JAMES BAY LITHIUM MINE

SUMMARY OF THE ENVIRONMENTAL IMPACT ASSESSMENT

AUGUST 2022 – REVISION 2

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GALAXY LITHIUM (CANADA) INC.

REVISION 2

PROJECT NO. 201-12362-00
DATE: AUGUST 2022

Presented to:

Impact Assessment Agency of Canada

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PREAMBLE

A summary of the environmental impact assessment (EIA) was prepared by WSP and presented to the Canadian Environmental Assessment Agency (CEAAg) and the Québec *Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques* (MDDELCC) in October 2018. While the federal and provincial authorities analyzed the EIA, the project design was also optimized. In addition, complementary studies were carried out to respond to the requests of the various government authorities or to acquire a better knowledge of the receiving environment and thus better define the project as well as the effects of the project on the environment. A second version of the EIA was therefore prepared and submitted to the Impact Assessment Agency of Canada (IAAC) and the MELCC in July 2021.

Following the filling of this second version of the EIA, questions, comments and information requests were sent by the provincial and federal authorities.

The summary of the EIA includes all the changes made to the second version of the EIA as well as the numerous answers provided to the provincial and federal authorities.The main modifications made to the report from the 2018 summary are highlighted using a different font (Verdana) and presented in bold.

1 CONTEXT

Galaxy wishes to open a mine to extract spodumene, the mineral that contains lithium. The project involves mineral extraction from a pit using conventional open-pit mining methods. The mineral treatment process used on-site will allow for the concentration of spodumene. Areas for the stockpiling and storage of extracted material, waste rock, dry tailings, spodumene concentrate, unconsolidated deposits and organic material will be built on the James Bay Lithium Mine project site. Process water will be used throughout the plant to wash and rinse material. It will then be recovered and recycled. Raw water from the main water retention basin will be used to top up the process water system. Surface water runoff will be directed to the raw water storage pond. Appropriate wastewater management will be applied on this project. Before being released into the receiving environment, **the effluent will be treated**, when required, in accordance with the applicable standards. Furthermore, Galaxy is planning to connect the mining site to Hydro-Québec's 69-kV power distribution system.

The James Bay Lithium Mine project is in the Nord-du-Québec administrative region, on the territory of the Eeyou Istchee James Bay Regional Government (X: 358 891, Y: 5 789 180). It is located approximately 10 km south of the Eastmain River and some 100 km east of James Bay, near the Cree Nation of Eastmain (Map 1).

This territory is subject to the James Bay and Northern Québec Agreement (JBNQA). This agreement was signed in 1975 by the governments of Canada and Québec, the Grand Council of the Crees and the Association des Inuits du Nouveau-Québec. Because of the project's position, legislative provisions associated with the James Bay territory apply. Section 22 of the JBNQA defines the environmental and social protection regime of the Cree people, their societies and communities and their economy regarding development activities that affect the territory. Schedule 1 of this section lists projects subject to environmental assessment, including mines. Section 22 of the JBNQA also defines the process leading to the granting of permits through evaluation and review.

The territorial regime introduced by the JBNQA is a determining factor governing use of the territory. It divides the territory into Category I, II and III Lands. The James Bay Lithium Mine project is located on Category III Lands, where mining rights belong to the provincial government.

The Environment Quality Act (EQA) dispositions subject the project to an environmental assessment in accordance with provincial guidelines. The project must therefore be subject to an environmental assessment under the EQA, which was reformed in 2018. The project is also subject to an environmental impact study by the Impact Assessment Agency of Canada (IAAC, formerly CEAAg), which was also reformed in 2019.

However, the provincial directives and federal guidelines for carrying out the impact study for the James Bay Lithium Mine project were received in 2018[1] before the 2018 and 2019 regulatory reforms. Thus, this impact study is carried out according to the directives issued by the regulatory authorities and does not take into account recent reforms.

Opening of the James Bay Lithium Mine is subject to the provincial environmental assessment and review procedure, as provided in section 153 of Chapter II of the *Environment Quality Act* (EQA). This chapter deals with the provisions applicable to the James Bay and Northern Québec region. Schedule A of the EQA lists projects that are automatically subject to the assessment and review procedure. The James Bay Lithium Mine project is subject to the procedure because Schedule A lists "all mining developments, including additions to, alterations or modifications of existing mining developments."

The project is also subject to a federal environmental assessment, as required under section 13 of the *Canadian Environmental Assessment Act* (CEAA) (2012) (S.C. 2012, c. 19, s. 52), because production will exceed 3,000 t/day (par. 16[a]) and the capacity of the mill will exceed 4,000 t/day (par. 16[b]) of the *Regulations Designating Physical Activities* (SOR/2012-147).

[1] **Directive provinciale : https://www.ree.environnement.gouv.qc.ca/dossiers/3214-14-055/3214-14-055-3.pdf**
Lignes directrices fédérales : https://aeic-iaac.gc.ca/050/documents/p80141/121718F.pdf

The Environmental Impact Assessment (EIA) contains all the relevant knowledge and analysis components for complying with the directive of Québec's Ministère du Développement durable, de l'Environnement et de la Lutte contre les changements climatiques (MDDELCC) and the CEAAg guidelines for this project

The site of the James Bay Lithium Mine project is located on Québec public lands (public land belonging to Her Majesty in right of the province of Québec). Wholly owned subsidiaries of **Allkem Limited**, including the project promoter, Galaxy Lithium (Canada) Inc. (Galaxy), are the holders of the mining claims currently comprising the mining property of the project.

The land covered by all 54 claims forming the mining property of the project is 2,163.75 ha in area. These 54 claims will expire between June 12, **2020** and **June 20**, 2023. Although they can be renewed for an additional two years, an application for a mining lease under section 100 of the *Mining Act* (R.S.Q. c. M-13.1) will be filed for the operation of a mine and concentrator with an annual production capacity of 2,000,000 T of material. This application will be submitted to Québec's Ministère de l'Énergie et des Ressources naturelles (MERN) in 2022.

The applications for lithium are highly diverse, particularly in the manufacture of glass and ceramics, lubricants, pharmaceutical polymers and products, air treatment and, very significantly, in the manufacturing of lithium ion batteries. Hybrid and electric vehicles, portable electronic devices, and renewable energy storage systems for homes and businesses are all applications that have grown significantly in recent years.

From a socio-economic standpoint, the James Bay area offers a significant pool of labour for Galaxy. Furthermore, the company plans to participate in developing training programs for the mining industry. Attractive employment prospects will be available to qualified people at the James Bay lithium mine.

The contact information for Galaxy Lithium (Canada) Inc. and its representative, **Caroline Morissette**, **Director – Environment and Permits**, is as follows:

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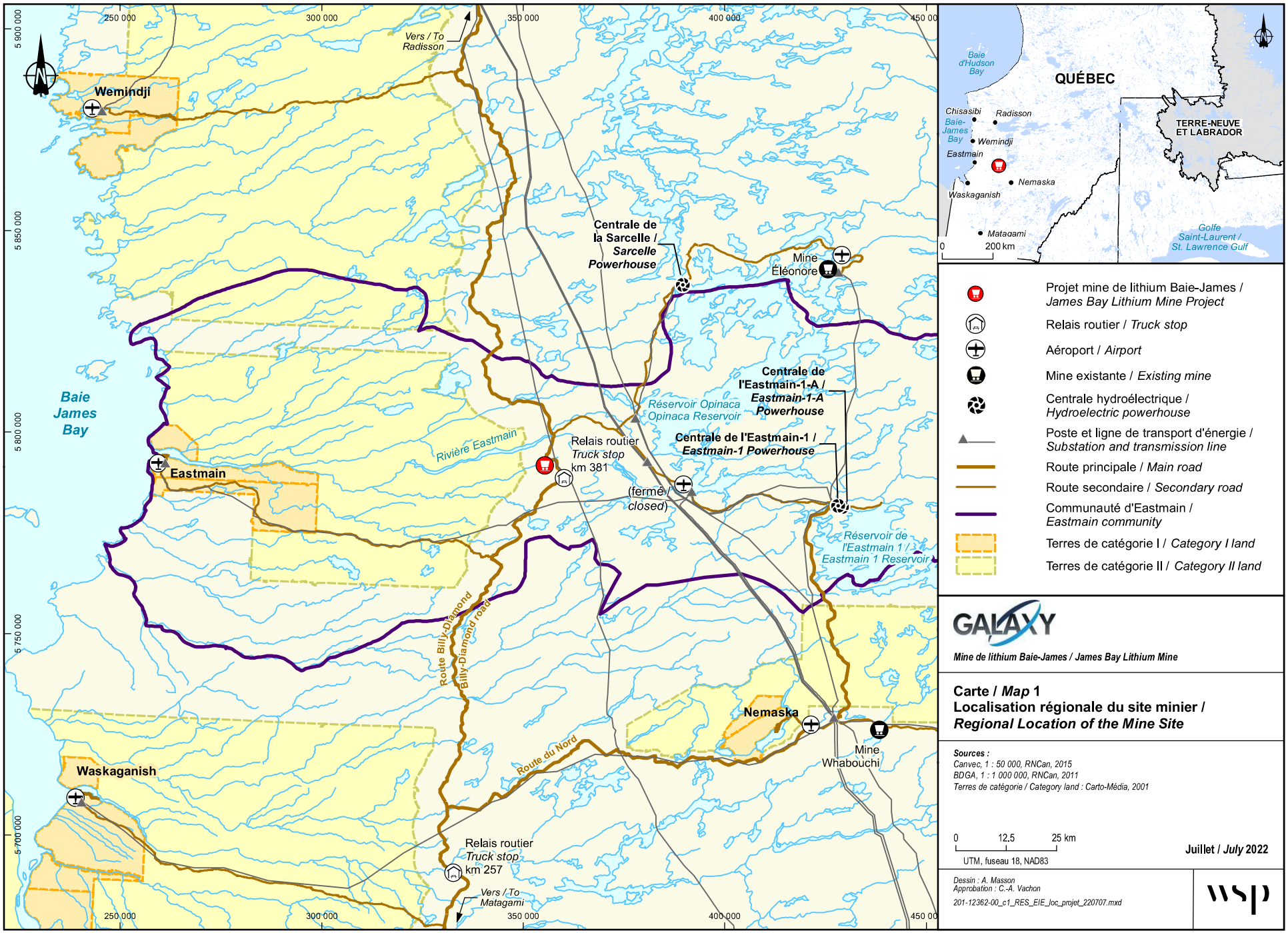
Telephone: 514-558-1855

The project title is: "James Bay Lithium Mine". Its location on maps is identified with its title. Of noteworthy mention, there is currently no mine in existence.



