

Hudbay Minerals Inc.

Lalor Mine Dry Facility Expansion

Notice of Alteration

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Date: November, 2021

Project #: 60658965

Distribution List

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Revision History

Rev #	Date	Revised By:	Revision Description

Jay Cooper
Director of Health, Safety & Environment
Hudbay Minerals Inc.
Manitoba Business Unit
PO Box 1500
1 Company Road
Flin Flon, MB R8A 1N9

November 10, 2021

Project #
60658965

Dear Mr. Cooper:

**Subject: Lalor Mine Dry Facility Expansion
Notice of Alteration**

Please find enclosed the Notice of Alteration and supporting information to obtain approval for the construction and operation of the Lalor Dry Facility expansion located at the Lalor Mine site near Snow Lake, Manitoba.

Should you have any questions regarding the Project or content in this report, please do not hesitate to contact Cliff Samoiloff at 204-928-7427.

Sincerely,

AECOM Canada Ltd.



Cliff Samoiloff, B.Sc., EP(CEA)
Project Manager, Senior Scientist

KB:kc
Encl.
cc:

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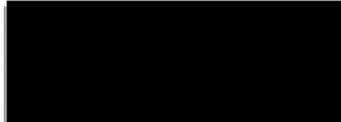
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Executive Summary

This report has been prepared in support of an Notice of Alteration (NOA) application submitted by Hudbay Minerals Inc. (Hudbay) for consideration by Manitoba Conservation and Climate (MCC), Environmental Approvals Branch for a proposed new Dry Facility, ancillary components and the decommissioning of the existing 2,000 m² polishing pond located at the Lalor Mine site which operates as per Environment Act License No. 3096. This NOA contains the information described in Manitoba Sustainable Development's [Information Bulletin – Alterations to Developments with Environment Act Licenses](#) (October, 2017).

The proposed Dry Facility expansion will connect to the existing Dry Facility to the south via a fully enclosed corridor and will include approximately 200 dry spaces with offices, lunchroom, shower facilities, locker rooms, and laundry. Wastewater (sewage and grey water) will initially be stored in new wastewater tanks to be installed at the site, which will be pumped and hauled offsite by a licensed contractor. In addition, four (4) wastewater holding tanks will be installed, upgrades to the existing fire protection system and the 2,000 m³ polishing pond will be decommissioned. All proposed activities will be taking place in areas previously disturbed and within an active mine site.

The results of the effects assessment are summarized as follows:

Topography / Geology

The expansion area of the new Dry Facility is within an area previously disturbed for the construction of the Lalor Mine site; therefore, none of the construction or operation activities are expected to entail new impact to topography or geology.

Following decommissioning of the polishing pond, excavated areas will be graded relative to natural grade in order to create appropriate surface water drainage and prevent large areas of ponded water.

Soil

None of the proposed construction or operation activities are expected to entail new impact to soil. Disturbed and exposed areas will be kept to a minimum with site restoration occurring as soon as is practical.

Wastes generated during construction, including hazardous materials, will be collected in bins maintained at specific locations throughout the Project Site. The bins will be emptied on a regular basis for recycling and/or disposal at a licensed waste disposal facility.

All disturbed areas will be re-vegetated following site closure.

Groundwater

Construction and operation of the Project is not anticipated to affect the local groundwater. There are no underground works involved with this Project, and no withdrawals of groundwater are required. No effects from waste management or accidents and spills are expected.

Dust Generation and Dust Deposition (vegetation)

The effect of dust during construction and operation will be Negligible. The dense vegetation immediately surrounding the Project Site is expected to mitigate wind effects and overall potential dust migration, limiting the effects to the Project Site and immediate area.

Noise (including Wildlife)

Noise will be generated to varying degrees during construction, operation and closure activities, with most of the noise expected to be typical of heavy equipment such as trucks, loaders and excavators. This will be similar to the current daily activities at the Lalor Mine site which the Project Site is situated in, therefore, combined with the intermittent nature of the noise generated from heavy equipment it is anticipated that noise impacts during construction and operation the Dry Facility expansion will be Negligible.

The potential impact of noise on wildlife is assessed to be Negligible as the Project Site is within an active mine site, it is anticipated that the local wildlife is likely already accustomed to some level of noise based on the existing activity at the Lalor Mine site and general area.

Climate / Greenhouse Gas

Air quality will not be adversely affected by emissions from equipment and vehicles. All vehicles used for the Project will comply with Environment Canada's On-Road Vehicle and Engine Emission Regulations as required, vehicles and equipment will be well maintained, and idling will be kept to a minimum.

Surface Water Quality

No additional surface water withdrawals will be needed for the Dry Facility expansion as currently freshwater use at the Project Site is pumped from Chisel Lake for use at the site for process water and for domestic use however, the volume of water will increase to approximately 46,920 L/day which is an overall increase of approximately 40,920 L/day. The current water rights license for Chisel Lake water withdrawal is approximately 402 dam³/year and the proposed increase in domestic water use at the Lalor Dry Facility expansion will have a negligible impact to the current withdrawal volumes.

Fish and Fish Habitat

The proposed Project does not require undertaking any activities in or near a surface waterbody, therefore, there will be no effects on fish or fish habitat.

Risk of Vehicle Collisions

The potential risk of vehicle collisions with wildlife is considered low, and speed limits on access roads, local roads and Provincial highways will reduce the risk of wildlife collisions.

Traffic

Although vehicular traffic will increase slightly during construction and operation of the New Britannia Mill, the effect of traffic on the Town of Snow Lake is assessed to be Negligible.

Conclusion

It is recommended that mitigation measures described in this report be implemented to ensure potential environmental effects are minimized and/or identified early so that appropriate action can be undertaken.

In summary, based on the proposed Project description and with the application of the proposed mitigation measures outlined in this NOA, adverse residual environmental impacts resulting from the Project are expected to be sufficiently mitigated and are not likely to cause significant adverse environmental effects.

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1. General Information

1.1 Project Overview

Hudbay Minerals Inc. (Hudbay) is proposing to expand the current Dry Facility at the Lalor Mine located near Snow Lake, Manitoba by constructing a new modular building which will house approximately 200 dry spaces which includes offices, lunchroom, shower facilities, locker rooms, and laundry. The expansion will also include new or upgraded connections for sewer and fire water. On-site sewage generated at the new Dry Facility will be directed to storage tanks and new fire water installation will connect to the existing fire water system on-site. Included with the expansion are some ancillary components which are further discussed in **Section 2.1** (Other Site Infrastructure).

Site upgrades will also include the decommissioning of the existing 2,000 m² polishing pond located at the Lalor Mine.

The Dry Facility expansion and ancillary components are herein known as the “Project.”

The Lalor Mine is currently permitted to operate in accordance with Environment Act License No. 3096 and in order to allow for the expansion of the Dry Facility, a Notice of Alteration (NOA) application is required. This report has been prepared to support an NOA to be submitted by Hudbay for consideration by Environmental Approvals Branch (EAB) in relation to the Lalor Mine Environment Act License No. 3096. This NOA contains the information described in Manitoba Sustainable Development’s [Information Bulletin – Alterations to Developments with Environment Act Licenses](#) (October, 2017). A copy of the NOA Form is included in **Appendix A**.

1.2 Proponent Contact Information

Table 1: Proponent Contact Information

Name of Project	Lalor Dry Facility Expansion
Name of Proponent	Hudbay Minerals Inc. (Hudbay)
Address of Proponent	PO Box 1500, #1 Company Road, Flin Flon, Manitoba, R8A 1N9
Principal Contact Person for the NOA	Jay Cooper Director of Environment, Hudbay PO Box 1500, #1 Company Road, Flin Flon, Manitoba, R8A 1N9 Ph: 204-687-2667 Email: jay.cooper@hdbayminerals.com

1.3 Company Profile

Hudbay has two (2) active mines in Manitoba: the 777 Mine in Flin Flon, which is expected to continue operation until the first quarter of 2022, and the Lalor Mine near Snow Lake, which is expected to continue operation until tentatively 2030.

Copper and zinc ore obtained from the 777 Mine is processed at the Flin Flon Metallurgical Complex (FFMC).

Zinc and copper ore obtained from the Lalor Mine is processed at the Stall Concentrator. Tailings from the Stall Concentrator are deposited via a pipeline into the Anderson Tailings Impoundment Area (ATIA). Tailings from Stall Concentrator are also used in the production of paste backfill at the Lalor Paste Plant that was commissioned in 2018 at the site of the Lalor Mine.

Zinc concentrate from both the FFMC and the Stall Concentrator is processed to produce refined zinc in the FFMC (which includes the zinc pressure leach, cellhouse and zinc casting plant). These facilities are expected to continue in operation until the close of operations of the 777 Mine. Since closure of the Flin Flon copper smelter in June of 2010, copper concentrate has been shipped out of Manitoba for further processing.

Starting in summer 2021, gold ore obtained at the Lalor Mine will be processed at the newly refurbished New Britannia Mill in Snow Lake. Tailings from the New Britannia Mill will be pumped by an overland pipeline to the Stall Concentrator for subsequent deposition into the ATIA.

As of December 2019, Hudbay directly employed 1,489 people, with an annual payroll of \$133.8 million (USD) in wages and benefits. In 2019, Hudbay paid approximately \$6.7 million in municipal taxes and grants as well as making community investments and charitable donations of approximately \$302,000.

1.4 Project Location and Land Tenure

The proposed Dry Facility expansion and other proposed upgrades will be contained to the existing footprint of the Lalor Mine site, as shown in **Figure 1** and no additional clearing or blasting will be required.

The Lalor Mine is accessed via Provincial Road (PR) 395 and then by turning west at the Chisel North mine via the Lalor Mine access road. No highway, access road, or parking upgrades are expected as a result of the Project.

1.5 Project Planning Process

In the planning process, Hudbay considered other location options for the new Dry Facility however, due to worker and resident safety reasons, including the avoidance of traffic by pedestrians and minimal distance to walk to the mine during cold weather, expansion at the existing Lalor Mine site was deemed most suitable.

Hudbay is planning to initiate site preparation and construction activities during Q3 of 2021 with the completion of the Dry Facility expansion (Phase 1) by Q4 of 2021 and the office expansion (Phase 2) by Q3 2022 following the issuance of regulatory permits and approvals required for Project construction and operation. Project phases include the following:

- Planning and Permitting Phase:
 - Current phase of the proposed Project.
- Construction Phase:
 - Phase 1 (Q3 2021 to Q4 2021)
 - Removal of existing structures and polishing pond;
 - Levelling; and
 - Construction of the Dry Facility expansion and wastewater tank installation.
 - Phase 2 (Q1 2022 to Q3 2022)
 - Levelling; and
 - Construction of the office spaces.
- Operation Phase:
 - Operation of the new Dry Facility and associated works.

A schedule for the above Project phases is provided in **Section 1.8**.

The new Dry Facility expansion will operate 24 hours per day, 7 days per week, and will accommodate workers, contractors, and visitors at the Lalor Mine and associated Hudbay mining facilities in Snow Lake.

1.6 Property Rights

The Dry Facility expansion will be located within the Lalor Mine Site which is part of Mineral Claim CB10607 and part of CB10605 as shown in **Figure 2**.

1.7 Funding

Funding for the proposed Project will be provided solely by Hudbay.

1.8 Project Schedule

The proposed Project Schedule is provided below.

Table 2: Proposed Project Schedule

Project Phase and Activity	Proposed Schedule (subject to the results of the Regulatory Review)
Construction	
Phase 1 Engineering and Offsite Fabrication	Q3 2021
Phase 1 Installation (200 Person Dry)	Q4 2021
Phase 2 Engineering and Offsite Fabrication	Q1-Q2 2022
Phase 2 Installation (200 Person Dry)	Q2-Q3 2022
Operation	
Phase 1 Commissioning	Q4 2021
Phase 1 Operation	Q4 2021 to Q4 2030
Phase 2 Commissioning	Q3 2022
Phase 2 Operation	Q3 2022 to Q4 2030
Decommissioning	
Decommissioning	Q2 2031

Note: QX = year quarter (e.g. Q4 = October through December timeframe)

Operation and decommissioning date as shown based on current Lalor Life of Mine Plan, of 2030.

2. Project Information

The proposed Dry Facility expansion will connect to the existing Dry Facility to the south via a fully enclosed corridor (**Figure 3**). The addition will be approximately 47 m by 94 m (4,418 m²) and will include approximately 200 dry spaces with offices, lunchroom, shower facilities, locker rooms, and laundry. Design drawings of the proposed Dry Facility layout are provided in **Appendix B**.

Wastewater (sewage and grey water) will initially be stored in new wastewater tanks to be installed at the site, which will be pumped and hauled offsite by a licensed contractor. A new wastewater treatment plant at the Lalor Mine site is being considered (selection and design pending and subject to environmental approval), but has not been included in the scope of this Project. A new fire protection pipeline will connect the existing fire water system to the expanded Dry Facility.

Freshwater for domestic use at the Project Site will continue to be supplied via surface water from Chisel Lake. Drinking water is supplied to the Project Site in bottles for consumption.

There are currently approximately 420 vehicles accessing the Lalor Mine on a daily basis. With the Dry Facility expansion, it is anticipated that there will be a net zero change to traffic from the current volumes due to the removal of the existing 50 person dry facility and reducing the usage of the Chisel dry facility. Hudbay is also looking into providing additional bus/shuttle services to the site.

2.1 Other Site Infrastructure

2.1.1 Wastewater Holding Tank

There are currently three (3) wastewater holding tanks at the Lalor Mine site as follows:

- One 1,000-gal tank at the existing 50 Person Dry;
- One 300-gal tank at the Millwrights Lunchroom; and
- One 750-gal tank at the Paste Plant.

