Information Sharing

In addition to formal public engagement as described above, the Lalor Concentrator Project has been covered extensively in various forms of media since 2011, and has been presented at industry events. The following listing includes a sampling of publications and industry events that have provided information regarding the Lalor Concentrator project:

Winnipeg Free Press

- Extra $144M for Manitoba Mine, July 6, 2011
- Province Mining Bright Future, November 19, 2011
- Snow Lake's Got it's Groove Back, December 1, 2011
- HudBay Boosts Capital Spending to Develop New Mines, December 20, 2011
- New Ventures on the Horizon, December 31, 2011
- Mining Hope in Northern Manitoba, March 1, 2012
- Lalor Mine Stealing Thunder of Other Site, August 3, 2012
- Mines are Gold for Province's North, August 15, 2012

- After the Gold Rush: Snow Lake Bursting at its Seams as Mining Activity Transforms Town, November 16, 2012
- HudBay to Spend $1.24 Billion on Projects in 2013, including Manitoba Mine, January 9, 2013

The Globe and Mail

- HudBay Minerals Announces Results of Lalor Optimization Study; Commitment to New 4,500 Tonne Per Day Concentrator, July 5, 2011
- HudBay Releases Third Quarter 2012 Results, November 1, 2012

Other Publications

- HudBay to Boost Investment in Lalor Project, Reuters, July 5, 2011
- HudBay's New Plan for Lalor, Mining Markets, July 5, 2011
- HudBay Minerals Announces Results of Lalor Optimization Study; Commitment to New 4,500 Tonne Per Day Concentrator, News Blaze, July 5, 2011
- Gold-Base Metal Development: HudBay Commits to New Concentrator at Lalor Project, Canadian Mining Journal, July 6, 2011
- HudBay to Build New concentrator at Lalor, Extends Mine Life, Mining Weekly, July 6, 2011.
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