GALAXY

Mine de lithium Baie-James / James Bay Lithium Mine

Carte / *Map* 1
Localisation régionale du site minier /
Regional Location of the Mine Site

Sources :
Canvec, 1 : 50 000, RNCan, 2015
BDGA, 1 : 1 000 000, RNCan, 2011
Terres de catégorie / Category land : Carto-Média, 2001

0 12.5 25 km
UTM, fuseau 18, NAD83

Juillet / *July* 2022

Dessin : A. Masson
Approbation : C.-A. Vachon
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2 PROJECT OVERVIEW

2.1 GENERAL PROJECT DESCRIPTION, 2021 VS. 2018

The project underwent several changes after the 2018 EIA. The main changes concern:

- **storage areas: four waste rock and tailings storage facilities instead of a single stockpile in 2018, the overburden and peat stockpile was moved from its 2018 location;**
- **the larger size and smaller number of trucks to transport concentrate and trucks used to carry ore to the crusher compared to 2018;**
- **haul roads to allow for shorter trips compared to what was planned in 2018;**
- **the location of the concentrator, the workers' camp and the service building, which are now closer to the Billy-Diamond Highway than they were in the 2018 project;**
- **the location of the explosives warehouse, which was moved further northwest from its location in the 2018 project.**

2.2 ALTERNATIVES STUDIED

To meet the requirements of provincial and federal guidelines issued for this assessment, Galaxy must analyze alternatives for certain components of its project. However, some general criteria have been established from the outset, thereby influencing the location of infrastructure.

First, it was determined that all the project's components would be located west of the **Billy-Diamond** Highway and power line, to avoid any interference with this infrastructure, mainly for safety and traffic reasons. This choice also made it possible to minimize the travel distances on site and the scope of transport infrastructure to be built. In addition, since the site is primarily comprised of wetlands, the effort was focused on reducing the overall footprint of the project rather than on the positioning of each of its components. Lastly, safety distances **related to blasting activities** were also considered around the pit, namely, a 200-m radius of total exclusion (no construction) and a 500-m radius of partial exclusion (restricted construction zone).

Therefore, considering the nature and location of the deposit and in the light of the general criteria set out above, **the following aspects were excluded from the alternative study**:

- **Mining and material extraction method**: Exploitation of the resource partially or completely underground has not been assessed since the project targets spodumene pegmatite on the surface. In addition, open-pit mining is the method typically preferred for mining for technical and economic reasons.
- **Concentrator location for processing**: In 2018, this component was positioned in the only available sector located near the pit. **In the current project (2021), the concentrator was moved adjacent to Billy-Diamond highway in an area where geotechnical work confirmed the soil's good bearing capacity. This change made it possible to reduce the amount of peat and materials (silt) to be excavated before beginning construction, to eliminate the access road, to shorten the transport distances for ore to the plant as well as for waste rock to the stockpiles, thereby reducing GHG emissions associated with mine operation activities. These changes also made it possible to reduce the surface areas affected. Relocating the concentrator enabled stockpiles to be repositioned near the pit, reducing the transport distances for waste rock to the stockpiles.**

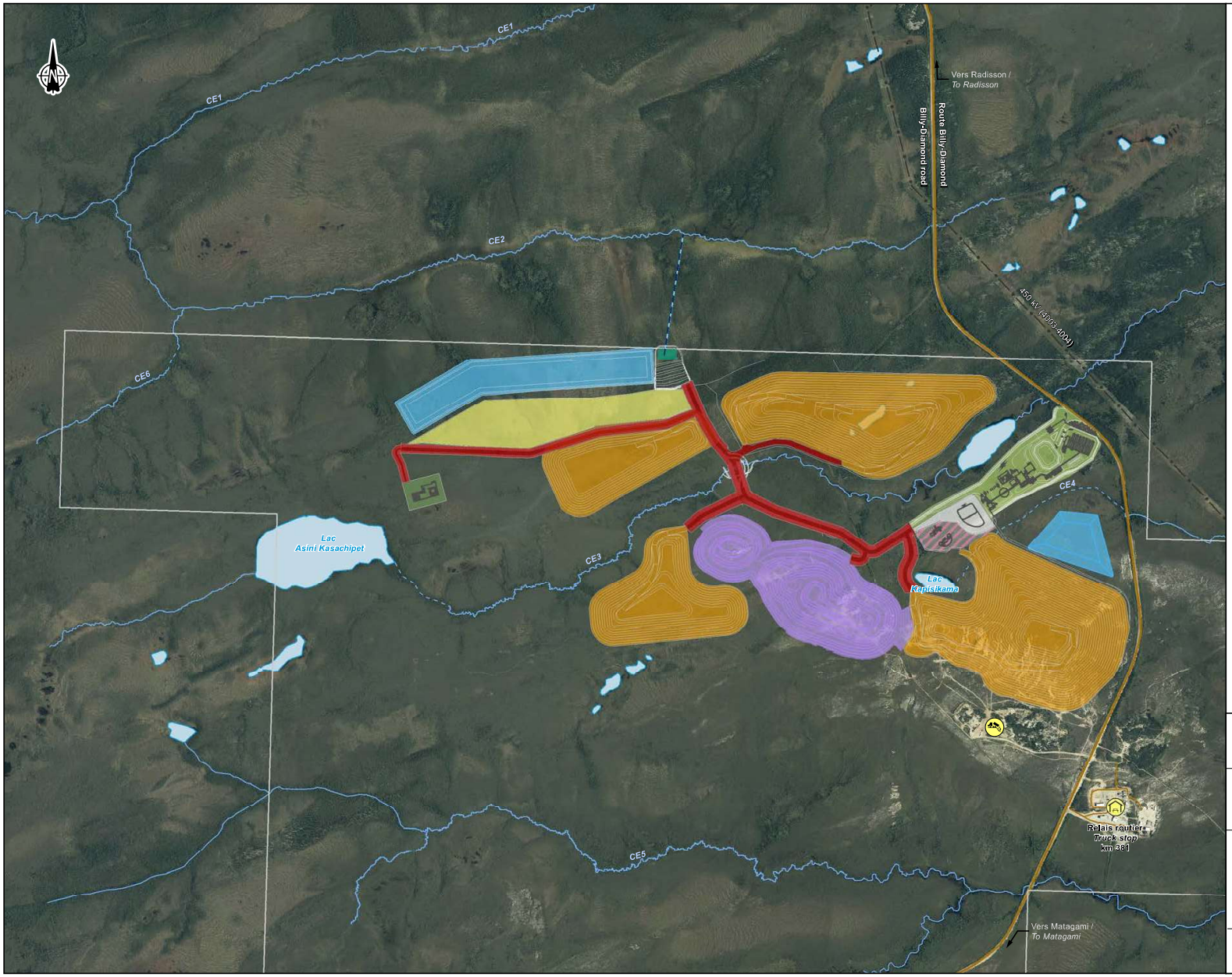
- **Worker's camp site**: **In 2018 as in 2021**, the **workers'** camp was positioned near the main infrastructure, including the concentrator and the pit, to minimize the transport of workers. In fact, the worker' camp is within walking distance of buildings, which will help to reduce the fleet of vehicles **and thereby reduce the risks of mechanical breakdowns likely to cause environmental impacts (e.g., oil leak) as well as** the GHG emissions associated with them.
- **Road alignment**: The site selected **in 2018** for the concentrator was 750 m **from Billy-Diamond Highway** and is outside the exclusion radius of the pit. Therefore, **an access road had to be built in the peatland, the other** needs being limited to site access and various roads connecting the infrastructure (pit, concentrator, waste rock and overburden stockpiles, water treatment plant (WTP), dike and explosive storage facilities) for a total of just over 8 km of roads to build. **Unlike 2018, the construction of an access road is not necessary in the current project (2021), and needs are still limited to access to the site and to various infrastructures. The roads to be built are shorter compared to 2018, as distances between infrastructures have been reduced. Two-lane roads are still planned. The principles of 2018 will still be respected, namely: prioritizing the shortest route with a few curves to follow the topography, limit speed and improve driving safety; distancing roads from watercourses by at least 60 m, as stipulated in the** *Règlement sur l'aménagement durable des forêts du domaine de l'État***.**
- **Water supply**: Since the project site is in an isolated environment, there are only two viable options for the site's water supply, namely developing a well (or wells), or transporting water to the site. For economic and environmental reasons, the decision was made on developing water supply wells. **According to the hydrogeological characteristics of the area, the aquifer identified as exploitable would be the bedrock aquifer. A hydrogeological study was conducted in July 2022 and a well was installed near the industrial and administrative area, South of the future workers' camp. This well will be the source of potable water.**

Furthermore, the components for an assessment of the technological alternatives or location has been carried out as follows:

- **waste rock, tailings and overburden stockpiles (deposition methods and location);**
- **domestic wastewater treatment (technology);**
- **mine water management and final effluent discharge point.**

The alternative analysis conducted as part of the 2018 ESIA for these components **was not redone in 2021** but the changes related to project optimization are described in detail for each project component included in the analysis.

Finally, an assessment of possible energy sources was conducted for the mine site (process and buildings) and the mobile equipment. Changes related to the 2021 project are presented, when applicable. It should be noted that as alternative options become available, GLCI will continually evaluate them in an effort to maximize new and innovative mining practices on site, reduce emissions and continually strive toward sustainable mining.



Limite de propriété / *Property limit*

Composantes du projet / *Project Component*

- Route / *Road*
- Effluent minier / *Mine effluent*
- Usine de traitement de l'eau / *Water treatment plant*
- Secteur administratif et industriel / *Administrative and industrial sector*
- Fosse / *Pit*
- Halde à minerai / *ROM pad*
- Halde à stériles / *Waste rock stockpile*
- Halde à matières organiques et dépôts meubles / *Overburden and peat storage facility*
- Entrepôt à explosifs / *Explosives magazine*
- Aire d'entreposage / *Dry storage area*
- Usine à béton (temporaire) / *Concrete batch plant (temporary)*
- Bassin de rétention d'eau / *Water retention basin*

Infrastructures / *Infrastructure*

- Route principale / *Main road*
- Route d'accès / *Access road*
- Ligne de transport d'énergie / *Transmission line*
- Relais routier / *Truck stop*
- Lieu d'enfouissement technique isolé / *Isolated technical landfill*

Hydrographie / *Hydrography*

- CE3 Numéro de cours d'eau / *Stream number*
- Cours d'eau permanent / *Permanent stream*
- Cours d'eau à écoulement diffus ou intermittent / *Intermittent or diffused flow stream*
- Plan d'eau / *Waterbody*

GALAXY

Mine de lithium Baie-James / James Bay Lithium Mine

Carte / *Map* 2
Aménagement du site minier /
Mine Site General Arrangement

Sources :
Orthoimage : Microsoft Bing (ESRI, 2017)
Gestim : MRNF Québec, 210315
Données du projet / Project data : Galaxy 2020

0 200 400 m
UTM, fuseau 18, NAD83

Juillet / *July* 2022

Dessin : A. Masson
Approbation : C. Martineau
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2.2.1 DEPOSITION METHODS

Five tailings deposition techniques were considered. The hydraulic deposit was rejected from the outset due to limited space on the site and to the absence of favourable topographic features. In this case, this option would increase the environmental risks because of the sludge lagoons, in addition to increasing the footprint. The thickened tailings option was not selected in the analysis because the reduction in water content does not provide any technical or economic benefit nor does it contribute to reducing the environmental risk associated with deposits of tailings. In fact, given the particle size distribution of tailings, their water content is low. Finally, considering the lack of information available on the economic viability of extracting the resources that will be left in the pit once the life of mine has, the deposit-in-the-pit option was not assessed.