In order to accommodate the new Dry Facility expansion, and in advance of the construction of a new wastewater treatment facility, larger wastewater holding tanks will be required.

The 50 Person Dry facility building will be removed from the Lalor Mine site along with the existing 1,000-gal holding tank. This will be replaced with two (2) 10,000-gal tanks to accommodate the new Dry Facility expansion. In addition, one (1) 300-gal wastewater holding tank will be added for the new Warehouse Trailer and one (1) 300-gal wastewater tank for the new Surface Operations Trailer. These trailers are 18 m by 4 m ATCO trailers and are located near the existing BioDisk portable wastewater treatment plant. Wastewater from the trailers will be serviced by a local licensed contractor and not connected to the existing wastewater collection system. The existing BioDisk portable wastewater treatment plant is not functional but is being used to store wastewater, will be removed from site.

In addition, Lift Station #1 will be relocated southeast of its current location, Lift Station #2 will remain in its current location, and Lift Station #3 will be removed as shown in **Figure 3**.

2.1.2 Upgrades to Existing Fire Protection System

Hudbay plans to upgrade the existing fire protection system at the Lalor Mine by installing new sprinkler pipes to service the expanded Dry Facility. This new equipment will provide additional fire suppression capacity and redundancy to the existing fire protection system.

All new pipe and sprinkler will occur in areas that have been previously cleared and levelled to accommodate existing facilities at the Lalor Mine.

2.1.3 Polishing Pond Decommissioning

Site upgrades will also include the decommissioning of the double-celled 2,000 m² polishing pond located on the western portion of the Lalor Mine site and adjacent to Lalor Lake. This pond, which is no longer in use, consists of two (2) adjacent geo-synthetic-lined dugouts, with a depth ranging from 1 m to 3 m, and was designed to collect and clarify water that was discharged from the underground workings of the mine.

Although the polishing pond is no longer in use, historical use has resulted in the accumulation of waste material (sediment, waste rock) within both cells of the pond, some of which has the potential to be metal leaching or acid generating material. It is estimated that there is approximately 3,000 m³ of this material within the basin of the dry polishing pond, which is contained from the surrounding environment by the existing geo-synthetic liner.

The first step in the decommissioning of the pond will be the excavation of this potentially contaminated material. Hudbay will use the services of a local contractor to complete the excavation and hauling activities associated with this decommissioning. Activities will be conducted using a track-mounted, or equivalent, excavator and end-dump trucks and will be conducted in a manner that prevents damage to the geo-synthetic liner. This material including ML/ARD material will be loaded into dump trucks and hauled to the Chisel Open Pit for disposal and treatment (water from the Chisel Open Pit passes through the Chisel North Water Treatment Plant prior to discharge to the environment). Upon removal of the accumulated material the geo-synthetic liner and any non-hazardous residual construction material will be removed and hauled away from the site for disposal at a licensed waste disposal facility (i.e. Hudbay's Chisel waste disposal ground).

During the removal of the liner the earthen berms surrounding the perimeter of the polishing pond and the overflow pipe will be removed. The berms are not composed of ML/ARD material and will be used as "clean" fill at the site (pond infilling) or stockpiled on site for future use.

Although the polishing pond is currently dry, if standing water is encountered prior to or during decommissioning of the polishing pond this water will be analyzed for potential contaminants (elevated metals, low pH). If the water does not meet discharge limits it will be pumped out by a licensed contractor and disposed of at a licensed water treatment facility. Water that meets applicable regulatory discharge limits will be pumped directly to the surrounding environment (Lalor Lake) prior to completing excavation activities.

Upon removal of all accumulated material, liner, and berms, the entire polishing pond will be backfilled with approximately 8,000 m³ of non-acid generating (clean) pit-run gravel. This gravel will be topped with clean crushed material and levelled to match the contours of the surrounding area. During and following excavation activities, it is anticipated that temporary sloping and/or benching of the excavated areas will not be necessary or will not exceed a 1:1 slope. The contractor will grade the excavated areas relative to natural grade to create appropriate surface water drainage and prevent large areas of ponded water.

The condition of the polishing pond and surrounding area will be documented prior to the initiation of excavation activities, and throughout the project. During the execution of the program, Hudbay personnel will observe contractor activity via periodic site inspections supported with drone surveys of site activity. Site inspections will document the work completed to date, inspect the site for spills, leaks, standing water, drainage issues, or for other signs of

environmental damage or stress. Although no environmental sampling is anticipated, Hudbay will be prepared to conduct environmental sampling of soil or surface water for laboratory analysis if deemed necessary due to accident, spill, or signs of environmental damage or stress.

The area will not be revegetated at this time due to its location within the existing and active mine site and will be used to store the Lalor Geology staff trailers.

2.2 Equipment

Equipment used during construction of the Dry Facility expansion will include standard heavy equipment such as loaders, excavators, forklifts and haul trucks. Equipment used during the decommissioning of the polishing pond will include a track-mounted excavator (or equivalent) and end-dump trucks.

2.2.1 Atmospheric Emissions

Atmospheric emissions associated with the Project will be dust and particulate matter (primarily during construction), and exhaust emissions, which is typical of industrial activity. Noise will also be generated through various activities during construction.

2.2.1.1 Dust and Particulate Matter

Sources of dust include activities such as site preparation (removal of existing buildings/structures, excavation of material from the polishing pond), excavating, levelling and movement of traffic. Dust occurs primarily during summer and fall, with greater likelihood for an increase in dust during dry and windy conditions.

2.2.1.2 Noise

The primary sources of noise associated with the Project construction include construction vehicles and heavy equipment. Primary sources of noise during operation will include employee vehicles travelling to and from the site, heavy equipment (site maintenance/snow clearing) and delivery trucks.

2.2.2 Wastewater Emissions

There is an existing BioDisk portable wastewater treatment plant (WWTP) located at the Lalor Mine site. This plant was constructed and commissioned in 2012. Although this plant operated at the site for a number of years, its usefulness has deteriorated and it is no longer being used to treat wastewater at the site. The plant is currently being used to store wastewater, which is pumped out on a regular basis by a licensed contractor. In the absence of wastewater treatment at the site, Hudbay installed two (2) 1,950-gal holding tanks at the location of the BioDisk WWTP, which are used to store wastewater. These tanks are regularly pumped out by a licensed contractor and the wastewater is hauled to the Town of Snow Lake WWTP for treatment.

To accommodate expansion of the Dry Facility, two (2) new holding tanks (10,000 gal each) will be installed to allow for the storage of wastewater and sewage generated at the Dry Facility. The estimated sewage outflow is approximately 981,410 L. These tanks will continue to be pumped out, and the wastewater will be hauled to the Town of Snow Lake WWTP by a local contractor for treatment.

2.2.3 Closure Plan

The existing Lalor Mine Closure Plan will be updated to include the Project following the procedures outlined in the *Manitoba Mine Closure Regulation 67/99*. Hudbay will submit the updated Closure Plan to the Department of Agriculture and Resource Development (Mines Branch) when it is available. Hudbay has successfully completed reclamation on many mining operations across Canada with several of these sites located in the Snow Lake region.

Following the decommissioning of the Lalor Dry Facility (Lalor Mine site), the site will be returned to the greatest extent possible to its natural state. 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 Hudbay 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 through natural succession and may be evident within a five to ten year period following closure.

3. Scope of the Assessment

To assess the potential environmental impact of the proposed Project, spatial and temporal boundaries were defined as follows:

3.1 Temporal Boundaries

The temporal boundaries of the assessment are divided as follows:

- **Construction Phase:**
 - Phase 1 (Dry Facility expansion and wastewater tank installation): Tentatively Q3 2021 to Q4 2021
 - Phase 2 (Office Expansion): Tentatively Q1 2022 TO Q3 2022
- **Operation Phase:** Q4 2022 to 2030 (life of mine)
- **Closure Phase:** 2031

3.2 Spatial Boundaries

Spatial boundaries used for the assessment are described below and shown in **Figure 4**. However, where specifically noted, the boundaries may be adjusted to suit the Environmental Component (EC) or Social Component (SC) affected.

- **Project Site:** includes the footprint of the Project, which is the area that will encompass the land on which project components are located and immediate surround area that will be directly affected by the Project.
- **Local Project Area:** is comprised of an area that is 2 km beyond the Project Site, which is intended to take into account the majority of direct and indirect effects of the Project on ECs (such as wildlife habitat loss related to vegetation clearing, noise, vehicle emissions and traffic).
- **Regional Project Area:** 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 unless otherwise indicated.

Figure 4 shows the Project Site, Local Project Area and Regional Project Area.

3.3 Biophysical and Socioeconomic Components

In accordance with the Manitoba Sustainable Development [Information Bulletin – Environment Act Proposal Report Guidelines](#) (March 2018), the scope of the environmental assessment includes potential Project effects on the:

- Biophysical environment
 - Including wildlife, fisheries, surface water, groundwater and forestry resources.
- Impact of such effects on the socioeconomic environment
 - Including human health and safety.
 - Potential impacts on Indigenous communities such as resource use and cultural or traditional activities.

Environmental assessment methods, including a specific list of the environmental components included within this assessment due to the potential for interactions with the Project, are described in **Section 6** (Environmental Assessment and Mitigation Measures).

4. Existing Environment

Baseline information regarding the Local and Regional Project Area was gathered using:

- Available desktop information.
- Environmental studies completed for Hudbay that overlapped with Project Local and Regional Areas;
- Proposed Lalor Mine Environmental Baseline Assessment (AECOM, 2012a).
- Lalor Mine Environment Act Proposal Report (AECOM, 2012b).

4.1 Physical Environment

4.1.1 Physical Setting

The physiographical location of the Project can be described using the Ecological Land Classification (ELC) system, used for overseeing ecological resources within Canada in a geographical representation. The Project is categorized as being within the following subsets of the ELC, which are also illustrated in **Figure 5**.

- Boreal Shield Ecozone, which encompasses the;
- Churchill River Upland Ecoregion, which contains the;
- Reed Lake Ecodistrict, within which the Project is located.

The Reed Lake Ecodistrict has an annual average temperature of -0.4 °C and annual precipitation is approximately 470 mm, of which approximately one-quarter falls as snow. Summers are typically short and cool, with winters being long, cold and snowy. Vegetation within the Ecodistrict consists of black spruce, jack pine and black spruce with fens consisting of tamarack, sedge and smaller shrubs. (Smith *et al.*, 1998).

4.1.2 Topography / Geology

The elevations in the Reed Lake Ecodistrict range from approximately 255 metres above sea level (masl) to 335 masl. Slope lengths in the ecodistrict range from approximately less than 50 m to more than 150 m in length. Rocky cliffs can rise from 35 m to 40 m above the lakes and peat-filled depressions. (Smith, *et al.*, 1998)

Elevations within the region of the proposed Lalor Mine site vary from more than 312 masl for the highest bedrock outcrops to the west to approximately 256 masl near Wekusko Lake, located to the east (Department of Energy, Mines and Resources, 1985 and 1995).

The Regional Project Area is part of the Flin Flon Belt (FFB). According to the Manitoba Geological Survey, the FFB is in the juvenile internal zone of the Trans-Hudson Orogen and consists of Paleoproterozoic volcanic, plutonic and minor sedimentary rocks. According to Manitoba's Mineral Resources Geological Survey, "*the Flin Flon greenstone belt extends hundreds of kilometres to the south-southwest beneath a thin, geophysically transparent Phanerozoic cover. To the north the FFB is tectonically overthrust by younger metasedimentary rocks of the Kisseynew domain and by nappes of metavolcanic rocks that are the same age as those in the FFB.*" (Government of Manitoba, 2021)

The tectonostratigraphic architecture of the FFB is of vital economic significance. The FFB is one of the largest Proterozoic volcanic-hosted massive sulphide (VMS) districts in the world, containing 27 copper – zinc (gold) deposits. Of these deposits, more than 162 million tonnes of sulphide have already been mined. (Government of Manitoba, 2021)

The Snow Lake arc assemblage that hosts the Lalor deposit is a 20 km wide by 6 km thick section that records the transition from primitive to mature arc. The mature arc Chisel Sequence that hosts the Lalor deposit typically contains thin and discontinuous volcanoclastic deposits and intermediate to felsic flow-dome complexes. Rock units in the hanging walls of the deposit typically include mafic and felsic volcanic and volcanoclastic units, mafic wacke, fragmental and crystal tuff units. The footwall rocks have extensive hydrothermal alteration and metamorphic recrystallization which has produced exotic aluminous mineral assemblages including; chloritic and seracitic schist; and cordierite-anthophyllite gneisses. (Bailes and Galley, 2007)

4.1.3 Soils

In general, the Reed Lake Ecodistrict consists of acidic granitoid bedrock in the form of sloping uplands and lowlands can be found in this ecodistrict. Bedrock areas are subdominant and widely distributed areas of permafrost can occur in peatlands.

Dystric Brunisols are the dominant soils in the ecodistrict. These soils have developed over glacial till overlying 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 the 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. (Smith, *et al.*, 1998).

4.1.4 Groundwater

Although there is no existing comprehensive regional study describing the groundwater flow system, based on conditions in similar environments, the regional shallow groundwater flow, in particular in the overburden, is likely controlled by the topography and bedrock surface in and around the Project Region. Shallow groundwater flow will generally follow the topography and drain to the low-lying areas where it will discharge to surface waterbodies and wetlands. Shallow groundwater tables are high in most peat lands and at or near the bedrock surface in low areas bordering the peat lands. Shallow groundwater levels in the area are generally at or near surface in the spring and early summer and drop as the year progresses. Recharge of shallow groundwater can be expected to occur in elevated areas.