Therefore, the remaining management options all involve dried stack tailings, either as a mixed deposit (co-disposal) or by arranging a separate deposit for the tailings (co-mingling) in the same stockpile. At this stage, the deposit techniques are considered equivalent for the purposes of the analysis, the co-disposal presenting minor differences with the co-mingling regarding the areas and volumes required.

Further to the project optimization exercise, a decision was made to pile waste rock and filtered tailings in four co-deposition piles. The advantages of co-deposition include:

- **improves physical stability of the stockpile slope in waste rock embankment zones;**
- **accelerated consolidation and better shear strength of tailings;**
- **reduced risk of embankment failure and loss of containment of tailings;**
- **less dust creation and erosion of tailings;**
- **improved opportunities for progressive closure.**

Disposing of tailings and waste rock in depleted areas of the pit was also considered and has been selected as part of the new design.

2.2.2 LOCATION OF WASTE ROCK AND TAILINGS STOCKPILES

In 2018, four options were proposed for the location of waste rock and tailings stockpiles. These options were evaluated according to four components: environmental, technical, economic and socioeconomic. The analysis found Option 2 to be preferable over the other three. Option 2 is a deposit for tailings and waste rock, as a mixture. The stockpile **was then** located on the north side of the pit.

As part of the project optimization exercise, the four waste rock stockpiles were positioned near the pit to reduce transportation distances for excavated material. In order to increase capacity, the area of the waste rock stockpile has been increased. The western section of the basin has been eliminated and the stockpile has been extended to the northern limit of the property. This also made it possible to standardize the elevation of the pile at 300 m. Additionally, two waste rock stockpiles located near the mine will be expanded into the pit once mining of the area is complete. This will reduce the size of the waste rock stockpiles to the north of the mine.

2.2.3 LOCATION OF OVERBURDEN STOCKPILE

A summary comparative analysis was performed **in 2018** to identify which location option would best support the project. The main findings of this analysis were as follows:

North option

- The North option called for a pile several metres in height close to the **Billy-Diamond** Highway (which created some worry as to possible problems with visibility on the road).

- Kapisikama Lake, creek CE4 and a special status plant in the North sector also curtailed the available storage options.
- The North option was partially located in a terrestrial environment, which would have had the advantage of limiting losses associated with the wetlands.

West option

- The West option was located further from the pit (longer route for stripping). After an examination, however, it was determined that most of the materials stored in the stockpiles would be peat from the tailings stockpile and topsoil stripping from the industrial sector.
- The West option was fully within the limits of a single drainage basin, meaning any impacts would have only involved a portion of one watercourse.

As part of the optimization exercise, the decision was made to pile the organic material and unconsolidated deposits into a single stockpile. Thus, after having carefully considered all this information, the West option was selected. This overburden stockpile was positioned between the west waste rock and tailings stockpile and the main water management pond. Relocation of this overburden stockpile allowed for the waste rock stockpile to be moved closer to the pit, thereby shortening waste rock transportation distances and reducing GHG emissions.

2.2.4 DOMESTIC WASTEWATER TREATMENT

The worker' camp must have a domestic wastewater treatment system for personnel during the mine's construction and operation phases.

Four technologies were explored. Although the technology has not been selected yet, among these options, a rotating biological contactor (Ecoprocess MBBR technology) seems to be the best choice, all criteria combined. It is also the most economical choice.

Nevertheless, after checking the information available at this stage, it was found that an absorption or leaching field could not be installed in the immediate camp environment. The soil in place is not adequate for the installation of such a system on the mine property. In general, the water table is less than one metre from the ground surface and the desired sand horizon is invariably under a layer of peat 0.7 to 1.5 m thick. For this reason, a tertiary treatment was added to the selected alternative.

The current plan is to have the discharge point on creek CE3.

2.2.5 MINE WATER MANAGEMENT AND FINAL EFFLUENT DISCHARGE POINT

The project's infrastructure has been positioned to minimize watershed changes (quantities of water to be redirected) and to simplify water management at the site. Thus, since the mining infrastructure was optimized throughout the project design, no analysis of alternatives was necessary on the position of the mining effluent. The mining effluent site on the creek CE2 was selected using videos of watercourses taken with a drone, to position it at the best location along the stream, over a segment of 200 m. In 2018, the mining effluent on creek CE3 has been placed near the crossing of the hauling road to facilitate sampling and minimize the deposit footprint.

In the current project (2021), mining effluent will only be discharged into CE2, in the same location planned for in 2018.

2.2.6 POWER SUPPLY AT THE MINE SITE

The project, as defined in 2018, required 8.3 MW to power the fixed infrastructure. Now, in 2021, these power needs have dropped to an estimated 8.01 MW.

In the vicinity of the project, Hydro-Québec's network includes three 735-kV transmission lines and a 450 kV line from the La Grande-2 and La Grande-2A generating stations, and a 315-kV line between the Sarcelle and Eastmain-1 generating stations. Also, a 69-kV line from the Muskeg generating station near the former Opinaca airport heads west to supply the community of Eastmain, running 7 km south of the mine site. Using this renewable energy network to supply the concentrator and other project infrastructure was therefore the first option considered. To optimize management of the preliminary design studies and permit applications, the option to connect to the 69-kV line has been prioritized **and this line will be the main source of electricity for the project**. With this option, Hydro-Québec will be able to supply a maximum of 7.6 MW. **However, for the industrial sector and the workers' camp, the average electricity demand is estimated at 3.33 MW and 2.95 MW respectively, for an average demand of 6.3 MW, and peaks of 7.7 MW during the winter months.**

Thus, in 2018, other power supplies were considered to make up for this difference. The choices were solar, wind, natural gas, liquefied natural gas and propane. Propane was chosen because it is easy to supply. **Finally, the 2021 project anticipates using only propane to heat the workers' camp during the construction and operation phases. Buildings in the administrative and industrial sectors will be heated with electricity.**

2.2.7 POWER SUPPLY FOR MOBILE EQUIPMENT

The possibility of obtaining electric motors abroad for hauling and road trucks as well as for heavy equipment, such as excavators and shovels, was examined with a view to reducing GHG emissions, since the models required for the mining project, as currently defined, were not available in Canada.

A forklift, buses (2) and pick-up trucks (9) are available in electric versions and will be purchased. The rest of the mobile fleet will be powered by diesel.

The market offers a limited choice of electric mining equipment for an open-pit mine like Galaxy's. Most of the electric equipment available is for underground facilities due to the savings on ventilation costs. Electric battery trucks are not available for the pits while electric drill rigs and mechanical shovels are available only at capacities that exceed Galaxy's needs. Smaller equipment is either no longer available on the market or not recommended by suppliers due to the high cost compared with equivalent diesel equipment. Consequently, given the size of the James Bay lithium mine, the use of electric equipment on the market today is not suitable for the project at this time and is therefore not recommended in the short term. **Galaxy remains on the lookout for any technological advances in the field of energy in order to reduce its dependence on fossil fuels.**

2.3 CONSTRUCTION PHASE

The construction phase includes all site preparation preceding mining operations. The infrastructure that must be built as part of this project is shown on Map 2. Air transport will be the main means of bringing workers **who live outside the region** to the site, as it will help save one day of travel in each direction and improve safety. Galaxy will likely arrange chartered flights from Montreal and the Abitibi region to the Eastmain airport. A shuttle service will be offered to workers because the Eastmain airport is located 135 km from the project site. Also, equipment and supplies will be transported to the site by truck. Material and supplies will go through Matagami (**Billy-Diamond Highway**).

A worker' camp will be created to accommodate the workforce required for construction and operation activities (**216** people). Potable water in the worker camp will be supplied from a well built on the site. Generators will also be required at the start of work to provide electricity to the site (before it is connected to the Hydro-Québec network). Discussions are underway with the *Société de développement de la Baie-James* (SDBJ) to use the km 381 truck stop as an initial lodging site so that the first of the facilities can be built. However, no agreement has been signed.

All equipment and material will be stored on site in designated areas. Contractors carrying out the work will be assigned a space for temporary facilities. These areas will also be located as close as possible to the location of the work and will be used for site trailers, temporary shops and storage areas. All storage areas will be within the project footprint.

Due to the limited amount of construction materials available in the project area, Galaxy wishes to use overburden and waste rock for road construction. Contrary to what was planned in the 2018 project, diabase will not be used as a building material. For the concrete aggregate, Galaxy will purchase its material from a quarry already in operation at km 394. A sand borrow pit located immediately south of the mine site, west of the truck stop landfill will also be used.

A concrete plant will be built near the industrial and administrative sector. This site will be converted to a dry storage area during the operation phase. **During the construction phase, a mobile crusher and a vibrating conveyor will sort the rocks by size and separate them into different piles.** The site will also be used to prepare concrete for the foundations required in the administrative and industrial sector (buildings and reservoirs).

Earthworks will include mainly two activities: clearing and filling. Deforestation will be done **in all vegetated areas within the project footprint, as well as an additional 50 m around them (35-m fire protection ring and an additional 15 m for machinery movement).** Trees, stumps and shrubs will be cut down to the ground, then along with the peat, all organic material and topsoil will be moved to the organic matter and unconsolidated deposits stockpile. e unconsolidated deposit stockpiles. Once this level is reached, the embankment will be placed. Fill material will be put down and then compacted, in accordance with the technical recommendations. According to the drawings, concrete foundations will also be required in some places. These activities will make it possible to build the industrial and administrative sector, roads on the site as well as dikes and berms.

Structure work will then be undertaken to erect buildings on the site as quickly as possible. This will be supplemented by equipment assembly work and electrical or other work inside the buildings.