Since the region possesses an abundance of surface water resources, the demand for groundwater is low and little is known about the distribution of aquifers, their yield or water quality. Freshwater use at the Project Site is pumped from Chisel Lake for use at the site for process water and for domestic use. There are no groundwater wells at the Project Site.

4.2 Atmospheric Environment

4.2.1 Air Quality

Although specific measurements of air quality in the Regional Project Area are not available, air quality in this area is considered very good compared with larger cities and commercial and industrial areas in Manitoba. There are no industrial operations with a significant release of air emissions within the Regional Project Area. The closest industrial activities are in the City of Flin Flon and the Town of The Pas, located approximately 120 km and 140 km west of the Project Site, respectively. Occasional regional impediments to air quality, although uncommon, may occur in the Regional Project Area. This could include smoke from forest fires and wood-burning stoves, emissions from fuel storage tanks, dust from gravel roads, and vehicle emissions.

4.2.2 Noise

A baseline noise assessment was undertaken by AECOM in the Snow Lake region in support of the Lalor Mine environmental assessment in July 2011 (AECOM, 2012c). During this study, baseline noise data was collected at two (2) Points of Reception (POR) within the Town of Snow Lake. The measured background levels were determined to be typical of a suburban area where the dominant sources of ambient noise and vibration are vehicular traffic. The equivalent day/night sound levels were calculated to be 53 dBA at POR 1 and 49 dBA at POR 2. Average root mean square velocities ranged from 0.045 to 0.426 mm/s at POR 1 and POR 2 over a 24 hour period.

4.2.3 Climate

The closest weather station to the site is near Baker's Narrows at the Flin Flon airport, approximately 100 km west of the Project Site. The Flin Flon airport is located at an elevation of 304 masl and in our opinion is climatically representative of the Project Site. The mean annual air temperature at the Flin Flon airport is -0.2°C. The daily mean temperature ranges between 18°C in July and -21°C in January. Total annual precipitation at the Flin Flon airport is composed of 339 mm of rain and 141 cm of snow. July has the highest average rainfall (77 mm), whereas November has the highest average snowfall (25 cm) (Environment Canada, 2018).

The average temperature, precipitation, and wind conditions measured at the Flin Flon airport each month are provided in Table 3.

Table 3: Climate Data for the Flin Flon Airport, Manitoba (1981-2010)

Parameter		Month												Year	Code
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Temperature (°C)	Daily Average	-19.8	-16.2	-8.9	0.8	8.4	14.9	18.2	17	10.4	2.6	-8.4	-17.1	0.2	A
	Daily Maximum	-15.1	-10.8	-2.7	6.9	14.4	20.4	23.4	22	14.7	6	-5.1	-12.9	5.1	A
	Daily Minimum	-24.5	-21.5	-15	-5.3	2.3	9.5	13	12	6.1	-0.9	-11.6	-21.3	-4.8	A
Precipitation	Rainfall (mm)	0.2	0.3	1.4	10.3	37.3	67.2	83.1	67.2	62.5	23.6	1.4	0.5	354.9	A
	Snowfall (cm)	21.7	18.2	19.7	18.7	3.6	0	0	0	1.7	14.6	27.5	24.6	150.2	A
Wind Conditions (km/h)	Speed	9.1	9.9	9.9	10.8	10.8	11.2	10.6	10.6	12	12	10.9	9.3	10.6	D
	Most Frequent Direction	NW	N	S	S	S	S	S	S	S	N	N	N	S	D

Notes: Data obtained from Flin Flon A meteorological station, latitude 54°41' N longitude 101°41' W Elevation 303.90 m (Environment Canada, 2020).

"A": World Meteorological Organization "3 and 5 rule" (i.e., no more than 3 consecutive and no more than 5 total missing for either temperature or precipitation).

"D": At least 15 years.

4.3 Aquatic Environment

4.3.1 Surface Water Drainage

As noted above, the Local Project Area is within the Reed Lake Ecodistrict which lies within the glacial Lake Agassiz basin. This ecodistrict is contained within the Nelson River drainage system. (Smith *et al.*, 1998)

The closest waterbody to the Project Site is Lalor Lake located approximately 210 m from the western edge of the Lalor Mine site property (or approximately 400 m west of the Dry Facility expansion area). Lalor Lake is a small (0.4 km²) headwater lake located to the west of the Project Site. It drains north for approximately 300 m through a creek and marsh into Maw Lake (0.16 km²).

Maw Lake then continues to drain northward for nearly 4 km via Unnamed Creek 1 into Varnson Lake (0.7 km²).

Varnson Lake continues to drain east via a creek into Squall Lake, a relatively large and deep lake.

Squall Lake then drains south via Snow Creek and eventually into Snow Lake Narrows, which makes up the west arm of Snow Lake. Snow Lake also receives water from the south via Tern Creek and Tern Lake, a small lake with a total surface area of approximately 0.15 km².

4.3.2 Fish and Fish Habitat

The Reed Lake Ecodistrict lies within the glacial Lake Agassiz basin and is part of the Nelson River drainage system. Fish species known to be present in the Nelson River watershed are listed in Table 4.

Table 4: List of Expected Aquatic Species in the Regional Project Area

Family Name	Common Name	Species Name	Distribution
Petromyzontidae	Silver Lamprey	<i>Ichthyomyzon unicuspis</i>	N
Acipenseridae	Lake Sturgeon	<i>Acipenser fulvescens</i>	N
Hiodontidae	Mooneye	<i>Hiodon tergisus</i>	N
Cyprinidae	Lake Chub	<i>Couesius plumbeus</i>	N
	Carp	<i>Cyprinus carpio</i>	I
	Pearl Dace***	<i>Margariscus margarita</i>	N
	Emerald Shiner	<i>Notropis atherinoides</i>	N
	River Shiner***	<i>Notropis blennioides</i>	O
	Blacknose Shiner	<i>Notropis heterolepis</i>	N
	Spottail Shiner***	<i>Notropis hudsonius</i>	N
	Fathead Minnow***	<i>Pimephales promelas</i>	N
	Longnose Dace	<i>Rhinichthys cataractae</i>	N
Catostomidae	Longnose Sucker***	<i>Catostomus catostomus</i>	N
	White Sucker***	<i>Catostomus commersoni</i>	N
	Shorthead Redhorse	<i>Moxostoma erythrum</i>	N
Ictaluridae	Channel Catfish	<i>Ictalurus punctatus</i>	R
Esocidae	Northern Pike***	<i>Esox lucius</i>	N
Umbridae	Central Mudminnow	<i>Umbra limi</i>	O
Osmeridae	Rainbow Smelt	<i>Osmerus mordax</i>	I
Salmonidae	Cisco***	<i>Coregonus artedii</i>	N
	Lake Whitefish***	<i>Coregonus clupeaformis</i>	N
	Rainbow Trout	<i>Oncorhynchus mykiss</i>	I

Family Name	Common Name	Species Name	Distribution
	Brook Trout	<i>Salvelinus fontinalis</i>	N
	Lake Trout	<i>Salvelinus namaycush</i>	N
Percopsidae	Trout-perch***	<i>Percopsis omiscomaycus</i>	N
Gadidae	Burbot	<i>Lota lota</i>	N
Gasterosteidae	Brook Stickleback***	<i>Culaea inconstans</i>	N
	Ninespine Stickleback	<i>Pungitius pungitius</i>	N
Cottidae	Slimy Sculpin	<i>Cottus cognatus</i>	N
Percidae	Iowa Darter***	<i>Etheostoma exile</i>	0
	Johnny Darter***	<i>Etheostoma nigrum</i>	N
	Yellow Perch***	<i>Perca flavescens</i>	N
	River Darter	<i>Percina shumardi</i>	N
	Sauger	<i>Sander canadensis</i>	N
	Walleye***	<i>Sander vitreus</i>	N
Sciaenidae	Freshwater Drum	<i>Aplodinotus grunniens</i>	N

Source: Stewart and Watkinson, 2004.

Notes: Estuarine species are excluded from this list. N = native; I = introduced; 0 = not previously captured in this watershed; *** = captured during aquatic assessments.

4.4 Terrestrial Environment

4.4.1 Vegetation and Wildlife

Vegetation in the Reed Lake Ecodistrict is typical of the northern Boreal forest region with black spruce, jack pine, trembling aspen and white spruce as the dominant species. The bog peat-lands have stunted black spruce, moss, and ericaceous shrub vegetation, while fens have sedge, shrub and tamarack vegetation in varying mixtures. Forest composition is reflective of a forest fire history. (Smith *et al.*, 1998)

The Churchill River Upland Ecoregion provides habitat for moose, woodland caribou, black bear, lynx, wolf, beaver, muskrat and snowshoe hares. Various bird species including Sandhill Crane, grouse, waterfowl (ducks, geese and pelicans) along with many other birds are found in this ecoregion. (Smith *et al.*, 1998)

The area of the proposed Dry Facility expansion is in an area that has been previously cleared of vegetation (Figure 3) and is currently a site access road with and is the location of some temporary structures/buildings such as offices.

4.4.2 Species of Conservation Concern

To identify species at risk that may occur in the Regional Project Area, a variety of online databases were examined including the Manitoba Conservation and Climate, Manitoba Conservation Data Centre (CDC) Occurrence of Species by Ecoregion (MCC, 2021), and Manitoba Breeding Bird Atlas (BBA). The species listed in these databases were cross-referenced with Schedule 1 of the Federal *Species at Risk Act* (SARA) SC 2002, C29 and *The Endangered Species and Ecosystems Act* (Manitoba), CCSM c E111 to determine the provincially listed rare or sensitive species within the ecoregion and Regional Project Area. Furthermore, distribution maps and habitat requirements were examined to determine the likelihood of occurrence of federally and/or provincially listed species in the Regional Project Area.

Based on this search, there are 12 listed species that may occur in the Regional Project Area (Table 5).

Table 5: Plant Species at Risk in the Churchill Upland Ecoregion that may occur in the Project Site

Common Name	Scientific Name	MBESEA Status	SARA Status	Probability of Occurrence within the Project Site
Flooded Jellyskin	<i>Leptogium rivulare</i>	Not Listed	Special Concern	Unlikely - Very few occurrence records of this lichen in Manitoba (one cluster of occurrences near Flin Flon).
Boreal Woodland Caribou	<i>Rangifer tarandus caribou</i>	Threatened	Threatened	Low - A limited amount of caribou habitat is present at the site, but is not expected to be frequented by caribou due to the previously disturbed nature of the Project Site (active mine site) as caribou have a tendency to avoid industrial disturbances including roads ^{a,b} .
Common Nighthawk	<i>Chordeiles minor</i>	Threatened	Threatened	Low - Limited suitable habitat occurs within the Project Site (active mine site) for this ground-nesting species, i.e. cleared areas, rocky outcrops and marshes for foraging ^c .
Eastern Whip-poor-will	<i>Caprimulgus vociferus</i>	Threatened	Threatened	Low - Although potentially suitable habitat occurs near the Project Site for this ground-nesting species, i.e. semi-open forests or patchy forests with clearings such as forests that are regenerating following major disturbances ^d , the Project Site is near the northern limit of this species range according to the Manitoba Breeding Bird Atlas and is an active mine site, cleared of vegetation.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Threatened	Threatened	Low - Potentially suitable habitat occurs near the Project Site for this tree-nesting species, i.e. forest openings/cleared areas, tall live or dead trees near wetland areas ^e however, due to the active nature of the mine site, the likelihood of this species within the Project Site is low.
Barn Swallow	<i>Hirundo rustica</i>	Not Listed	Threatened	Low to Moderate - Man-made structures such as buildings at the Lalor Mine site provide nesting habitat for this species that builds a mud cup nest adhered to vertical surfaces under overhangs ^f
Bank Swallow	<i>Riparia riparia</i>	Not Listed	Threatened	Unlikely - No suitable steep riparian bank habitat occurs at the Project Site that would be suitable nesting habitat for this species which burrows into banks for nesting ^g
Rusty Blackbird	<i>Euphagus carolinus</i>	Not Listed	Special Concern	Low - Potential suitable habitat occurs west of the Project Site for this tree-nesting species, i.e. near or over water in riparian vegetation. ^h but the likelihood of this species within the Project Site is low.

Common Name	Scientific Name	MBESEA Status	SARA Status	Probability of Occurrence within the Project Site
Yellow Rail	<i>Coturnicops noveboracensis</i>	Not Listed	Special Concern	Low - Although potentially suitable habitat occurs near the Project Site for this ground-nesting Species which includes marshes with little to no standing water or damp field and meadows, ⁱ the likelihood of this species within the Project Site is low.
Shortjaw Cisco	<i>Coregonus zenithicus</i>	Not Listed	Threatened	Unlikely -Shortjaw Cisco generally inhabit deep waters of large lakes and Lalor Lake is a smaller lake (0.4 km ²) and this species was not found on the Aquatic Species at Risk Map from Fisheries and Oceans.
Canada Warbler	<i>Cardellina canadensis</i>	Threatened	Threatened	Low - Although potentially suitable habitat occurs near the Project Site for this ground-nesting species in dense ferns or logs ^j , the Project Site is near the northern limit of this species range according to the Manitoba Breeding Bird Atlas and the Project Site is an active mine site, cleared of vegetation.
Monarch	<i>Danaus plexippus</i>	Threatened	Special Concern	Low to Moderate - The range of the Monarch can extend to the 54°Latitude on the prairie provinces. However, the bulk of occurrences are south of the 50° Latitude. Recorded occurrences are limited in the northern regions such as Thompson, The Pas and Grand Rapids, however these are generally considered vagrants ^k

a Manitoba Boreal Woodland
Caribou Management Committee 2015
b Schindler et al. 2007
c COSEWIC 2007

d COSEWIC 2015
e Environment Canada 2016
f COSEWIC 2011
g COSEWIC 2013

h COSEWIC 2006
i COSEWIC 2009
j COSEWIC 2008
k COSEWIC 2016

4.5 Socioeconomic Environment

The Snow Lake Mining District has been developed for mining purposes for over 60 years. Hudbay has played an integral part in this history since the late 1950s, by operating many mines in the area including: Photo Lake, Chisel Lake, Stall Lake, Osborne Lake, Rod Mine, Spruce Point, Ghost Lake, Anderson Lake, Chisel North, Reed and Lalor.

Hudbay's 777 mine will come to the end of operations in 2022. At that time, Hudbay anticipates that the Flin Flon Mill and Zinc Plant will be placed in long-term care and maintenance. This will result in a substantial change in economic conditions in Flin Flon and surrounding area.

In terms of planning for employment needs in the future, Hudbay's first priority is to define future workforce requirements in Snow Lake, where opportunities are expected to lie. As well, work is advancing on the 1901 Project and Pen Zone, both small mineral deposits near Snow Lake. These projects are indicative of Hudbay's continuing efforts to identify viable opportunities in northern Manitoba. With the continued exploration and expansions in Hudbay's future, upgraded facilities servicing mining operations in the Snow Lake region will be very beneficial.

According to the 2016 census conducted by Statistics Canada, the population of Snow Lake was 899 residents (Statistics Canada, 2017). Hudbay's Snow Lake Camp provides accommodation for an additional approximately 400 people. Many Snow Lake residents are employed in the mining industry and related services.

Based on Government of Manitoba and Federal sources, there is no Indian Reserve within the Project Region. Indigenous communities in closest proximity to the Project Region are Mathias Colomb Cree Nation (approximately 125 km northwest), Nisichawayasihk Cree Nation (approximately 123 km northeast), Mosakahiken Cree Nation (approximately 133 km south), Opaskwayak Cree Nation (approximately 142 km southwest), Pimicikamak Cree Nation (approximately 147 km east) and Norway House Cree Nation (approximately 177 km southeast) as shown on **Figure 6**.

4.5.1 Parks and Protected Areas

There are no national parks or designated protected areas in the Regional Project Area. There is one provincial park located within the Regional Project Area; Wekusko Falls Provincial Park (0.88 km²) located approximately 12 km southeast of the Project Site.

4.5.2 Heritage Resources

As the Project Site is located within an active mine site and will be constructed in an area that has been previously disturbed during the construction of the Lalor Mine, a Heritage Screening Request has not been submitted to Manitoba Historic Resources Branch (HRB).

The closest heritage resource of significance is located approximately 10 km southeast of the Project Site at Tramping Lake, the site of one of Manitoba's largest known concentrations of aboriginal petroglyphs. At the Narrows of Tramping Lake, in the southeastern part of the Grass River waterway, ancient artwork appears on a series of 14 rock faces; on granite outcropping that dominates the shore. The paintings of deer, bison, moose, birds, fish, snakes and humans are thought to have been created 1,500 to 3,000 years ago by the Algonkian-speaking ancestors of the Cree and Ojibway First Nations.

4.5.3 Regional Resource Use

In addition to mining activities, extensive forestry operations have occurred within the region and surrounding area, with wood sent to Canadian Kraft Papers Industries Ltd.'s pulp and paper mill operation in The Pas, Manitoba. Canadian Kraft Papers Industries Ltd. has three Forest Sections (Highrock, Nelson River and Saskatchewan River) where wood may be harvested.

Trapping, fishing, and hunting are also popular activities in the region. The Lalor Mine Environment Act Proposal Report (AECOM, 2012b), available on the MCC public registry, set out a description of land uses in the vicinity of the Project Region which continues to reflect current activities.

5. Engagement Program

As all proposed construction works will be taking place on private mining property, only accessible to Hudbay, a formal engagement program with the community was not included as part of this Project. All potential environmental effects due to the Project will be located within the immediate area of the Lalor Mine site and not extending to the community of Snow Lake.

Hudbay will be in communication with the Town of Snow Lake regarding the upgrades at the Lalor Mine site including the hauling of wastewater to the community WWTP for treatment.

6. Environmental Assessment and Mitigation Measures

This section identifies the potential Project effects on the biophysical and socioeconomic environmental components, describes mitigation measures included in the design of the Project to avoid or minimize potential Project effects and determines the residual adverse impacts remaining, if any, after the application of mitigation measures.

The scope of this environmental assessment regarding spatial and temporal boundaries and the environmental components to be assessed has been described in **Section 3** (Scope of the Assessment).

6.1 Effects Assessment Methods

Table 6 identifies the biophysical and socioeconomic components that may be potentially affected by the Project due to the potential for interactions with the Project activities and components. Potential interactions were identified based on:

- Professional judgement; and
- An understanding of Project components, construction methods, operation processes and the assumption that standard environmentally responsible construction techniques and operating procedures will be applied in the course of project construction, operation and decommissioning/closure.

The framework for determining environmental impacts of the Project on environmental components includes the following:

- Determine potential adverse effects of the Project on environmental components;
- Apply mitigation measures to avoid or minimize potential adverse effects;
- Determine the residual environmental impacts, which are those adverse environmental effects that remain after the application of mitigation measures; and
- Evaluate the residual environmental impacts based on defined effects evaluation criteria.

The criteria used to evaluate residual environmental impacts are defined in **Table 7**, noting that the defined criteria is used as a general guide and may be modified to more appropriately evaluate impacts to specific environmental components.

Table 6: Environmental Component Potential Interactions with the Project

ACTIVITY	BIOPHYSICAL COMPONENTS										SOCIO-ECONOMIC COMPONENTS			
	Physical			Atmospheric		Terrestrial			Aquatic		Heritage Resources	Land and Resource Use	Human Health and Well-being	Indigenous and Treaty Rights** Aesthetics
	Topography	Soil	Groundwater	Air Quality (dust, noise)	Climate / Greenhouse Gases	Vegetation	Wildlife	Species of Conservation Concern	Surface Water Quality	Fish and Fish Habitat*				
CONSTRUCTION														
Mobilizing construction equipment, materials and crew to and from Project Site including improvement of existing construction access road as needed	X	X		X	X		X	X				X	X	
Removing of existing temporary buildings / structures	X	X		X	X		X	X				X	X	
Construction of the Dry Facility expansion and ancillary facilities / components includes excavations, soil movement, removal of BioDisk WWTP	X	X	X	X	X		X	X				X	X	
Decommissioning the polishing pond	X	X		X	X							X	X	
Disposing of miscellaneous construction wastes		X					X	X					X	
OPERATION and MAINTENANCE														
Mobilization of additional employees and contractors to site.				X	X		X	X					X	
Daily operations of the Dry Facility expansion.				X	X								X	
DECOMMISSIONING/CLOSURE														
Mobilizing decommissioning/closure equipment, materials and crew to and from Project Site				X	X		X	X					X	
Dismantling or demolishing, and removal of structures.		X		X	X		X	X					X	
Disposing and recycling of waste materials		X		X	X		X	X					X	

* Protected spaces such as parks and other protected areas do not occur within the Project Site.

** Project activities are not anticipated to adversely impact Indigenous and Treaty Rights.

Table 7: Environmental Effects Assessment Criteria

Criteria Term	Definition			
Magnitude of Effect:	Refers to the estimated percentage of population or resource that may be affected by activities associated with the construction, operation and decommissioning/closure of the Project. Where possible and practical, the population or resource base has been defined in quantitative or ordinal terms (e.g. hectares of soil types, units of habitat). Magnitude of effect has been classified as less than (<) 1%, 1% to 10%, or greater than (>) 10% of the population or resource base. Where the magnitude of an effect was determined as virtually immeasurable or represented a potential change that was within the natural variation of population or resource levels, the effect was considered Negligible. An exception to this is regarding human health effects where, for example adverse health issues due to the Project and affecting 1% of the population would still be considered major			
	Negligible (immeasurable)	Minor (<1%)	Moderate (1 to 10%)	Major (>10%)
Direction of Effect:	Refers to whether an effect on a population or a resource is considered to have a positive, adverse or neutral effect			
	Positive	Adverse	Neutral	
Duration of Effect:	Refers to the time it takes a population or resource to recover from the effect. If quantitative information was lacking, duration was identified as short term (<1 year), Moderate term (1 to 10 years) and long term (>10 years)			
	Short term (<1 year)	Moderate (1 to 10 years)	Long term (>10 years)	
Frequency:	Refers to the number of times an activity occurs over the Project phase and is identified as once, rare, intermittent or continuous			
	Once	Rare	Intermittent	Continuous
Scope of Effect:	Refers to the spatial area potentially affected by the effect and categorized as Project Site, Local Project Area or Regional Project Area as defined in Section 3.2 . Where possible, quantitative estimates of the resource affected are provided			
	Project Site	Local Project Area	Regional Project Area	
Reversibility:	Refers to if an adverse effect is likely to be reversed after completion of the activity or Project decommissioning/closure			
	Reversible		Irreversible	

The significance of residual environmental impacts is commented on where applicable regulatory criteria exist such as a regulatory threshold (e.g. air quality guidelines are exceeded due to Project activities). In the absence of such regulatory thresholds, an overall characterization of the impact is provided, taking into consideration the assessment criteria as described above **Table 7**.

6.2 Physical Environment

6.2.1 Topography / Geology

Magnitude of Effect: Negligible

Direction of Effect: Neutral

Duration of Effect: Long term

Frequency: Once

Scope of Effect: Project Site

Reversibility: Irreversible

The location of the Dry Facility expansion project is located within the Lalor Mine site; an active mining site. The expansion area of the new Dry Facility is within an area previously disturbed for the construction of the Lalor Mine

site; therefore, none of the construction or operation activities are expected to entail new impact to topography or geology.

Following decommissioning of the polishing pond, excavated areas will be graded relative to natural grade in order to create appropriate surface water drainage and prevent large areas of ponded water.

6.2.2 Soil

Magnitude of Effect: Negligible

Direction of Effect: Neutral

Duration of Effect: Short term to Long term

Frequency: Continuous to Intermittent

Scope of Effect: Project Site

Reversibility: Reversible

Activities that can result in elevated erosion potential are excavating, levelling and vehicle traffic. As a result of incidental vehicle and heavy equipment movement, along with excavating, leveling, grading and stockpiling of materials during construction also has the potential to cause soil compact and mixing of soil horizons, which may change the soil structure. Lastly, wastes such as used oils, rags, drums and miscellaneous refuse can potentially affect soil quality, which can in turn affect other environmental components (e.g. vegetation, groundwater and surface water).

The effect on soil erosion is assessed to be Negligible when taking into account the following mitigation measures:

- Excavated materials will be minimal during construction, and any material that is excavated will be stockpiled, compacted, and reused where appropriate. Stockpile heights will be monitored and limited.
- Excavation activities will not occur during high rain or wind events, to minimize the erosion potential of exposed soils.

The effects of the Project on soil compaction and mixing of soil horizons are expected to be Negligible due to the following mitigation measures:

- Construction equipment and vehicle traffic will be limited to designated areas within and around work areas, including construction laydown areas at the Project Site.
- Construction activities will be limited during periods of severe precipitation and runoff.
- Disturbed and exposed areas will be kept to a minimum with site restoration occurring as soon as is practical.

Hudbay's waste management practices will be followed during the construction and operation of the Project, therefore the impact on soil quality from wastes is assessed to be Negligible as the following practices will be implemented:

- Wastes generated during construction will be collected in garbage bins maintained at specific locations throughout the Project Site. The bins will be emptied on a regular basis for recycling and/or disposal at a licensed waste disposal facility.
- Waste oils and other hazardous materials generated (chemicals, reagents, waste oil, lubricants, or petroleum products) will be stored in secured containers equipped with spill containment. These materials will be removed by a licensed hazardous materials handler for appropriate disposal or recycling.

As the Project Site has been previously disturbed and is located within an active mine site, the overall residual impact on soil as a result of the Project is assessed to be Negligible. The mitigation measures listed above to minimize the impact on soil (due to erosion, soil compaction and mixing of soil horizons and materials and wastes) are deemed sufficient.

At the time of closure, the Closure Plan for the Project will be strictly followed to ensure that required closure procedures associated with the proposed alteration are carried out.

6.2.3 Groundwater

Magnitude of Effect: Negligible

Direction of Effect: Neutral

Duration of Effect: Short term

Frequency: Rare

Scope of Effect: Project Site

Reversibility: Reversible

Activities such as fuel handling, lubricants and waste can potentially affect groundwater quality due to leaks, spills and accidents.

The overall effect on groundwater quantity and quality is assessed to be Negligible for the following reasons:

- There are no proposed underground works involved with this Project.
- Any excavations required for the Project are not anticipated to be deep enough to encounter groundwater; excavations will remain surficial.
- No withdrawals of groundwater are required for the proposed Project and there is no concern about quantity of groundwater because there are numerous pathways for groundwater recharge.
- The mitigation measures identified in **Section 6.7** (Accidents and Malfunctions) are assessed to be adequate to prevent potential effects on groundwater.

6.3 Atmospheric Environment

6.3.1 Air Quality

Regional air quality may be potentially affected by Project components and activities that generate dust (excavation, grading / leveling, stockpiles; gravel roads) and greenhouse gasses (e.g. vehicles used during all phases of the Project), and through the potential for the generation of fugitive dust from Project construction and closure activities.