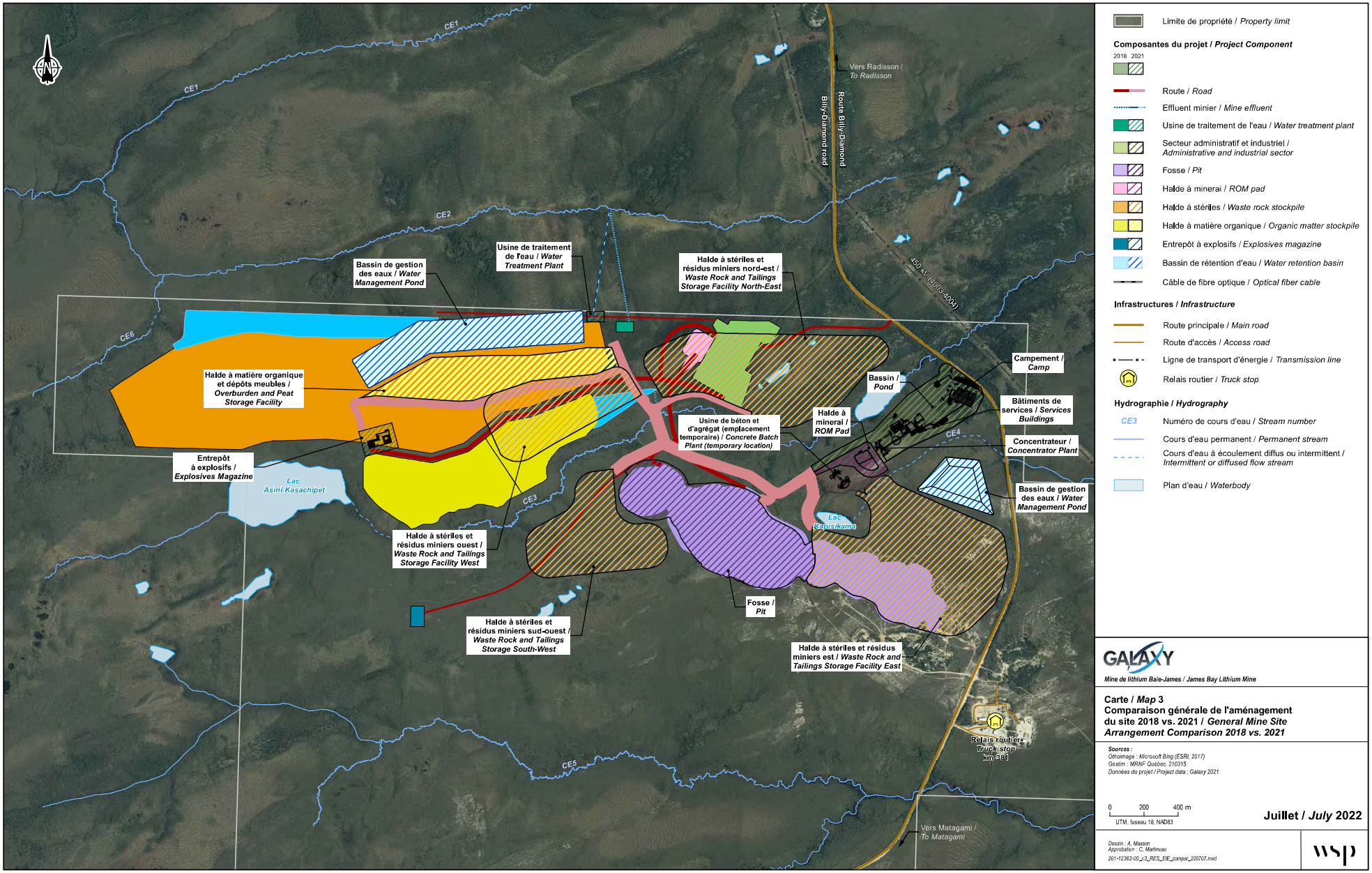
2.4 OPERATION PHASE

2.4.1 DEPOSIT

The spodumene-bearing pegmatites delineated on the property strike parallel and are separated by layers of meta-sedimentary rocks. A north-south diabase dyke has also been identified. A total of 18 pegmatite dykes have been discovered to date; additional drilling may delineate others. In fact, many pegmatite intersections were noted during the 2017 drilling program. The mineralization is contained in the spodumene and is the main source of lithium found on the site. The indicated mineral resources total 37 Mt at a grade of 1.30% Li_2O (Mining Services, 2021).

2.4.2 SITE INFRASTRUCTURE

The mine site consists mainly of the pit, the waste rock and tailings **stockpiles** (hereinafter referred to as the waste rock **stockpiles**), the organic matter and unconsolidated deposits stockpile and the industrial and administrative area. The industrial and administrative area houses the ROM pad, the industrial area, the mechanical workshops and warehouses, the administrative buildings and the worker camp. The layout of this area is shown on Map 3.



Limite de propriété / *Property limit*

Composantes du projet / *Project Component*

2018 2021

- Route / *Road*
- Effluent minier / *Mine effluent*
- Usine de traitement de l'eau / *Water treatment plant*
- Secteur administratif et industriel / *Administrative and industrial sector*
- Fosse / *Pit*
- Halde à minerai / *ROM pad*
- Halde à stériles / *Waste rock stockpile*
- Halde à matière organique / *Organic matter stockpile*
- Entrepôt à explosifs / *Explosives magazine*
- Bassin de rétention d'eau / *Water retention basin*
- Câble de fibre optique / *Optical fiber cable*

Infrastructures / *Infrastructure*

- Route principale / *Main road*
- Route d'accès / *Access road*
- Ligne de transport d'énergie / *Transmission line*
- Relais routier / *Truck stop*

Hydrographie / *Hydrography*

- CE3 Numéro de cours d'eau / *Stream number*
- Cours d'eau permanent / *Permanent stream*
- Cours d'eau à écoulement diffus ou intermittent / *Intermittent or diffused flow stream*
- Plan d'eau / *Waterbody*

GALAXY

Mine de lithium Baie-James / James Bay Lithium Mine

Carte / *Map* 3
Comparaison générale de l'aménagement du site 2018 vs. 2021 / *General Mine Site Arrangement Comparison 2018 vs. 2021*

Sources :
Orthoimage : Microsoft Bing (ESRI, 2017)
Gestim : MRNF Québec, 210315
Données du projet / Project data : Galaxy 2021

0 200 400 m
UTM, fuseau 18, NAD83

Juillet / *July* 2022

Dessin : A. Masson
Approbation : C. Martineau
201-12362-00_p3_RES_EIE_compar_220707.mxd

WSP

The water management infrastructure will consist of **two** basins on the site. The first, considered the main water retention basin, is located north (north water retention basin). The second is east of the east stockpile (east water retention basin). **A WTP will be built from the construction phase and will be ready to treat the effluent before it is discharged into the environment to ensure that no effluent standard is exceeded. Only one mining effluent is planned on the site, it will be discharges in the CE2 creek.**

An explosives magazine is located at a safe distance from the main infrastructure. Lastly, an access road to the site as well as a service road for towing and/or maintenance will be developed on the site. Table 1 shows the surface areas of the project components listed in this subsection. The total surface area **of project infrastructure** is **289.49** ha. Map 2 illustrates the mine site as it will be developed.

Table 1 Project infrastructure surface areas

Infrastructure	Area (ha)
Pit	**51.09**
Waste rock **and tailings** stockpile (including dikes and berms) - **West stockpile (29.0 ha)** - **North stockpile (54.4 ha)** - **Southwest stockpile (31.0 ha)** - **East stockpile (58.1 ha)**	**172.05**
Organic matter and unconsolidated deposits stockpiles (including berms)	**25.36**
Administrative and industrial area	**15.13**
Concrete plant (construction phase) / Dry storage area (operation phase)	**3.74**
WTP and pumping stations	**0.65**
Explosives magazines	**0.78**
Roads and ditche	**20.70**
Total	**289.49**

2.4.3 EXTRACTION

According to the current mining plan, **37** Mt of material will be extracted. As well, approximately 130 Mt of waste rock and 5.8 Mt of overburden will be excavated (Table 2). The waste rock will be mainly gneiss (84.9%) and banded gneiss (14.0%).

Table 2 Composition and quantity of waste rock and overburden

Category	Volume (m³)	Tonnage (t)
Total waste rock	**59,047,447**	**129,904,382**
Overburden	**2,900,716**	**5,801,431**
Total	**48,931,856**	**133,260,352**

Source: G Mining Services, 2021

Drills, excavators and surface mining trucks will be used to extract and transport the different material. A backhoe will be used to load the material into the trucks as it is better suited to the nature of the pegmatite dikes.

Mining for each bench will begin on the retaining wall side of the deposit and progress toward the economic material. Once the material is extracted, the remaining waste rock on the walls will be removed as needed when ramps and/or roads leading to the next bench are laid out. As detailed in section 2.3.7, the bench height will be 10 m. Where vibrations could be more significant, there will be two blasts per bench (5 m). The areas at risk for vibration are located on the surface, at the east end of the pit. They represent about 10% of the extraction. Thus, the other areas (90%) will have blast patterns of 10 m.

Extraction of the material will be sequenced and carried out by opening the pits in stages. This will allow for a smooth transition, in the early years, and for less stripping of waste rock, with a gradual increase later in the life of the mine. The material will be hauled by truck to the ROM pad. Overburden, organic matter and waste rock will be hauled by truck and placed in its own stockpile. The waste rock stockpile will start in the centre of the site and progress east until capacity is reached, at which point it will be developed westward.

2.4.4 ROCK TRANSPORTATION

Ore and waste rock will be transported on several haul roads shown on Map 2. The haul roads will be **25 m** wide and will rest on a foundation **acceptable for heavy machinery to support the proposed 100 t haul trucks**. Trucks will exit the pit **from one of three ramps: JB1, JB2 or JB3**.

The ore will be transported **to the crusher located 960 m from JB1 and JB2 and 1200 m from JB3. The ore will be placed in the crusher and sorted, and then sent to the crushed ore pile (in a dome) located in the processing plant area.**

The waste rock will be **transported to one of the waste rock stockpiles. The waste rock will be unloaded according to a predetermined disposal plan and a bulldozer will flatten the incoming material.**

Since the haul road crosses creek CE3, a **culvert** will have to be installed. It will comply with the standards set out in the *Règlement sur l'aménagement durable des forêts du domaine de l'État.*

2.4.5 PROCESSING

The material will be will be sent to a dense medium separation (DMS) process. The concentrator is designed to process 2 Mt per year and produce a nominal spodumene concentrate **varying from 317,107 to 378,036 t per year** (41 t/h). The simplified process diagram is shown in Figure 1.

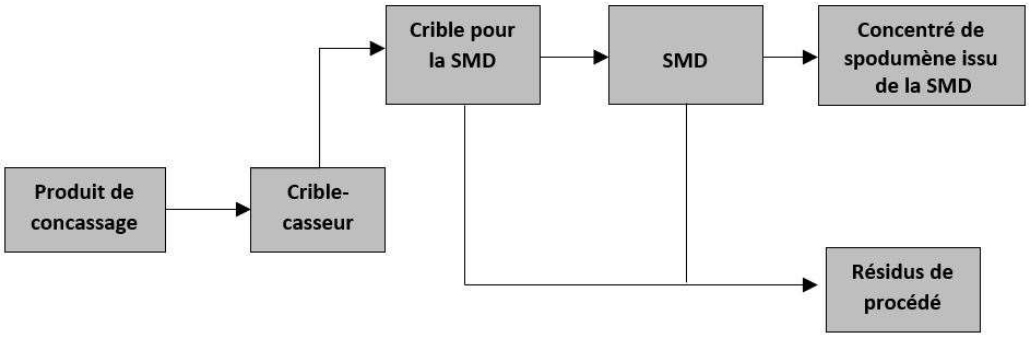


Figure 1 Simplified process diagram

The material is transported from the pit to the ROM pad. The material is then sent to a three-stage circuit comprising a primary crusher, a secondary cone crusher and a closed tertiary cone crusher with a screen to produce the desired product size.