6.3.1.1 Dust Generation

Magnitude of Effect: Negligible

Direction of Effect: Adverse

Duration of Effect: Long term

Frequency: Continuous

Scope of Effect: Project Site

Reversibility: Reversible

Dust and particulate matter have the potential to adversely affect air quality with consequent effects on human health (e.g. respiratory concerns and safety concerns related to impaired visibility on roads), vegetation (decreased growth due to deposition), and soil quality (deposition of contaminants). It is expected that dust generation will primarily occur during the summer and fall.

Dust may be produced during the construction and closure phases of the proposed Project by activities such as levelling, excavating, stockpiling materials, movement of construction equipment/vehicles and/or employees, and general use of equipment.

The dense vegetation immediately surrounding the Project Site is expected to mitigate wind effects and overall potential dust migration, limiting the effects to the Project Site and immediate area. To mitigate potential air quality effects during construction, operation and closure, the following mitigation measures will be undertaken:

- Material stockpile heights will be limited where practical.
- Disturbed/exposed areas will be kept to a minimum. Vegetated buffers will be maintained to the extent possible to minimize the transport of dust generated on the Project Site.
- At all times, vehicles will be required to adhere to Hudbay's speed limits on main roads and access roads.
- If required, dust suppression activities, such as use of an approved dust control agent, will be completed.
- Re-vegetation will occur as part of site closure activities and will provide long term mitigation of dust effects upon the completion of closure activities.

With these mitigation methods employed as necessary during construction, operation and closure, the residual effect of dust generation on air quality is anticipated to be Negligible.

6.3.1.2 Noise

Magnitude of Effect: Negligible
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Local Project Area
Reversibility: Reversible

An increase in noise levels at the Project Site during construction, operation and closure activities has the potential to influence people and wildlife in the surrounding area. Potential effects on wildlife are discussed in **Section 6.5.2** (Wildlife). Noise will be generated to varying degrees during construction, operation and closure activities, with most of the noise expected to be typical of heavy equipment such as trucks, loaders and excavators. This will be similar to the current daily activities at the Lalor Mine site which the Project Site is situated in, therefore, combined with the intermittent nature of the noise generated from heavy equipment it is anticipated that noise impacts during construction and operation the Dry Facility expansion will be Negligible.

6.3.1.3 Climate / Greenhouse Gas

Magnitude of Effect: Negligible
Direction of Effect: Adverse
Duration of Effect: Long term
Frequency: Continuous
Scope of Effect: Beyond the Regional Project Area
Reversibility: Irreversible

Exhaust emissions from vehicles and equipment have the potential to adversely affect air quality. During construction, emissions will be generated during excavating, grading / leveling, stockpiling and delivery of building materials to the Project Site. Similar exhaust emissions will occur during the operation with additional employees coming to the Project Site and closure phases of the project.

Emissions will be relatively contained to the Project Site and the residual effect on air quality of emissions generated during the construction, operation and closure phases is likely to be Negligible due to the vegetated nature of the surrounding area. To mitigate potential air quality effects during construction and closure, the following mitigation measures will be followed:

- Vehicles and equipment will be well maintained.
- Vehicle idling will be kept to a minimum.
- All vehicles used for the Project will comply with Environment Canada's On-Road Vehicle and Engine Emission Regulations as required.

The increase in traffic during operation along public and private roads (e.g. Lalor Access Road and PR 395) is temporary and exhaust emissions as a result of this increase are Negligible in relation to air quality in the Regional Project Area. It is anticipated that once the Dry Facility expansion is operational, there will be a net zero change to traffic from the current volumes (approximately 420 vehicles per day).

Overall, the mitigation measures proposed above are sufficient to mitigate any adverse effects due to exhaust emissions during the construction, operation and closure phases. Residual effects on air quality are therefore assessed to be Negligible.

6.4 Aquatic Environment

6.4.1 Surface Water Quality

Magnitude of Effect: Negligible

Direction of Effect: Adverse

Duration of Effect: Short term

Frequency: Intermittent

Scope of Effect: Local Project Area

Reversibility: Reversible

Residual effects from levelling, excavating, and construction of the Dry Facility expansion have the potential to increase surface water runoff within the Project Site and Local Project Area. This in turn has the potential to leach contaminants into the groundwater.

As indicated in **Section 4.3.1** (Surface Water Drainage), the closest waterbody to the Project Site is Lalor Lake located approximately 400 m west of the Dry Facility expansion area. No additional surface water withdrawals will be needed for the Dry Facility expansion as currently freshwater use at the Project Site is pumped from Chisel Lake for use at the site for process water and for domestic use however, the volume of water will increase to approximately 46,920 L/day which is an overall increase of approximately 40,920 L/day. The current water rights license for Chisel Lake water withdrawal is approximately 402 dam³/year and the proposed increase in domestic water use at the Lalor Dry Facility expansion will have a negligible impact to the current withdrawal volumes.

The decommissioning on the polishing pond includes the excavation and removal of potentially contaminated waste materials within the dry basin of the polishing pond. Removal of this material from the site eliminates a potential source of contamination that currently exists at the site.

If standing water is encountered prior to or during decommissioning of the polishing pond this water will be analyzed for potential contaminants (elevated metals, low pH). If the water does not meet discharge limits it will be pumped out by a licensed contractor and disposed of at a licensed water treatment facility. Water that meets applicable regulatory discharge limits will be pumped directly to the surrounding environment (Lalor Lake) prior to completing excavation activities.

To prevent potential effects due to leaching, the mitigation measures described in **Section 6.2.3** (Groundwater) will be implemented. Additionally, mitigation measures as described in **Section 6.2.2** (Soils) will be implemented.

With the application of the above described mitigation measures, the impacts on surface water are assessed to be Negligible.

6.4.2 Fish and Fish Habitat

The proposed Project does not require undertaking any activities in or near a surface waterbody, therefore, there will be no effects on fish or fish habitat. Project related impacts on fish and fish habitat are not anticipated due to the lack of fish habitat within the Project Site, the distance to the nearest waterbody (Lalor Lake, approximately 400 m west of the Dry Facility expansion area) and the implementation of mitigation measures as described in **Section 6.2.2** (Soils) and **Section 6.2.3** (Groundwater).

6.5 Terrestrial Environment

6.5.1 Vegetation

As indicated in **Section 4.4.1** (Vegetation and Wildlife), the area of the proposed Dry Facility expansion is in an area that has been previously cleared of vegetation (**Figure 3**) and is currently a site access road with and is the location of some temporary structures/buildings such as offices.

The potential effects on vegetation arise from the accumulation of contaminants (dust deposition and bioaccumulation).

6.5.1.1 Dust Deposition

Magnitude of Effect: Negligible

Direction of Effect: Adverse

Duration of Effect: Short term

Frequency: Continuous

Scope of Effect: Project Site and Local Project Area

Reversibility: Reversible

Dust generated during the construction, operation, and closure phases of the proposed Project can potentially affect vegetation in the area by interfering with photosynthetic ability of the vegetation. However, assuming implementation of the mitigation measures above in **Section 6.3.1.1** (Dust Generation), effects on vegetation due to dust are assessed to be Negligible.

6.5.2 Wildlife

Noise (disturbance) and vehicle collisions (mortality) are potential sources of effects on protected and wildlife species.

6.5.2.1 Noise

Magnitude of Effect: Negligible

Direction of Effect: Adverse

Duration of Effect: Short term

Frequency: Continuous

Scope of Effect: Project Site and Local Project Area

Reversibility: Reversible

As described in **Section 6.3.1.2** (Noise), noise generated during construction, operation and closure phases of the proposed Project has the potential to disturb wildlife within the Local Project Area.

The potential impact of noise on wildlife is assessed to be Negligible as the Project Site is within an active mine site, it is anticipated that the local wildlife is likely already accustomed to some level of noise based on the existing activity at the Lalor Mine site and general area.

6.5.2.2 Risk of Vehicle Collisions

Magnitude of Effect: Negligible

Direction of Effect: Adverse

Duration of Effect: Short term

Frequency: Continuous

Scope of Effect: Project Site and Local Project Area

Reversibility: Reversible

With the anticipated increase in traffic on local access road (**Section 2**), there is potential for increased risk of wildlife collisions. Wildlife (e.g. Moose, deer) may pass through the Project Area, including across provincial highways and local roads. The potential risk of vehicle collisions with wildlife as a result of the Project is assessed to be Negligible for the following reasons:

- As local wildlife populations are considered low, the potential for increased wildlife collisions is also considered low.
- Hudbay's experience in the local area indicates that wildlife collisions are rare.
- Speed limits on access roads, local roads and Provincial highways will continue to be implemented.

6.6 Socioeconomic Environment

As the Project Site is within an active mine site, in an area that has been previously disturbed, potential effects on land use and heritage resources are assessed to be Negligible.

Project activities during construction and operation could potentially impact the aesthetics of the Project Site. This potential impact is assessed to be Negligible for the following reasons:

- Project Site is located in an area that have been previously disturbed as part of the Lalor Mine and historic mining activities.
- The Project Site will be inspected on a regular basis for loose waste and debris in order to maintain a clean site.
- Waste and debris will be stored in bins and removed from the site on a regular basis.
- The Closure Plan for the Lalor Mine will be updated to include the closure activities associated with the proposed Project. During the closure phase, the Project Site will be re-vegetated and returned to native conditions to the extent feasible.

6.6.1 Traffic

Magnitude of Effect: Negligible

Direction of Effect: Adverse

Duration of Effect: Short term

Frequency: Continuous

Scope of Effect: Regional Project Area

Reversibility: Reversible

Vehicles will travel to the Lalor Mine site via PR 395 and then by turning west at the Chisel North mine via the Lalor Mine access road.

During the construction and closure phases, traffic will increase by approximately 5 vehicles per day as described in Table 8.

Table 8: Traffic Changes

	Provincial Road 395	Provincial Road 392 North of Provincial Road 395	Provincial Road 392 South of Provincial Road 393
AADT (MI, 2019)¹	630 ²	570	450
Maximum Vehicles - Construction Phase	5	5	0
Percentage Change	1%	1%	-

Notes:

1 The numbers presented represent the range of AADT along the route between the Lalor Mine and Snow Lake.

2. Value provided from the Notice of Alteration: New Britannia Mill Report (AECOM, 2019).

AADT = Annual Average Daily Traffic.

During the operation phase, traffic is not anticipated to change from current volumes. As indicated in **Section 2** (Project Information), with the Dry Facility expansion, it is anticipated that there will be a net zero change to traffic from the current volumes due to the removal of the existing 50 person dry facility and reducing the usage of the Chisel dry facility. Hudbay is also looking into providing additional bus/shuttle services to the site.

Although vehicular traffic will increase slightly during construction of the Dry Facility expansion, the effect of traffic on the Town of Snow Lake is assessed to be Negligible. No additional mitigation measures are required to accommodate the increase in truck traffic.

6.7 Accidents and Malfunctions

To prevent accidents and malfunctions, all phases of the Project will be conducted in accordance with applicable regulatory requirements. In addition to standard safety controls and procedures (alarm systems, training and operating procedures), the following sections provide additional details on precautionary measures that will be implemented by Hudbay to further minimize the potential for accidents and malfunctions to occur.

6.7.1 Worker Health and Safety

Worker protection in Manitoba is regulated through standards, procedures and training required under *The Workplace Safety and Health Act*. In addition, all Hudbay operations abide by their internal health and safety requirements as covered under its certified safety management system, OHSAS 18001. Safety training, equipment and personal protective equipment will be provided to employees. Safety equipment will be located throughout the Project Site and accessible to all employees.

6.7.2 Spills and Leaks

Environmental effects may occur due to fuel and chemical spills from diesel fuel, lubricants, oils and hydraulic fluids. An accidental release of hazardous materials and/or equipment fluids could occur from improper storage and handling procedures. Accidental releases have the potential to affect air, surface water, groundwater and soils, with consequential effects on vegetation, aquatic resources and possibly human health and safety.

The following standard procedures will be implemented to prevent spills from occurring during Project activities:

- Diesel tanks used on-site will be self-contained aboveground storage tank(s);

- When servicing requires drainage or pumping of lubricating oils or other fuels from equipment, a groundsheets of suitable material and size will be spread on the ground to catch all fluid in the event of a leak or spill. An adequate supply of suitable absorbent material and any other supplies and equipment necessary to immediately clean up spills will also be available;
- Storage and disposal of liquid wastes and filters from equipment maintenance, and residual material from spill clean-up will be contained in an environmentally safe manner and in accordance with existing regulations;
- Waste oils, fuels, and other hazardous wastes will be handled in a safe manner. Staff will be required to transport, store and handle all such substances as recommended by the suppliers and/or manufacturers and in compliance with applicable federal, provincial and municipal regulations. Manitoba Conservation and Climate will be notified immediately if a reportable spill occurs;
- Fuels, oils or other hazardous materials will be stored in designated areas;
- Storage sites will be inspected regularly for compliance;
- Personnel on-site will be trained in how to deal with spills, including knowledge of how to properly deploy site spill kit materials which will be available on-site;
- Spill kits will be stationed and readily available for easy access;
- Service and repairs of equipment will be performed by trained personnel;
- Vehicles and equipment will have pre shift inspections and walk arounds to ensure no fluid leaks, primarily from the fuel system and/or hydraulics. Any detected leak will result in the unit being pulled from service until repaired. All service and repairs will be logged and tracked in the units operating and maintenance logs; and
- Fuel and chemical handlers will be trained and qualified, and appropriate emergency response measures will be in place and readily available.

Taking into account application of the above mitigation measures as necessary, and assuming the implementation of safe work practices, the risk of spills and leaks is considered to be appropriately mitigated.

6.7.3 Fires and Explosions

During construction, operation and closure activities, the presence of heavy machinery, various waste and fuels on-site creates the potential for fires and explosions. Effects related to fires and explosions include, but are not limited to, harm to on-site personnel, equipment, and the potential release of contaminants and hazardous materials with subsequent effects on soil, surface water, groundwater, air, flora, fauna and aquatic resources and aesthetics, including forest fires.

Only minor upgrades to the fire protection system at the expanded camp will be required, and it will be tied into the existing distribution system and water source.

Necessary precautions will be taken to prevent fire hazards at the Project Site; including but not limited to:

- Removal of flammable waste on a regular basis and disposal at a licenced disposal facility;
- Workers will be provided with appropriate fire prevention training;
- Appropriate fire extinguishers will be available on the Project Site. Such equipment will comply with and be maintained to the manufacturers' standards and employees will be appropriately trained in their use;
- Storage, transportation and use of hazardous materials, including flammable waste, will comply with regulatory requirements;
- On-site fire prevention/response equipment will be checked on a routine basis and in accordance with local fire safety regulations to maintain proper working order;

- Greasy or oily rags or materials subject to spontaneous combustion will be deposited and stored in appropriate receptacles. This material will be removed from the Project Site on a regular basis and be disposed of at licenced waste disposal facility; and
- Smoking will be restricted to designated areas.

With these mitigation measures employed and assuming the implementation of typical safe work practices, the risk of fires and explosions is considered to be appropriately mitigated.

6.7.4 Transportation Accidents

An increase in traffic has the potential to increase the potential for transportation accidents including vehicular collisions and wildlife collisions. Transportation accidents can consequently result in the release of pollutants to the environment such as fuel and oils, or materials that the vehicles colliding are transporting (e.g. construction/general wastes). Such accidental releases to the environment could potentially result in secondary effects on other environmental components (e.g. groundwater contamination through seepage, decline in surface water quality through runoff) or tertiary effects on vegetation (e.g. decline of growth potential due to soil contamination), wildlife, aquatic resources and human health.

The incremental increase in area traffic is anticipated to be Negligible during the construction phase of the Project, as the equipment and truck travel to/from the site will be sporadic. This Negligible increase in traffic is not anticipated to result in a measurable increase in factors leading to transportation accidents.

The following measures will be employed to reduce the risk of transportation accidents:

- Personnel retained to drive and operate vehicles and construction equipment will have a valid appropriate-Class Manitoba Driver's License with a copy provided to Hudbay.
- Speed limits on the Lalor Mine access road, Provincial Highways and the Lalor Mine site will continue to be implemented. Signage and speed limits on the PR 395 and PR 392 are regulated by the Province of Manitoba.

In addition, Hudbay is exploring the addition of increased collective transportation options such as buses which will also aid in the decrease of vehicular traffic on the access road and Provincial Highways.

The above noted measures are assessed to appropriately mitigate the potential risk of transportation accidents during all phases of the Project.

6.8 Summary of Environmental Effects and Mitigation Measures

Table 9 summarizes potential environmental effects of the proposed Project and the design features, standard operating procedures and other mitigation measures that will be implemented.

Table 10 summarizes potential accidents and malfunctions and measures to reduce the risk of such occurrences.

With the application of proposed mitigation measures, adverse environmental impacts of the Project are expected to be sufficiently mitigated summarizes potential environmental effects of the proposed Project and the design features, standard operating procedures and other mitigation measures that will be implemented.

Table 9. Summary of Environmental Assessment and Mitigation Measures

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
PHYSICAL ENVIRONMENT				
Soils (including soil erosion, compaction and wastes)	Construction, Operation and Decommissioning	Excavating, levelling, grading, stockpiling, and vehicle traffic, storage of wastes (e.g. used oil, rags)	Excavated materials will be minimal during construction, and any material that is excavated will be stockpiled, compacted, and reused where appropriate. Stockpile heights will be monitored and limited.	Negligible
			Excavation activities will not occur during high rain or wind events, to minimize the erosion potential of exposed soils.	
			Construction equipment and vehicle traffic will be limited to designated areas within and around work areas, including construction laydown areas at the Project Site.	
			Construction activities will be limited during periods of severe precipitation and runoff.	
			Disturbed and exposed areas will be kept to a minimum with site restoration occurring as soon as is practical.	
			Wastes generated during construction will be collected in garbage bins maintained at specific locations throughout the Project Site. The bins will be emptied on a regular basis for recycling and/or disposal at a licensed waste disposal facility.	
			Waste oils and other hazardous materials generated (chemicals, reagents, waste oil, lubricants, or petroleum products) will be stored in secured containers equipped with spill containment. These materials will be removed by a licensed hazardous materials handler for appropriate disposal or recycling.	
Groundwater	Construction, Operation and Decommissioning	Not applicable.	There are no proposed underground works involved with this Project.	Negligible
			Any excavations required for the Project are not anticipated to be deep enough to encounter groundwater; excavations will remain surficial.	
			No withdrawals of groundwater are required for the proposed Project and there is no concern about quantity of groundwater because there are numerous pathways for groundwater recharge.	
			The mitigation measures identified in Accidents and Malfunctions are assessed to be adequate to prevent potential effects on groundwater.	
ATMOSPHERIC ENVIRONMENT				
Air Quality (dust generation, noise, exhaust emissions)	Construction, Operation and Decommissioning	Excavating, grading/leveling, stockpiles, and gravel roads; vehicles used during all phases of the Project.	Material stockpile heights will be limited where practical.	Negligible
			Disturbed/exposed areas will be kept to a minimum. Vegetated buffers will be maintained to the extent possible to minimize the transport of dust generated on the Project Site.	
			At all times, vehicles will be required to adhere to Hudbay's speed limits on main roads and access roads.	

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
			<p>If required, dust suppression activities, such as use of an approved dust control agent, will be completed.</p> <p>Re-vegetation will occur as part of site closure activities and will provide long term mitigation of dust effects upon the completion of closure activities.</p> <p>Vehicles and equipment will be well maintained.</p> <p>Vehicle idling will be kept to a minimum.</p> <p>All vehicles used for the Project will comply with Environment Canada's On-Road Vehicle and Engine Emission Regulations as required.</p>	
AQUATIC ENVIRONMENT				
Surface Water Quality	Construction, Operation, and Decommissioning	Excavating, levelling, general construction/operation; decommissioning of the polishing pond.	Mitigation measures as listed for the Groundwater and Soil components in this table above will be applied.	Negligible
			If standing water is encountered prior to or during decommissioning of the polishing pond this water will be analyzed for potential contaminants (elevated metals, low pH).	
			If the water does not meet discharge limits it will be pumped out by a licensed contactor and disposed of at a licensed water treatment facility.	
			Water that meets applicable regulatory discharge limits will be pumped directly to the surrounding environment (Lalor Lake) prior to completing excavation activities.	
Fish and Fish Habitat	Construction, Operation and Decommissioning	Not applicable.	Project does not require undertaking any activities in or near a surface water, and implementation of mitigation measures listed for Groundwater and Soils , Project related impacts on fish and fish habitat are not anticipated.	None
TERRESTRIAL ENVIRONMENT				
Vegetation (dust deposition)	Construction, Operation and Decommissioning	Excavating, grading/leveling, stockpiles, and gravel roads; vehicles used during all phases of the Project.	Mitigation measures to control dust (see Air Quality component in this table) will be applied to minimize accumulation of dust on vegetation.	Negligible
Wildlife (noise and risk of vehicle collisions)	Construction, Operation, and Decommissioning	Excavating, grading/leveling, stockpiles, and gravel roads; vehicles used during all phases of the Project.	Mitigation measures to control noise (see Noise component in this table) and dust (see Air Quality component in this table) will be applied.	Negligible
			Local wildlife populations are considered low, the potential for increased wildlife collisions is also considered low.	
			Hudbay's experience in the local area indicates that wildlife collisions are rare.	
			Speed limits on access roads, local roads and Provincial highways will continue to be implemented.	
SOCIOECONOMIC ENVIRONMENT				

Environmental and Social Component	Project Phase	Sources of Potential Effects	Summary of Measures *	Residual Adverse Impact
Land Use and Heritage Resources	Construction and Decommissioning	Not applicable.	Project Site is within an active mine site and previously disturbed therefore related impacts on land use and heritage resources are not anticipated.	None
Aesthetics	Construction and Operation	Project Site changes due to the presence of construction equipment, related general disturbances (noise, dust, construction wastes); daily site operations	Project Site is located in an area that have been previously disturbed as part of the Lalor Mine and historic mining activities.	Negligible
			The Project Site will be inspected on a regular basis for loose waste and debris in order to maintain a clean site.	
			Waste and debris will be stored in bins and removed from the site on a regular basis.	
			The Closure Plan for the Lalor Mine will be updated to include the closure activities associated with the proposed Project. During the closure phase, the Project Site will be re-vegetated and returned to native conditions to the extent feasible.	
Traffic	Construction, Operation, and Decommissioning	Increased traffic within the Project Site, and along PTH 395	Vehicular traffic will increase slightly during construction however, no additional mitigation measures are required to accommodate the increase in truck traffic.	Negligible

Table 10: Summary of Potential Accidents and Malfunctions and Measures to Mitigate Risk of Occurrence

Risks Associated with Accidents and Malfunctions	Project Phase	Possible Consequences	Measures to Reduce Risk of Occurrence	Conclusion
Worker Health and Safety	Construction, Operation and Decommissioning	Risk of workplace accidents affecting worker health.	Worker protection in Manitoba is regulated through standards, procedures, and training under the Workplace Safety and Health Regulation, M.R. 217/2006.	Risk is assessed to be appropriately mitigated
			Safety equipment and personal protective equipment will be supplied to employees and workers.	
Spills and Leaks	Construction, Operation and Decommissioning	Spills and leaks from diesel fuel, lubricants, oils, hydraulic fluids, and other hazardous materials can have adverse effects to air quality, water quality, groundwater quality, wildlife, plants and	Diesel tanks used on-site will be self-contained aboveground storage tank(s).	Risk is assessed to be appropriately mitigated
			When servicing requires drainage or pumping of lubricating oils or other fuels from equipment, a groundsheet of suitable material and size will be spread on the ground to catch all fluid in the event of a leak or spill. An adequate supply of suitable absorbent material and any other supplies and equipment necessary to immediately clean up spills will also be available.	
			Storage and disposal of liquid wastes and filters from equipment maintenance, and residual material from spill clean-up will be contained in an environmentally safe manner and in accordance with existing regulations.	

Risks Associated with Accidents and Malfunctions	Project Phase	Possible Consequences	Measures to Reduce Risk of Occurrence	Conclusion
		human health and safety.	<p>Waste oils, fuels, and other hazardous wastes will be handled in a safe manner. Staff will be required to transport, store, and handle all such substances as recommended by the suppliers and/or manufacturers and in compliance with applicable federal, provincial, and municipal regulations. Manitoba Conservation and Climate will be notified immediately if a reportable spill occurs.</p> <p>Fuels, oils, or other hazardous materials will be stored only in designated areas.</p> <p>Storage sites will be inspected regularly for compliance.</p> <p>Personnel on-site will be trained in how to deal with spills, including knowledge of how to properly deploy site spill kit materials which will be available on-site.</p> <p>Spill kits will be stationed and readily available for easy access.</p> <p>Service and repairs of equipment will only be performed by trained personnel.</p> <p>Vehicles and equipment will have pre shift inspections and walk arounds to ensure no fluid leaks, primarily from the fuel system and/or hydraulics. Any detected leak will result in the unit being pulled from service until repaired. All service and repairs will be logged and tracked in the units operating and maintenance logs.</p> <p>Fuel and chemical handlers will be trained and qualified, and appropriate emergency response measures will be in place and readily available.</p>	
Fires and Explosions	Construction, Operation and Decommissioning	Accidental fires and explosions from mechanical equipment, fuels, and other hazardous materials may result in loss of equipment and infrastructure, worker health and safety risk, and deterioration or loss of natural habitat.	<p>Removal of flammable waste on a regular basis and disposal at a licenced disposal facility.</p> <p>Workers will be provided with appropriate fire prevention training.</p> <p>Appropriate fire extinguishers will be available on the Project Site. Such equipment will comply with and be maintained to the manufacturers' standards, and employees will be appropriately trained in their use.</p> <p>Storage, transportation and use of hazardous materials, including flammable waste, will comply with regulatory requirements.</p> <p>On-site fire prevention/response equipment will be checked on a routine basis and in accordance with local fire safety regulations to maintain proper working order.</p> <p>Greasy or oily rags or materials subject to spontaneous combustion will be deposited and stored in appropriate receptacles. This material will be removed from the Project Site on a regular basis and be disposed of at licenced waste disposal facility.</p> <p>Smoking will be restricted to designated areas.</p>	Risk is assessed to be appropriately mitigated
Transportation Accidents	Construction, Operation and Decommissioning	Vehicular collisions (human health and safety, traffic	Personnel retained to drive and operate vehicles and construction equipment will have a valid appropriate-Class Manitoba Driver's License with a copy provided to Hudbay.	Risk is assessed to be appropriately mitigated

Risks Associated with Accidents and Malfunctions	Project Phase	Possible Consequences	Measures to Reduce Risk of Occurrence	Conclusion
		disruption, road closure, release of contaminants) and wildlife collisions (loss of wildlife, human health and safety, road closures).	Speed limits on the Lalor Mine access road, Provincial Highways and the Lalor Mine site will continue to be implemented. Signage and speed limits on the PR 395 and PR 392 are regulated by the Province of Manitoba.	