The preparatory steps for the DMS classify the material into distinct size fractions. **The ore is first passed through a primary crusher and then onto a primary sizing sieve. This primary classifier screen is a double deck, inclined, vibrating screen with an upper mesh size of 30 mm and a lower mesh size of 15 mm. Ore smaller than 15 mm is sent directly to the crushed ore reserve. The coarse ore from this screen is directed into a secondary crusher and then fed to a screen identical to the primary screen, with an upper mesh size of 20 mm and a lower mesh size of 15 mm. The undersized ore is then sent to the crushed ore reserve. The oversized ore from the secondary screen is passed through a tertiary crusher and returned to the secondary sizing screen. The ore is thus recycled in the crushing circuit until it is under 15 mm in grain size. The crushed ore is then transferred by a feed conveyor to the DMS area.**

The DMS receives all the flows (> 1 mm, <15 mm) from the sizing screen. After the initial preparation steps, the crushed economic material is mixed with ferrosilicon (FeSi) and pumped to the DMS cyclones. FeSi pulp acts as a densification agent, used in gravity separation to separate spodumene from lower density minerals. Spodumene usually has a higher density than gangue minerals and therefore sinks while the gangue floats.

The DMS cyclone underflow is dehydrated and pumped to the magnetic drum to recover the FeSi and remove the water. The removed water is reused in the DMS process. The result is spodumene concentrate that can be prepared for shipping.

The DMS cyclone overflow heads to a wet magnetic separator where the ferromagnetic material is separated using a ferromagnetic extraction matrix. After this separation, the product is dried and the FeSi recovered. This product is the tailings. The tailings are sent to the transfer conveyor for processing and thickening.

They are placed on the tailings transfer conveyor from the DMS flows, screens and the tailings thickening tank. A tailings conveyor transfers the material to the tailings hopper. Mining haul trucks carry the tailings to the waste rock stockpiles.

The dried spodumene concentrate is moved on the conveyor to the dome, where it is loaded into trucks for shipment to Matagami. It will then be loaded on trains and sent to another factory for further processing.

2.4.6 GEOCHEMICAL CHARACTERIZATION

Samples of the varying lithology of waste rock, tailings and overburden were analyzed for available metal content, tested for leaching (TCLP, SPLP and CTEU-9), and where relevant, tested to determine their acid generating potential (MABA) **as well as kinetic column tests between 2018 and 2020**.

The results of these studies show that the ore, waste rock and tailings that will be extracted from the James Bay lithium mine are considered leachable in the short term, but not leachable in the long term. These materials are also all non-potentially acid generating (NPAG).

2.4.7 ACCUMULATION AREAS

The following accumulation areas are planned:

- **one (1) organic matter and unconsolidated deposits stockpile;**
- **four (4) waste rock and tailings stockpile;**
- **one (1) ore stockpile.**

The following sections detail the various accumulation areas.

OVERBURDEN

Overburden is composed of a mixed granular deposit with a small fraction of cohesive soil. Because of the heterogeneous properties of the unconsolidated deposits, it was recommended to incorporate a protection layer on the slope surface of the stockpile. This layer will be made of selected granular material, will be a more homogeneous material, and will have better frictional property to ensure the slope stability. This protection layer will be compacted to provide the required shear resistance.

Organic material was found in most of the borehole locations and consists of fibrous peat. This material is known to be saturated with water. Therefore, it is important to consider water management in the stockpile design to allow for easy drainage of this water. To this end, a perimeter stone dike (0-1,000 mm) will be built around the stockpile. In addition, access roads, spaced approximately 100 m apart, will be constructed to optimize bulldozer grading. The roads will be used by the trucks to travel safely on the stockpile while unloading the organic matter.

WASTE ROCK AND TAILINGS

The combined waste rock and filtered tailings will be placed at four different stockpiles named "West", "Northeast", "Southwest" and "East" (according to their layout on the project site). Also, some of the waste rock will be placed in the northwestern part of the pit when it is mined-out. The location of the waste rock stockpiles was determined to minimize hauling distances from the pit. All stockpiles will be a minimum of 60 m from the high water mark of streams and lakes, with the exception of the east waste rock stockpile which crosses a segment of an intermittent stream draining Kapisikama Lake. It was already planned that this lake would be drained during the pit operations.

The waste rock and the tailings were designed taking into consideration the site properties, the design criteria of D019 (MELCC, 2012), as well as the Guidelines for preparing mine closure plans in Quebec (MERN, 2017). The design assumes that the foundation soils have a sufficiently low permeability to meet the maximum infiltration rates allowed by D019. The soils at the proposed sites are described as a non-cohesive granular sand and silt deposit. Infiltration rates measured under the waste rock stockpiles are significantly less than 3.3 L/m^2/day.

According to the mining plan, the diameter of the waste rock blocks will be 900 mm at maximum, with an average of 200 mm. The waste rock and tailings will be placed on a solid foundation. The topsoil and peat will be cleared around the perimeter. These materials will either be stored in the organic matter and unconsolidated deposits stockpile or temporarily stored nearby for use as material in the progressive restoration of the stockpile.

The properties of the four waste rock and tailings stockpiles are presented in Table 3.

Table 3 Summary of WRTSFs

WRTSFs	Ultimate Footprint Area (ha)	Ultimate Crest Elevation (m)	Maximum Final Height (m)	Slope
West	**29.0**	**260**	**53**	**2.5**
Northeast	**54.4**	**290**	**83**	**2.5**
Southwest (JB1)	**31.0**	**270**	**62**	**2.5**
East	**58.1**	**280**	**68**	**2.5**

ECONOMIC MATERIAL

The material mined from the pit (ROM) will be trucked and stocked on the ore stockpile. The stockpile is designed to allow access to trucks and their circulation as well as the temporary deposit of the blasted ore. This stockpile has a minimum capacity of 20,000 tonnes (in bulk). The ridge of the stockpile was set at an elevation of 215 m, which represents approximately 8 m above existing ground.

Given the expected stockpile volume, an area of 120 m by 140 m is planned on top of the stockpile. A peripheral berm is needed at the summit of the stockpile. It will be 1.5 m, the height of the largest equipment wheel travelling on its surface. Crushed stone (0-600 mm) will be used to build the stockpile to the required altitude. A layer of crushed stone of smaller size (maximum 80 mm) will be laid for the road surface.

The preparatory work requires excavation and leveling of the site to ensure a usable soil surface that is not subject to flooding or erosion. **In order to prevent erosion of the exterior slopes, a layer of vegetation cover 200 mm thick will be deposited. The ROM pad area also includes an impermeable layer.**

The crushed stone and spodumene concentrate will be stored in domes in the administrative and industrial area (Map 3).

2.4.8 WATER MANAGEMENT

Water management involves setting up various facilities to allow the water to be transferred to the retention basin, treated and evacuated at the **only discharge point, at creek CE2** (north of the waste rock stockpile).

The Directive 019 and the MDMER will apply to the effluent discharge point, the C2 creek. Effluent in creek CE2 will include the construction of a weir or channel to measure flow (e.g. Parshall channel), with pH, temperature and water outflow monitoring instruments, as well as incorporate energy dissipation measures to reduce water velocity and minimize sediment disturbance. In addition, **the sanitary effluent will be discharged, after treatment, into the CE3 creek.**

WATER RETENTION BASINS AND DIKES

The proposed surface water management strategy for the site has been developed in conjunction with the design of the tailings, waste rock and overburden accumulation areas. All runoff from precipitation that falls on areas affected by mining is considered "contact water". The surface water management strategy aims to limit the mixing of natural runoff with contact water Contact water will be collected and stored before treatment (if required) and discharged to the environment.

Two water retention basins will be developed on the mine site: the north water basin (main basin) and the east water basin.

The project's surface water management strategy includes the following:

- **Diverting natural runoff around areas affected by mining to limit mixing of natural runoff with contact water.**
- **Limiting the mixing of natural runoff with contact water (i.e., reducing the volume of contact water requiring management).**
- **Limiting the risk of contact water discharge to the environment.**
- **Collecting all runoff and seepage water from tailings, waste rock and overburden accumulation areas. Contact water from these areas will be collected in collection ditches and directed to the water retention basins or the open pit. Water collected in the east water retention basin and the open pit will be pumped to the north water retention basin, which is the main water management pond for the site.**
- **Prioritize reuse (i.e., recovery) of contact water.**
- **Have a single final effluent point (creek CE2).**

WATER TREATMENT PLANT

A water treatment plant (WTP) will be built during the construction phase to treat water from the north water retention basin before it is released into the environment. A WTP construction permit application will be prepared in due course before the construction of this treatment unit.

WATER BALANCE

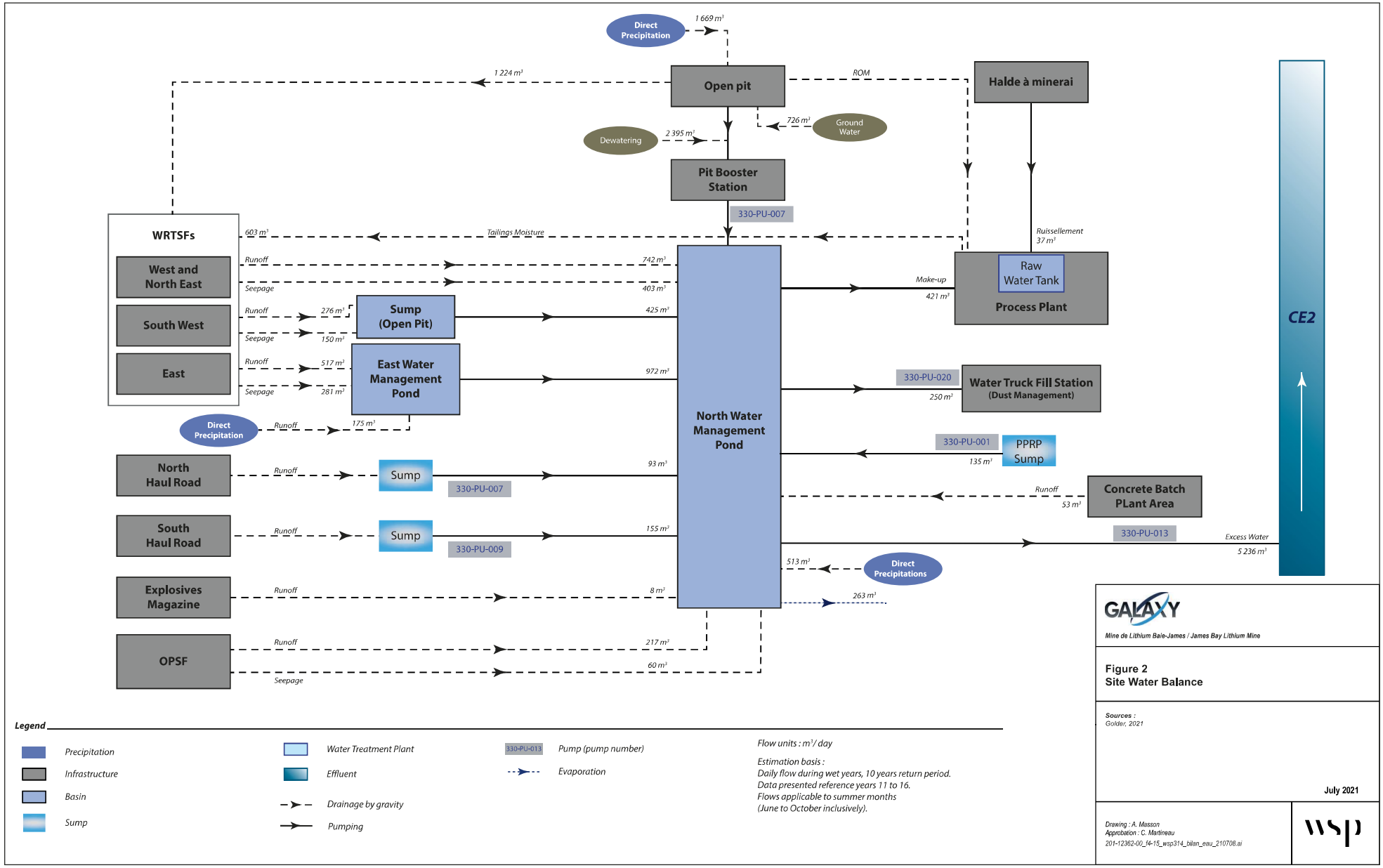
The water balance of the site is presented in Figure 2. Water management meets the design criteria of Directive 019 for all project years.