7. Monitoring and Follow-up Programs

Follow-up programs verify the accuracy of the environmental assessment of a project and determine the effectiveness of measures taken to mitigate the adverse environmental effects of the Project. For the proposed Project, mitigation measures will be applied as described herein and a formal follow-up program is not anticipated to be required.

8. Conclusion

Overall, any adverse residual effects of the proposed Dry Facility expansion are expected to be Negligible in magnitude and mitigable with the measures incorporated into the Project design and recommended herein. The results of the effects assessment are summarized as follows:

Topography / Geology

The expansion area of the new Dry Facility is within an area previously disturbed for the construction of the Lalor Mine site; therefore, none of the construction or operation activities are expected to entail new impact to topography or geology.

Following decommissioning of the polishing pond, excavated areas will be graded relative to natural grade in order to create appropriate surface water drainage and prevent large areas of ponded water.

Soil

None of the proposed construction or operation activities are expected to entail new impact to soil. Disturbed and exposed areas will be kept to a minimum with site restoration occurring as soon as is practical.

Wastes generated during construction, including hazardous materials, will be collected in bins maintained at specific locations throughout the Project Site. The bins will be emptied on a regular basis for recycling and/or disposal at a licensed waste disposal facility.

All disturbed areas will be re-vegetated following site closure.

Groundwater

Construction and operation of the Project is not anticipated to affect the local groundwater. There are no underground works involved with this Project, and no withdrawals of groundwater are required. No effects from waste management or accidents and spills are expected.

Dust Generation and Dust Deposition (vegetation)

The effect of dust during construction and operation will be Negligible. The dense vegetation immediately surrounding the Project Site is expected to mitigate wind effects and overall potential dust migration, limiting the effects to the Project Site and immediate area.

Noise (including Wildlife)

Noise will be generated to varying degrees during construction, operation and closure activities, with most of the noise expected to be typical of heavy equipment such as trucks, loaders and excavators. This will be similar to the current daily activities at the Lalor Mine site which the Project Site is situated in, therefore, combined with the intermittent nature of the noise generated from heavy equipment it is anticipated that noise impacts during construction and operation the Dry Facility expansion will be Negligible

The potential impact of noise on wildlife is assessed to be Negligible as the Project Site is within an active mine site, it is anticipated that the local wildlife is likely already accustomed to some level of noise based on the existing activity at the Lalor Mine site and general area.

Climate / Greenhouse Gas

Air quality will not be adversely affected by emissions from equipment and vehicles. All vehicles used for the Project will comply with Environment Canada's On-Road Vehicle and Engine Emission Regulations as required, vehicles and equipment will be well maintained, and idling will be kept to a minimum.

Surface Water Quality

No additional surface water withdrawals will be needed for the Dry Facility expansion as currently freshwater use at the Project Site is pumped from Chisel Lake for use at the site for process water and for domestic use however, the volume of water will increase to approximately 46,920 L/day which is an overall increase of approximately 40,920 L/day. The current water rights license for Chisel Lake water withdrawal is approximately 402 dam³/year and the proposed increase in domestic water use at the Lalor Dry Facility expansion will have a negligible impact to the current withdrawal volumes.

Fish and Fish Habitat

The proposed Project does not require undertaking any activities in or near a surface waterbody, therefore, there will be no effects on fish or fish habitat.

Risk of Vehicle Collisions

The potential risk of vehicle collisions with wildlife is considered low, and speed limits on access roads, local roads and Provincial highways will reduce the risk of wildlife collisions.

Traffic

Although vehicular traffic will increase slightly during construction and operation of the New Britannia Mill, the effect of traffic on the Town of Snow Lake is assessed to be Negligible.

Conclusion

It is recommended that mitigation measures described in this report be implemented to ensure potential environmental effects are minimized and/or identified early so that appropriate action can be undertaken.

In summary, based on the proposed Project description and with the application of the proposed mitigation measures outlined in this NOA, adverse residual environmental impacts resulting from the Project are expected to be sufficiently mitigated and are not likely to cause significant adverse environmental effects.

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Appendix **A**

Notice of Alteration Form

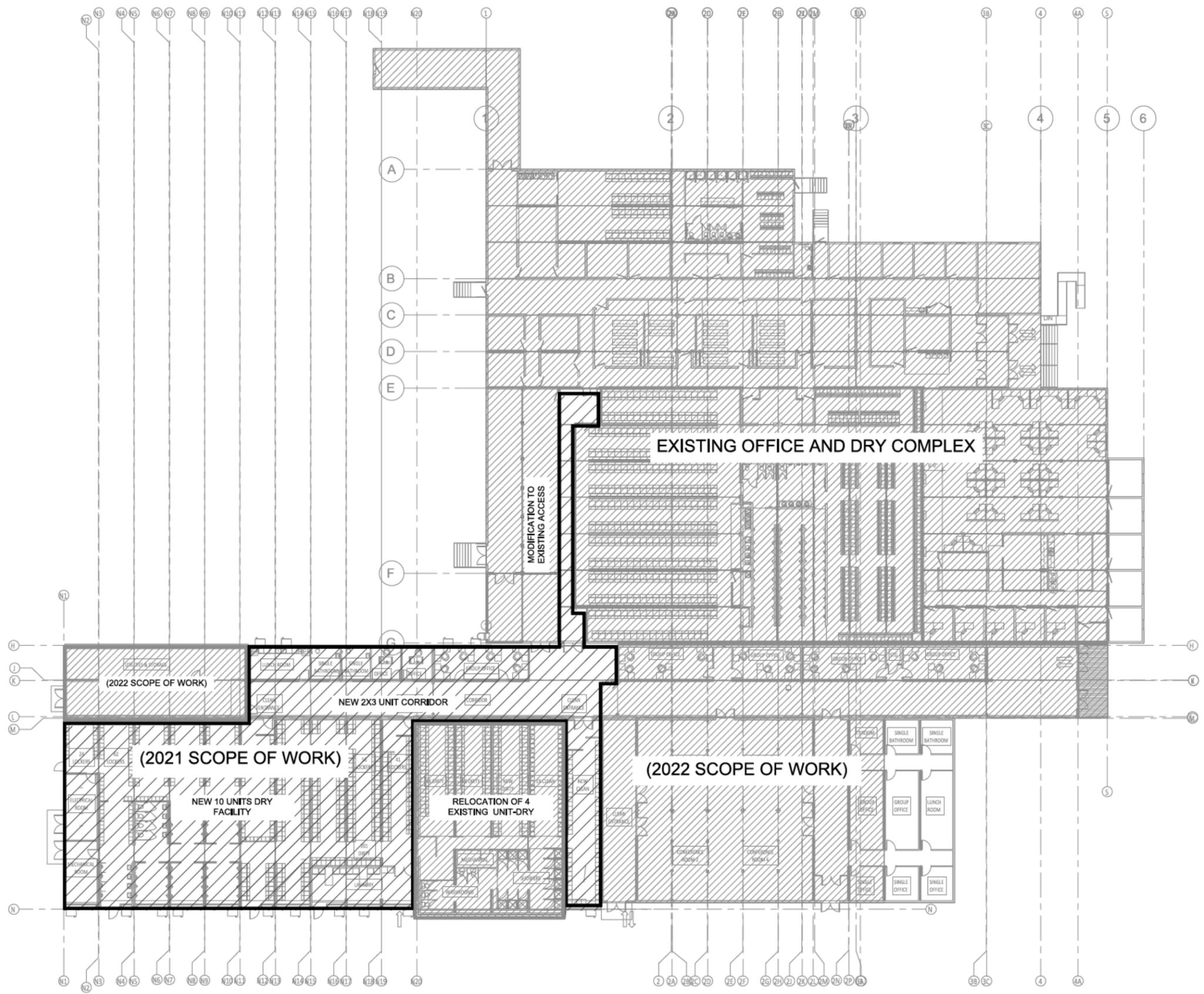
Notice of Alteration Form



Client File No. :	Environment Act Licence No. : 3096
Legal name of the Licencee:	Hudbay Minerals Inc.
Name of the development:	Lalor Dry Facility Expansion
Category and Type of development per Classes of Development Regulation:	Mining Mines, other than pits and quarries
Licencee Contact Person:	Jay Cooper
Mailing address of the Licencee:	PO Box 1500, 1 Company Road
City:	Flin Flon
Province:	Manitoba
Postal Code:	R8A 1N9
Phone Number:	(204) 687-2667
Fax:	
Email:	jay.cooper@hudbayminerals.com
Name of proponent contact person for purposes of the environmental assessment (e.g. consultant):	Kristiina Cusitar, BA, C.E.T., EP(SAR)
Phone:	(204) 928-7475
Mailing address:	99 Commerce Drive
Fax:	
Winnipeg, MB R3P 0Y7	
Email address:	kristiina.cusitar@aecom.com
Short Description of Alteration (max 90 characters):	Expansion of the current Dry Facility at the Lalor Mine to approx 200 dry spaces
Alteration fee attached:	Yes: <input checked="" type="checkbox"/> No: <input type="checkbox"/>
If No, please explain:	
Date:	21-11-10
Signature:	
Printed name:	JAY COOPER
A complete Notice of Alteration (NoA) consists of the following components:	Submit the complete NoA to:
<input checked="" type="checkbox"/> Cover letter	Director
<input checked="" type="checkbox"/> Notice of Alteration Form	Environmental Approvals Branch
<input checked="" type="checkbox"/> 2 hard copies and 1 electronic copy of the NoA detailed report (see "Information Bulletin - Alteration to Developments with Environment Act Licences")	Manitoba Sustainable Development
<input checked="" type="checkbox"/> \$500 Application fee, if applicable (Cheque, payable to the Minister of Finance)	1007 Century Street
	Winnipeg, Manitoba R3H 0W4
	Formore information:
	Phone: (204) 945-8321
	Fax: (204) 945-5229
	http://www.gov.mb.ca/sd/eal
Note: Per Section 14(3) of the Environment Act, Major Notices of Alteration must be filed through submission of an Environment Act Proposal Form (see "Information Bulletin – Environment Act Proposal Report Guidelines")	

Appendix **B**

Design Drawing



1 Electrical Keyplan
 E1.1 Scale: 1/16"=1'-0"

1. THESE DRAWINGS MUST BE CHECKED BY THE CUSTOMER OR CONTRACTOR. ANY ERRORS OR OMISSIONS MUST BE REPORTED IN WRITING TO STEENHOF BUILDING SERVICES GROUP PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. OWNER OR CONTRACTOR MUST CHECK AND VERIFY ALL SITE CONDITIONS BEFORE PROCEEDING WITH THE WORK.
3. ALL DIMENSIONS SHOWN ON THESE DRAWINGS MUST BE CHECKED AGAINST ALL OTHER PROJECT DRAWINGS. ALL DIMENSIONS MUST BE REPORTED TO THE CONSULTANT BEFORE PROCEEDING WITH THE WORK.
4. FOR CONSTRUCTION PURPOSES, USE ONLY THE LATEST APPROVED DRAWINGS LABELED 'TOLER FOR CONSTRUCTION'.
5. DO NOT SCALE THE DRAWINGS.
6. DIMENSIONS ARE TO THE INSIDE FACE OF STUD AND OUTSIDE FACE OF EXTERIOR FINISHED U.L.D.

REVISION SCHEDULE		
No.	Description	Date
01	Issued for Review	10-14-2021



Project Status:
PRELIMINARY

Scale:



Steenhof Building Services Group
 40 Peter Street South
 Oshawa, ON L1V 5A9
 Tel: 705-325-5400 Fax: 1-855-252-2613
 Website: www.steenhofbuilding.com

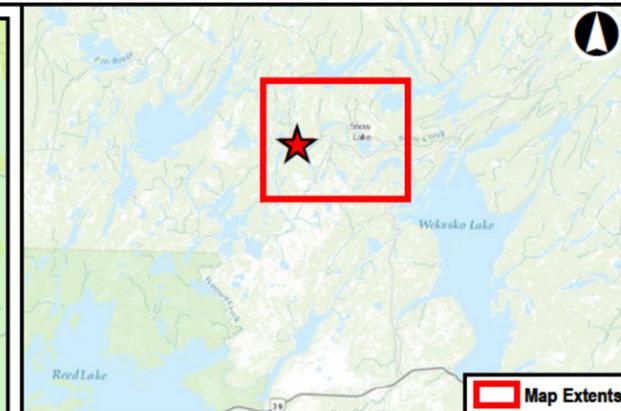
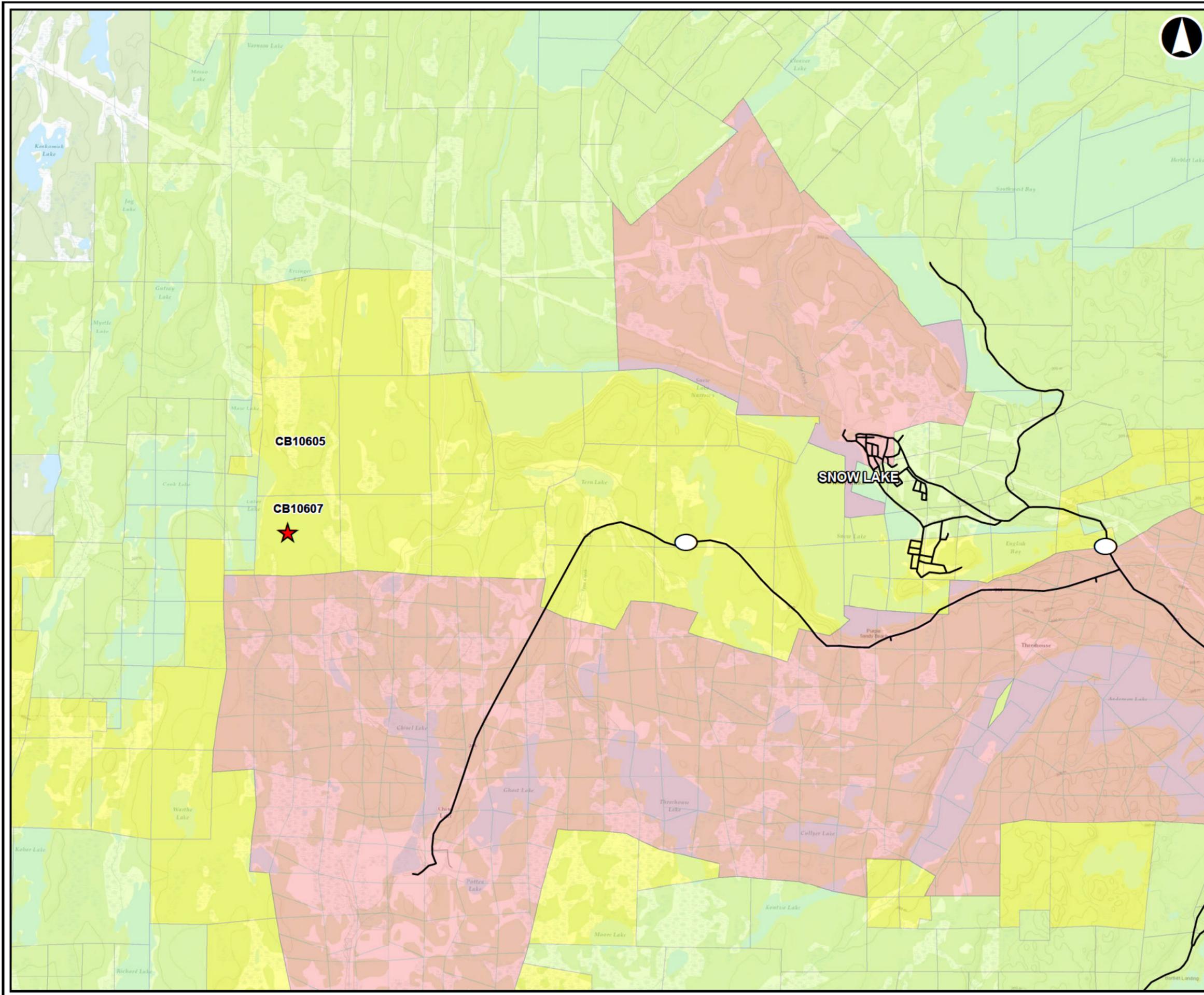
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 Project No:

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Chd By:	Scale:	
Drawing No:	Revision:	
E1.1	01	

Figures



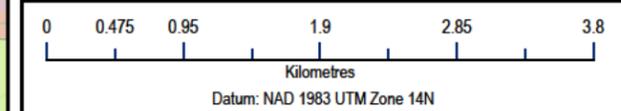
Source: Geogratis - North American Atlas (NR Canada); Manitoba Lands Initiative (MLI)



- Legend**
- ★ PROJECT SITE
 - MINERAL LEASES**
 - HUDSON BAY MINING AND SMELTING CO., LIMITED
 - MINERAL CLAIMS**
 - HUDSON BAY MINING AND SMELTING CO., LIMITED
 - OTHER

MINERAL CLAIMS AND MINERAL LEASES

**LALOR MINE DRY FACILITY EXPANSION
NOTICE OF ALTERATION
HUBBAY MINERALS INC.**

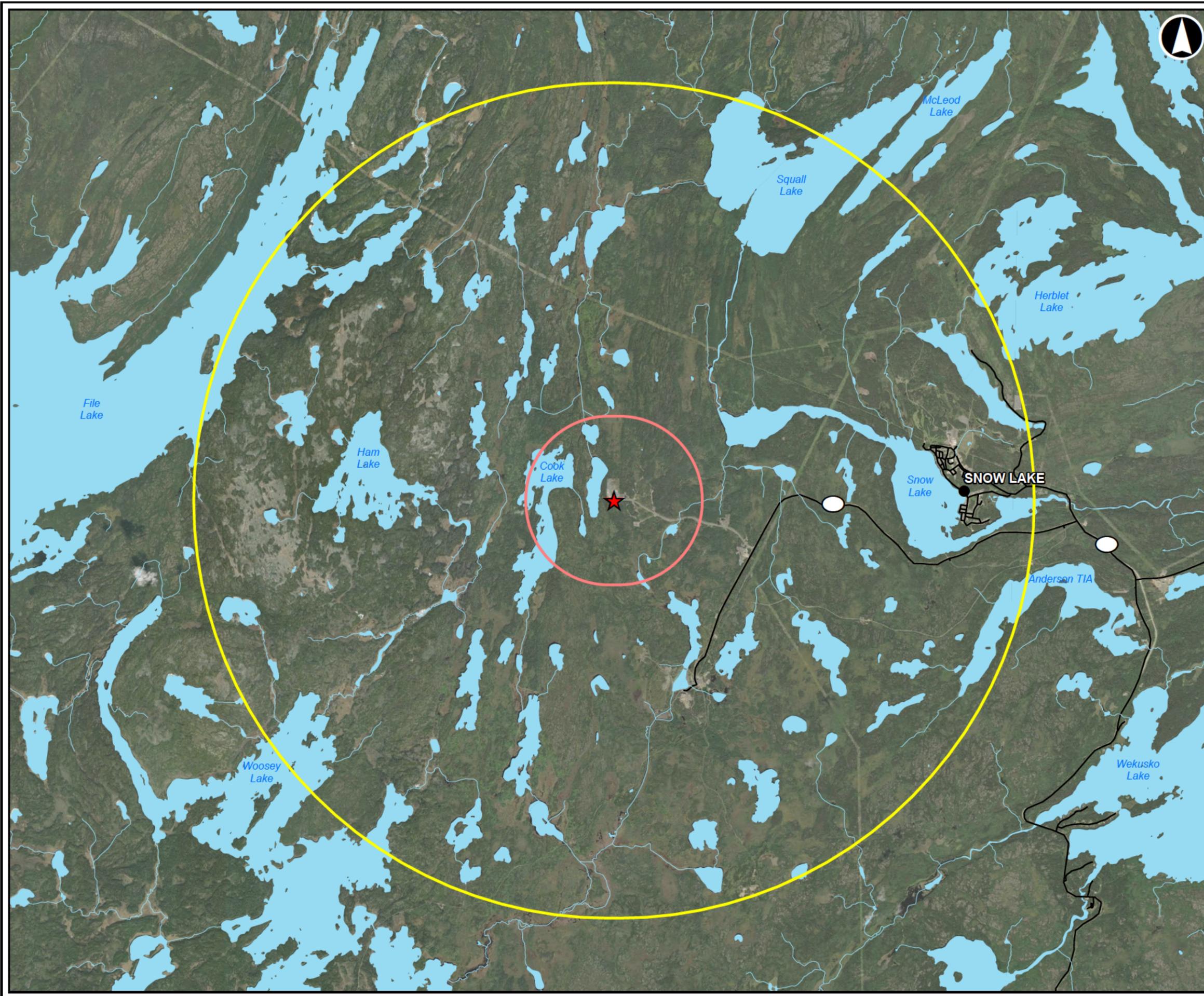


Data Sources: GeoGratis; Manitoba Lands Initiative (MLI)

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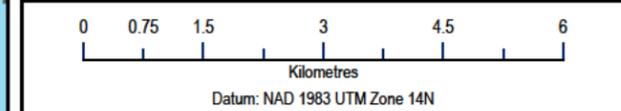
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- Legend**
- ★ PROJECT SITE
 - LOCAL PROJECT AREA: 2 KM FROM PROJECT
 - REGIONAL PROJECT AREA: 10 KM FROM PROJECT SITE

SPATIAL BOUNDARIES OF THE ASSESSMENT

**LALOR MINE DRY FACILITY EXPANSION
NOTICE OF ALTERATION
HUBBAY MINERALS INC.**



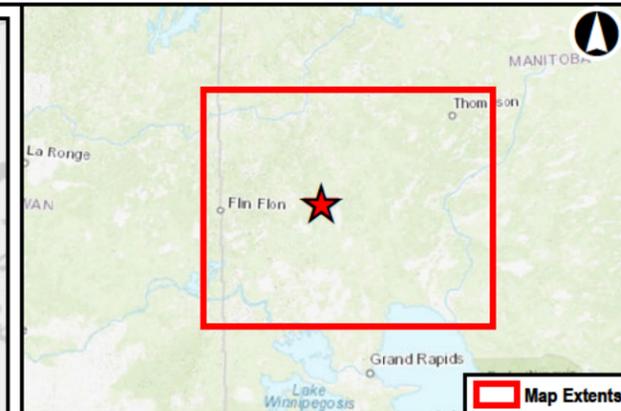
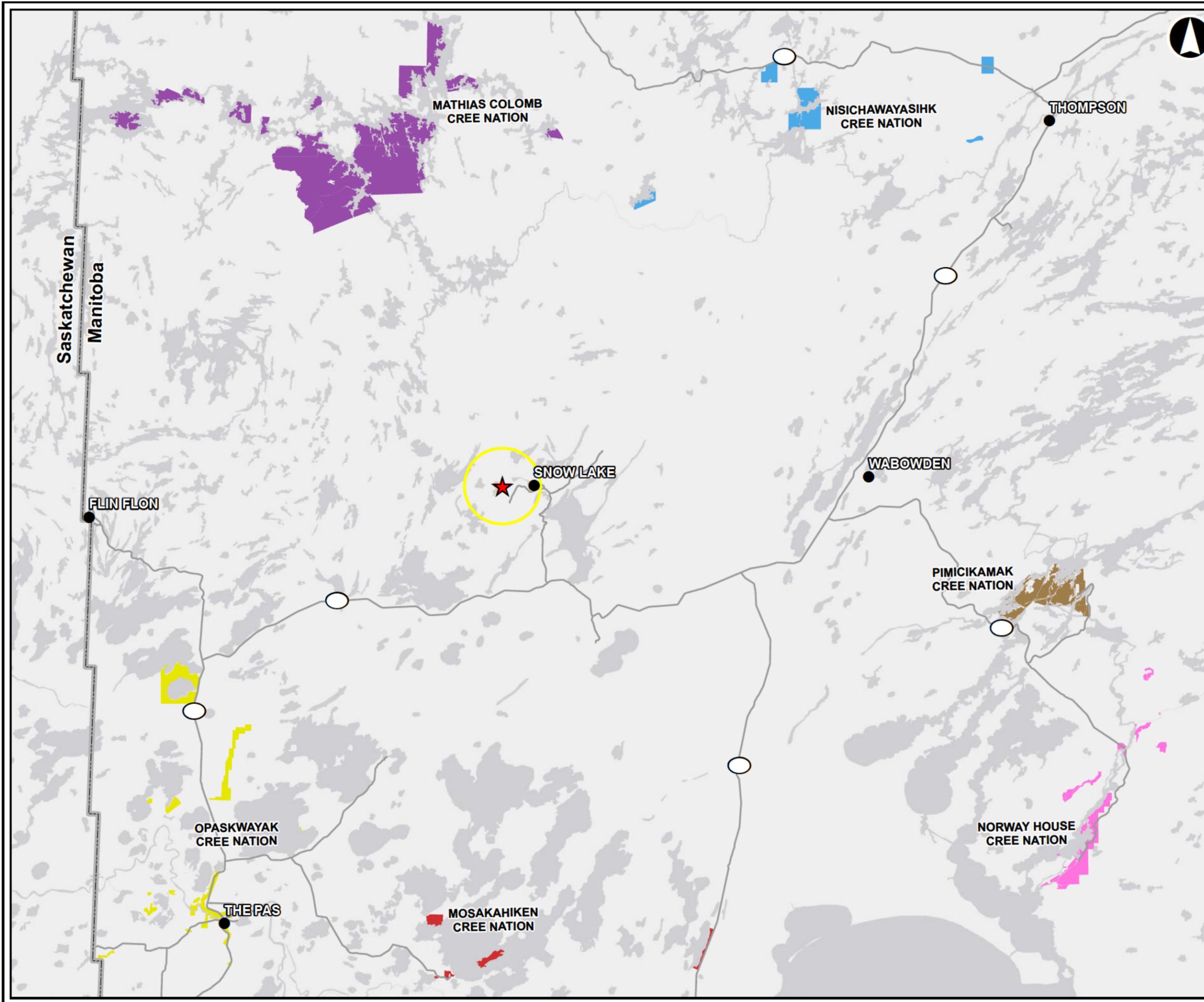
Data Sources: GeoGratis, Esri World Imagery

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Figure 4

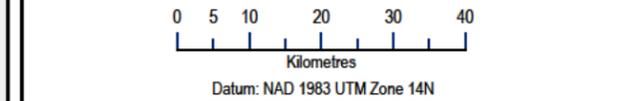
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- Legend**
- ★ PROJECT SITE
 - REGIONAL PROJECT AREA: 10 KM FROM PROJECT SITE
- FIRST NATION**
- OPASKWAYAK CREE NATION
 - MATHIAS COLOMB CREE NATION
 - NISICHAWAYASIHK CREE NATION
 - PIMICIKAMAK CREE NATION
 - NORWAY HOUSE CREE NATION
 - MOSAKAHIKEN CREE NATION

FIRST NATIONS RELATED TO THE REGIONAL PROJECT AREA

**LALOR MINE DRY FACILITY EXPANSION
NOTICE OF ALTERATION
HUBBAY MINERALS INC.**



Data Sources: GeoGratis, Government of Canada

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