2.4.9 OTHER INFRASTRUCTURE

In addition to water extraction, treatment and management infrastructure, the project will require various additional facilities. Buildings will be required for administration, laboratory, medical services, warehouses and various workshops. Most of the buildings (service and process buildings) will be constructed using insulated and freestanding buildings. The warehouses will be erected on the site using light steel sections and metal cladding.

The access road to the site **will be 12 m wide, 50 m** long and will be built with crushed, compacted stone. The topsoil will be removed. For safety reasons, the Billy-Diamond Highway will be expanded with the addition of turning lanes to enter and exit the site.

The site will present only one service road **leading to the north water retention basin and to the explosives warehouse**. **From the edge of the road surface, 8 m on either side of the road surface has been added to consider the width at the base of the backfill.** A ditch system will divert clean water into the environment and direct the contact water to the north water retention basin.



Legend

- Precipitation
- Infrastructure
- Basin
- Sump
- Water Treatment Plant
- Effluent
- Drainage by gravity
- Pumping
- 330-PU-013 Pump (pump number)
- Evaporation

Flow units : m³/ day

Estimation basis :
Daily flow during wet years, 10 years return period.
Data presented reference years 11 to 16.
Flows applicable to summer months (June to October inclusively).

GALAXY

Mine de Lithium Baie-James / James Bay Lithium Mine

Figure 2
Site Water Balance

Sources :
Golder, 2021

July 2021

Drawing : A. Masson
Approbation : C. Martineau
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wsp

The worker' camp will be able to accommodate up to **216** workers during the construction **and operation phases**. The camp will have dormitories, a kitchen, a cafeteria, common rooms, laundry service, a gym, emergency generators, a drinking water treatment system and refrigerated warehouses in sea containers. Modular-type buildings will be installed on stilts and interconnected by corridors. The worker camp will be heated with boilers at various locations and fuelled with propane. **Various options are currently being discussed with suppliers to minimize the energy demand and environmental footprint of these buildings.**

The mining services area will consist of the mine shop, administration, , mechanical warehouse, light vehicle parking, and a warehouse for diesel storage and filling. Overhead cranes will be installed in some work areas to lift heavy loads. All water collected during washing activities will be directed to a water-oil separator before leaving the water management system. This system will be maintained and emptied regularly with a vacuum truck.

The fuel storage area located in the mine services area will consist of two diesel tanks, a diesel exhaust fluid tank, a tank filling area and a heavy vehicle service station. It should be noted that compared to the 2018 project, there is no longer a gasoline and diesel tank to supply light vehicles because they will be electric. The fuel storage and distribution facilities will comply with provisions under the Building Code and be managed in compliance with the Safety Code.

The explosives magazine has been designed in accordance with all applicable provincial and federal legislation, as well as industry best practices. The location of the explosives magazine was chosen to respect the minimum safe distances. Galaxy will comply with Québec and Canadian regulations and will request and obtain all permits and authorizations required for storage and use of the type of explosives planned.

In addition, a high voltage substation, emergency generators and an optical fibre cable will be installed.

2.4.10 EMISSIONS, DISCHARGES AND WASTE MANAGEMENT

AIR EMISSIONS

Air emissions at the mine site will consist of gases associated with blasting, dust, exhaust gas for fixed and mobile installations, and ventilation. In the administrative and industrial area, air emissions will be dust, exhaust gas and ventilation. Noise-emitting activities are associated with drilling, blasting and transportation.

A dust management plan for handling waste rock and tailings will be prepared. Water will be used as a control method. Various criteria were considered in the design of the spray system, for example, the size of the dust particles and the size of the spray drops. Water requirements will vary with the project phases and will be 500 m^3 per day during the mine's operation.

The quantity of GHG emissions by all direct activities during the construction, operation and rehabilitation phases is **615,200** tCO_2eq. During the project period, annual average emissions will be 32,379 tCO_2eq. During the operation period, annual average emissions will be **32,273** tCO_2eq. Indirect project emissions have been estimated at **12,137 tCO2eq annually.**

DOMESTIC WASTEWATER TREATMENT

The worker' camp will be served by a domestic wastewater treatment system with a planned capacity of **216** people during the construction and **operation phases**. **The treated water requirements are estimated at 56 m^3 per day and 30 m^3 per day, respectively for the construction and operation phases.** A **system for the removal of MES, BOD and nitrogen, combined with phosphorus removal and disinfection if necessary is planned (Ecoprocess or equivalent).** The discharge of treated wastewater will occur either directly into the receiving watercourse, **the CE3 creek**.

WASTE MATERIALS

As a rule, Galaxy will try to minimize the production of waste. However, any waste produced will have to be managed on site. To this end, a waste storage facility will be built **and a composter will be installed on the mine site**. The warehouse will be divided into areas where different types of waste will be stored separately. The facility is large enough to allow a forklift to enter through a garage door to load the waste into trucks. Waste materials will be transported to a third-party managed facility. This party will be required to have the necessary permits and agreements with the authorized landfill/recycling sites.

HAZARDOUS MATERIALS

Hazardous materials will be stored in the waste materials facility. On-site management and temporary storage of hazardous materials will include:

- **Household hazardous waste**: The waste is stored in a specific well-ventilated area until transportation to a transfer centre or ecocentre.
- **Hazardous waste containers:** The management of these materials is regulated; they must be properly stored to prevent any accidental spill into the environment. Hazardous waste will be stored in appropriate double-floor containers (marine container). Certain types of hazardous materials must be stored to avoid chemical reactions or to minimize risks (explosion, fire, toxic gas, etc.) by following the instructions of the Workplace Hazardous Materials Information System (WHMIS),.

2.4.11 SHIPMENT OF SPODUMENE CONCENTRATE TO MATAGAMI

Approximately **10 to 12 trucks** per day will be required to ship the mine's daily production of concentrate. Shipments will take place mainly during the day. The spodumene concentrate will be shipped to the transhipment yard in Matagami, where it will be placed on trains (Map 1). The transhipment yard will be managed by a third party. The concentrate will be shipped from Matagami to an undetermined location in southern Québec, either a processing plant or a port for international export.

2.5 REHABILITATION PHASE

Once activities end, Galaxy will conduct a site characterization study in accordance with Schedule III of the *Land Protection and Rehabilitation Regulation* (CQLR, Q-2, r .37). Areas likely to have been contaminated by oil, hydrocarbons and metals will be given priority. In all areas where petroleum storage tanks and transfer sites were present during construction and mining operations, the ROM pad and all the petroleum product transfer sites will be sampled and analyzed for contamination.

Site rehabilitation will include the dismantling and demolition of all buildings and surface infrastructure, as well as electrical and support infrastructure. The foundations will be levelled. Concrete slabs will be washed, punctured or crushed to ensure proper water drainage and covered with topsoil to ensure vegetation growth. **Water retention basins** will be drained and their sludge removed and sent **at an authorized disposal** site. **Eventually, the water management ponds will be reinstated as a wetland.** Management of the dismantling materials will be carried out in accordance with the *Regulation respecting the landfilling and incineration of residual materials* (CQLR, c. Q-2, r.19), and the *Gestion des matériaux de démantèlement - Guide de bonnes pratique* (Courtois and coll., 2003).

All equipment and heavy machinery will be sold or emptied of any liquid, dismantled into parts and sent to an authorized recycling facility. All oil tanks and related pipelines will be emptied, cleaned and sold or disposed of in accordance with applicable regulations. There will be no residual hazardous material on the site once mining activities have stopped.

The waste rock and tailings storage facilities will be remodelled to ensure long-term physical stability and integration into the landscape. The slopes will be reduced to 2.5H : 1V and covered with overburden and topsoil to improve vegetation recovery. Roads built to access remote areas for restoration work will be vegetated. If steep slopes of granular material are exposed, the gradient will be reduced to allow revegetation.

There will be no more economic material left on the ROM pad after mining activities cease. The surface will be reprofiled to prevent the formation of water pools and then revegetated.

Tailings and waste rock will be deposited in the southeast portion of the pit once the mineral resources of interest have beenextracted. The remainder of the pit will fill naturally with precipitation and groundwater to an equilibrium level with the water table. An overflow and ditches will be constructed to prevent overflow around the pit that could damage the environment. The flow will be channelled to the CE3 creek. The pit will be surrounded by a 2 m high berm, with a ditch built at its foot. Preliminary results from the groundwater flow model showed that the pit would take 120 to **180** years to fill.

The industrial and administrative area, the WTP area, the waste rock stockpiles and **unconsolidated deposit and organic matter stockpiles** and the roads (surfaces and shoulders) will also be revegetated to control erosion and rehabilitated to a natural state. Before revegetation, the surfaces will be scarified. They will then be seeded with native herbaceous plant seeds and measures to promote plant growth will be implemented. The remaining content in the unconsolidated deposit and organic matter stockpile will also be seeded with native herbaceous plants. Revegetation will allow the area to reach a satisfactory state, meaning that once in place, the plants should be robust, offer long-term viability and not require further measures to ensure their sustainability.

Lastly, during the rehabilitation activities, a breach of the dike of the main water retention basin will be made, the crossing structures in creek CE3 will be removed and the surface water flows will be returned to pre-project conditions. The WTP will be dismantled at the end of the post-restoration monitoring program.

2.6 PROJECT EXECUTION

Figure 3 shows a schedule that covers activities ranging from submission of the EIA to post-restoration monitoring. Galaxy plans to begin construction at the mine **in 2022** for commissioning in **2023**. According to the latest forecast, the mine will be in operation **for 18,5** years.

Most of the mine workers will work 10-hour shifts. They will be on site for 14 consecutive days followed by 14 days of rest. Schedule adjustments may be possible for Crees that do not require air travel. Management positions **as well as the Eastmain community members could have** a four-day work period followed by three days off or a typical five-day work schedule (Monday to Friday) and two days off.

During the construction phase, an average of 210 workers, **to reach the maximum of 280 workers,** will be employed for the **15** months required to set up the infrastructure. Initial activities will involve civil engineering works such as the opening of the site and construction of the first roads. Once the roads and the worker camp are in place, activities in the industrial and administrative area will be able to start. At that time, the various building structures will be assembled. After a few months of work on the structure, the mechanical and electrical work will begin (around the sixth month). The bulk of the work involves civil works, which will be continuous throughout the construction.

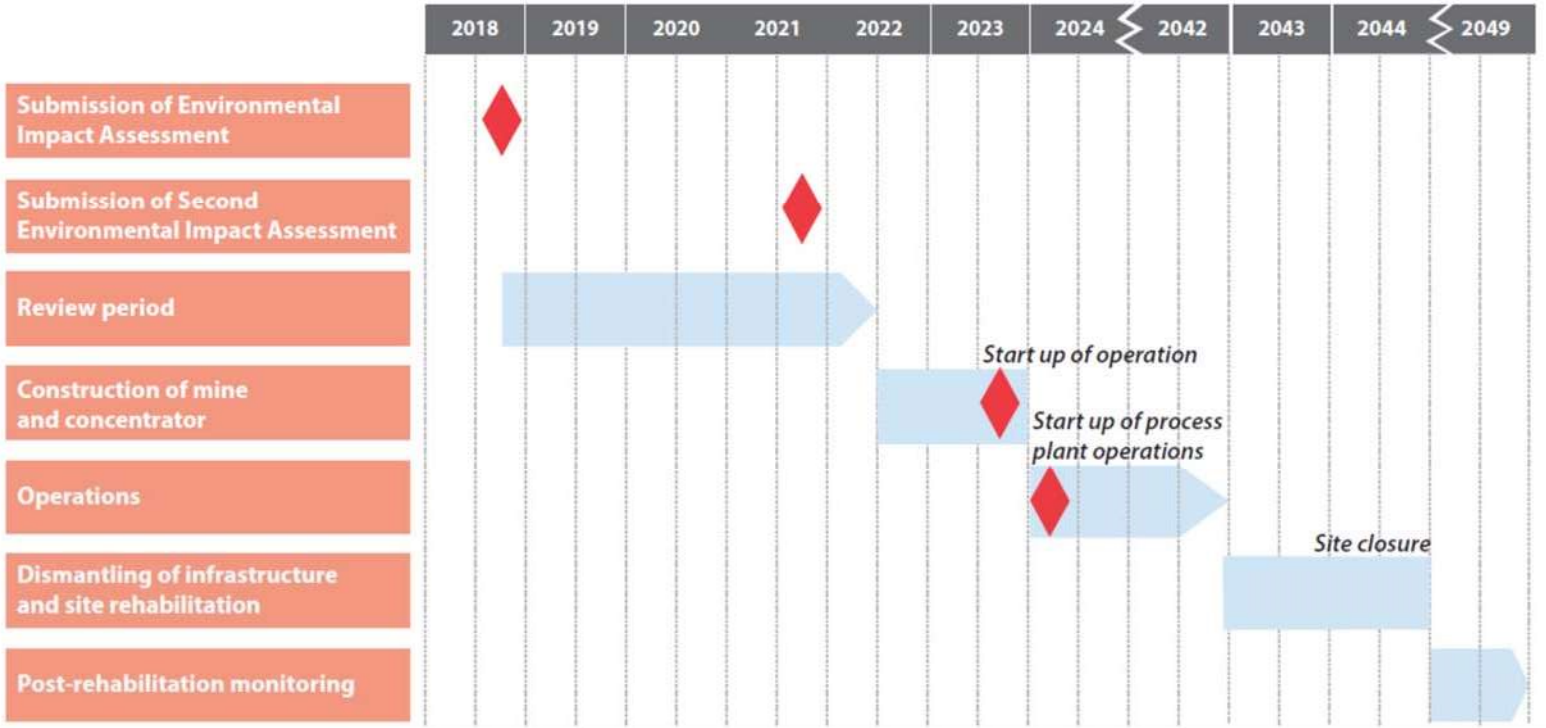


Figure 3 Schedule

3 OPTIMIZATION OPPORTUNITIES CONSIDERED IN THE PROJECT

3.1 AIR TRANSPORT

As currently defined, the project will use the Eastmain airport to transport workers from southern Québec. Located 130 km west of the worker camp, this airport is not equipped to receive so many travellers throughout the year. Work will be required, including installing de-icing equipment and a source of fuel supply, to improve the flow of departures and landings.

Another option considered is to use the Opinaca airport, 55 km east of the project site. This airport has been closed since 2013 and its facilities have been dismantled but since the runway is still usable, materials could be delivered by a Hercules-type carrier.

A study **was carried out** to evaluate the two air transport solutions. **It was decided to go ahead with the necessary work at Eastmain airport, namely the addition of equipment and the installation of a fuel tank. The Opinaca airport solution was ruled out because all the infrastructure would have to be built, in addition to asking for occupancy, construction and use rights because the land is on a on trapline owned by the Eastmain Community.**

3.2 USE OF LNG TRUCKS TO TRANSPORT CONCENTRATE TO MATAGAMI

As mentioned earlier, reducing GHG emissions is an inherent priority issue for Galaxy, a producer of lithium, the preferred source for electric vehicle batteries. At the present time, several electric vehicles with the capacity required for the project activities are not available. Although LNG is a source of fossil energy, it emits 30% less GHG than diesel. **Discussions were held between GLCI and Energir (Quebec's LNG supplier) in 2018, regarding the possibility of using LNG to fuel haul trucks (also valid for trucks transporting the concentrate to Matagami). Considering the full cycle, including the transportation of LNG (and losses during transportation and storage), the anticipated reduction in GHG emissions is minimal and the capital costs of the project would increase. Based on this evaluation, LNG-fuelled trucks are not as beneficial a choice as it might seem at first sight.**

3.3 USE OF A CONVEYOR SYSTEM TO TRANSPORT EXTRACTED ROCK ON THE MINE SITE

To reduce GHG and dust emissions, the option of installing a conveyor to transport extracted ore and waste rock the concentrator and waste rock stockpile was considered in 2018. With the project optimization, this option is no longer appropriate given the new stockpile locations, which are now closer to the pit.

3.4 OPTIMIZATION OF THE WASTE ROCK STOCKPILE

To reduce construction and operating costs, technical solutions other than those presented **in the 2018 impact assessment project description were studied. Based on this study, the positioning was optimized by moving the stockpiles closer to the pit to reduce transport distances and by limiting encroachment on less suitable areas such as wetlands.**

3.5 USE OF THE KM 381 TRUCK STOP

Given the long work hours and difficult living conditions of workers on remote sites, it was decided to set up a camp on the project site. This permanent camp will be able to house **216** workers.

The opportunity of housing additional workers at the truck stop is also being considered.

The main problem with using the truck stop is that it is a public facility and alcohol is permitted whereas the worker' camp on the project site will be dry. Galaxy is looking at how to manage the different conditions for employees at the truck stop and at the site.

4 PUBLIC CONSULTATION

To adequately explain the project and to engage local communities and stakehoders, Galaxy established a jamesian stakeholder consultation and engagement process. This initiative made it possible to gather the concerns, views and expectations of local communities concerned by the James Bay Lithium Mine project.

4.1 CONSULTATION PROCEDURE

To reach the largest number of people in the jamesian community, Galaxy met with stakeholders from various spheres: municipal administration, economic development, land use and planning, and natural resources. These meetings identified the concerns and expectations of James Bay stakeholders regarding the project and mining development in the territory. The stakeholders expressed their support for mining development in their region, but all underscored the importance of establishing conditions to ensure and maximize socioeconomic spin-offs for the region.

4.2 COMMUNICATION TOOLS

As part of the consultation process held by Galaxy, several communication methods and tools were put in place and used to inform, consult and ensure proper follow-up of commitments made to the jamesian communities and stakeholders:

A register of stakeholders and consultation activities has been established, so that Galaxy can track and follow up on communications, concerns, past activities, and future actions with the organizations or communities concerned.

One-on-one interviews were also scheduled with James Bay's socioeconomic stakeholders. These meetings, either by telephone or in presence of the person concerned, were conducted in the manner of a structured interview aimed at surveying their knowledge of the project, obtaining information on their organization, learning the known effects of other mining projects on the Eeyou-Istchee James Bay (EIJB) territory, taking into account the potential positive and negative impacts from the proposed mining development, determining whether any cumulative impacts need to be considered, and collecting all of the mitigation measures, expectations or concerns recommended by the stakeholders.

Reports were drafted following each of the meetings, interviews, presentations or other consultation activities to report on the themes covered and on the discussions between Galaxy and the stakeholders. Reports of the one-on-one interviews and focus groups were sent for approval to the stakeholders and users concerned.

4.3 CONSULTATION ACTIVITIES

A series of consultations were carried out for the periods 2012 and 2017-2018. Regarding the 2018-2021 period, **no meeting with the jamesian stakeholders has been held since the submission of the first version of the EIA in October 2018. However, meetings are planned during the next year to present the modifications related to the optimization of the project.** The objectives are to meet with the regional organizations concerned to present the project to them and receive the concerns, expectations and recommendations of these stakeholders as well as information useful to the development of the EIA.

4.4 CONCERNS, EXPECTATIONS AND RECOMMENDATIONS REGARDING THE PROJECT

Stakeholders' concerns, expectations and recommendations regarding the James Bay Lithium Mine project were recorded throughout the consultation process. A summary of the concerns is shown in Table 4.

Table 4 Main concerns of the James Bay community

Themes	Main concerns
Processing of the concentrate	• Environmental impact of the processing. • Whether any thought was given to use of EIJB land as the site of a processing plant.
Environment	• Impact of disturbances on the environment and risk of drinking water contamination during construction and operation. • The mining project's effects on land integrity. • Compliance with the new regulation to protect peatland.
Sustainable development	• The mine's intention to participate in the region's development
Land use	• Impact of commuting on the James Bay community (fewer economic spin-offs, loss of job opportunities, loss of residents in the Nord-du-Québec region, etc.). • The site of the mine's administrative and operating hub. • Logistics of worker transportation.
Jobs and labour	• Employee retention problems in the administrative region of Nord-du-Québec. • Giving due consideration to Cree workers. • The mining project's impact on small business owners or service providers.
Training	• Determining whether the mine plans to use the region's vocational training centres/establishments.
Economic spin-offs	• Concerns regarding the lack of economic spin-offs for the region. • The need to obtain year-round air service.
SDBJ facilities	• Effects on SDBJ infrastructure and services. • Risk of contamination to the drinking water supply at the km 381 truck stop.
Billy-Diamond Highway	• Impact of the mining project and the associated increase in traffic on the road's integrity. • Concerns regarding the weight-bearing capacity of the James Bay road.
Leadership	• Fear that Galaxy will not use its mining expertise to assume a leadership role and set the tone for other junior companies that will develop projects in the region.

4.5 GALAXY'S RESPONSE TO THE CONCERNS, EXPECTATIONS AND RECOMMENDATIONS ABOUT THE PROJECT

Galaxy has already responded to several concerns, expectations and recommendations voiced by James Bay and Cree stakeholders. Galaxy's response is detailed in the EIA.

The main steps taken regarding the James Bay communities involve the SDBJ and the Km 381 truck stop. Galaxy agreed to erect a fence around the remote landfill of the SDBJ as well as along the northern side of the road to get there, so that the site will not be impacted by mining activities. The relocation of the tailings stockpile, mentioned previously, is also a positive means of limiting the impact on the Km 381 truck stop. On another note, agreements for worker housing and shared emergency medical services are presently being discussed. These potential collaborative efforts constitute actions that would help increase economic spin-offs and better meet the SDBJ's expectations.

Galaxy also responded to the Administration régionale de la Baie-James (ARBJ)'s suggestion to consult the Table jamésienne de concertation minière as part of the EIA.

5 CONSULTATION OF INDIGENOUS PEOPLES

To adequately explain the project and to engage local communities and stakehoders, Galaxy established a cree stakeholder consultation and engagement process, particularly those of the Cree community of Eastmain. This initiative made it possible to gather the concerns, views and expectations of local Cree communities concerned by the project.

5.1 CONSULTATION PROCEDURE

To reach the greatest number of persons from the Cree community, Galaxy conducted interviews in Eastmain with stakeholders from various sectors relating to the economy, the socio-cultural world, health, hunting, fishing, trapping, the environment, and from focus groups.

These meetings identified the concerns and expectations of the Cree regarding the project and mining development in the territory. The stakeholders expressed their support for mining development in their region, but all underscored the importance of establishing conditions to ensure and maximize socioeconomic spin-offs for the region.

5.2 COMMUNICATION TOOLS

As part of the consultation process held by Galaxy, several communication methods and tools were put in place and used to inform, consult and ensure proper follow-up of engagements with communities and stakeholders concerned.

A stakeholder register and consultation activities have been established, so that Galaxy can track and follow up on communications, concerns, past activities, and future actions with those organizations or communities.

To inform and consult the Eastmain Cree community, two public presentations were offered to its population. The objective of the event was to present the James Bay Lithium Mine project to the public and to initiate a frank and respectful dialogue with the Eastmain Cree community. The main aim of the second event, an Open Day, was to present the results of the environmental impact assessment to community members. Both activities featured a PowerPoint presentation and posters presenting the salient features of the project or key aspects of the EIA.

Individual interviews, either by telephone or face-to-face, were also planned with socio-economic stakeholders from the Eastmain community. In addition, certain members of the Eastmain community were asked to participate in focus group discussions, the groups being formed on the basis of the age or gender of participants.

Group interviews with the trapline tallymen and their families were organized during consultations for the EIA. Maps of the traplines were provided to participants so that they could mark their activities and camps, drinking water supplies, transportation links and enhancement and preservation sectors. A group interview was also conducted during the consultation of the Cree Board of Health and Social Services of James Bay (CBHSSJB), and of the Cree School Board (CSB). All stakeholders from these two bodies were invited to the meeting. This approach made it possible to canvass the views of each area of intervention within these organizations.

The purpose of all these meetings was to address participants' knowledge of the James Bay Lithium Mine project; the known effects of other mining projects on the EIJB territory; participants' views on the proposed project; its potential positive and negative impacts; its potential cumulative impacts; mitigation measures to consider; and any other expectations, concerns or queries members of the community wished to voice.

Reports were drafted following each of the meetings, interviews, presentations or other consultation activities to record the themes covered and the discussions between Galaxy and stakeholders. Reports of the one-on-one interviews and focus groups were sent for approval to the stakeholders concerned.

5.3 CONSULTATION ACTIVITIES

Suspended in 2012 for economic reasons, Galaxy's James Bay Lithium Mine project was relaunched in 2017. Many meetings were organized with the Eastmain Cree community to inform and consult stakeholders concerned by this mining development. The meetings were primarily aimed at socioeconomic stakeholders, RE2, VC33 and VC35 tallymen2, the users of the territory of these traplines, and members of the Eastmain community, including Cree Women of Eeyou Itschee Association. **Since the submission of the first version of the EIA in October 2018, consultations with the Cree communities have continued. Meetings were held with the various stakeholders during 2019. However, the context associated with the 2020 health crisis limited consultation activities. These activities nevertheless continued through various videoconferencing platforms in 2020 and 2021.**

5.4 CONCERNS, EXPECTATIONS AND RECOMMENDATIONS REGARDING THE PROJECT

Stakeholders' concerns, expectations and recommendations regarding the James Bay Lithium Mine project were recorded throughout the consultation process (Table 5).

5.5 GALAXY'S RESPONSE TO THE CONCERNS, EXPECTATIONS AND RECOMMENDATIONS ABOUT THE PROJECT

Galaxy has already responded to several concerns, expectations and recommendations voiced by Cree stakeholders.

Many steps have been taken to address some of the issues raised by the Eastmain Cree population following regional consultations. Table 6 presents the initiatives implemented thus far regarding Cree stakeholders.

5.6 ONGOING CONSULTATION INITIATIVE AND STAKEHOLDER COMMITMENT

Galaxy has agreed to develop sustainable relationships with stakeholders, so as to maximize the social and economic benefits of the project while minimizing its environmental impacts. The mining company also undertook to share information on the project, specifically by holding "open days", organizing sessions with stakeholders, posting updates on the Web site for the community and maintaining direct links with employees. With these commitments, Galaxy aims to offer timely and relevant responses to all the comments and concerns voiced with regard to the James Bay Lithium Mine project.

[2] It was determined during the exchanges held in 2011–2012 with the RE1 trapline tallyman that they did not feel concerned about the Galaxy project.

Table 5 Cree community's main concerns

Themes	Main concerns
Environment	• The impact of disturbances (dust, noise, vibration, odours, etc.) on fauna and flora and on the water and air quality. • The risks of contamination of the territory's resources. • Effect of cumulative impacts of hydroelectric and mining developments on the Eastmain territory.
Employment	• Prioritization of Cree workers. • Impacts of the mining project on the workforce of the community and its services.
Training	• Fear that the Cree workforce is not sufficiently qualified to obtain jobs on the mining site.
Work and culture	• Presence of obstacles that could hinder Cree workers, such as the French language requirement, racism, sexual harassment, and Galaxy's expectations regarding professionalism and ethical standards.
Communication	• Lack of knowledge of mining operations and problems. • Fear of not being well informed or of not having a proper understanding of the issues related to the proposed mine project.
Business and partnerships	• Implementation of a business model that will contribute to enriching the community while respecting its culture and values. • Possibility of forming partnerships between the mining company and the Eastmain community.
Economy	• Concerns about the boom–bust phenomenon and its effects.
Traditional activities	• The mining project's impact on hunting, fishing and gathering activities. • Impact on the quality of resources produced by traditional activities. • Work schedule constraints on workers' traditional activities.
Traffic, transportation and roads	• Increased road traffic. • Accelerated degradation of road infrastructures. • Impact on the environment in the event of a spill. • Surveillance of transportation of chemicals.
Km 381 truck stop	• Impact of the mining project on the infrastructures of the Km 381 truck stop and on the quality of artesian well water. • Possibility of relocating the Km 381 truck stop.
Worker' camp	• Handling of cultural problems. • Management of problems related to alcohol and drug consumption.
Exportation of lithium in Nord-du-Québec	• Impact of all mining projects involving the exploitation of lithium on the Eastmain territory.
Benefits	• Fear of not receiving the promised benefits or that no part of Galaxy's profits will be reinvested in the community.
Health and social problems	• Risk of an increase in emergencies, in problems related to alcoholism and substance abuse. • Increase of cases of cancer due to the presence of contaminants in the environment. • Problems related to increased revenue. • The effect of Cree workers' working schedules on families and on community values. • Possible rise in the number of children placed in foster or other care and of seniors left unsupported because their loved ones are absent. • Possibility that the mining company might exert pressure on local health services and social services by using them.
Environmental monitoring and tracking	• Ensure adequate environmental monitoring and tracking.
Site rehabilitation	• Presence of contaminants following the mine site rehabilitation phase. • Residual footprint of mine site.

Table 6 Steps taken to address the Eastmain Cree population's concerns

Concerns	Steps taken by Galaxy
Lack of stakeholder knowledge of the various aspects of mining operations. Difficulty taking a stance vis-à-vis the project.	• Galaxy invited stakeholders from the Eastmain Cree community members and the local tallyman to an organized visit of the Stornoway diamond mine. The visit had to be cancelled on two occasions, due to cancellations by the Cree participants. • An introductory course on the subject of lithium and mining operations was offered in Eastmain on July 11, 12 and 13, 2018 (18 participants).
Waste rock stockpile located near a watercourse used by the family of the trapline RE2 (CE5) tallyman, **regarding the 2018 version of the project**.	• **Following the modifications to the project design in 2021, waste rock will now be stored in four smaller stockpiles instead of a large one. The quantity of waste rock will remain the same as planned in the 2018 project. The four stockpiles will be located East of Asini Kaschipet Lake and south of CE2 Creek. They are positioned to have no impact on CE5 Creek.**
Presence of Galaxy consultants or workers in trapline RE2 without the tallyman's permission.	• Galaxy agreed to give, and has given, the trapline RE2 tallyman advance notice of activities planned on the land.
Training support for Cree workers.	• The mining company agreed to work in conjunction with the Cree School Board and Eastmain HRDC to develop community training designed to prepare the Cree workforce for future job opportunities at the mine.
Impact on the quality of life of Cree workers and their families (problems due to being far from their community).	• Work schedules for Cree employees will be tailored to their particular reality and, for some positions, one option would be 7 work days followed by 7 days off.
Impact on traditional activities.	• The noise level of certain activities, such as upkeep of the industrial facility, will be diminished during the geese hunting season, so as to limit impacts on hunting activities. • **Lower truck speed during hunting season and raise the workers awareness.** • Cree workers will also receive days off during the geese hunting season. • **Royalties to Cree Nation Government, that could be redistributed to relocate camps if necessary.**
Exacerbation of alcohol and gambling problems among workers.	• The worker camp will be alcohol-free ("dry") during the construction and operations phases. • Video poker machines, regardless of type, will be strictly forbidden at the mining site.
Issue regarding prostitution of girls and women related to the presence of working camp	• **GLCI plans to work with the Cree Women of Eeyou Itschee Association to develop ways to protect Cree girls and women on the workers' camp.** • **A Cree woman will be hired in the mine's Human Resources office to facilitate interaction with the women.** • **During the operation phase of the mine, workers will be picked up at the airport, controlled at the camp and allowed to leave only with permission. There will be no personal vehicles on site during this period.**

The relationship and exchanges between Galaxy and stakeholders will be maintained throughout the life of the project. As required under An Act to amend the Mining Act (section 101.0.3), Galaxy will establish **several committees, including monitoring committee** to foster the participation of the communities involved in the project's execution. This committee will be created prior to the mine's construction and will remain active throughout its life, until the works provided for in the mining site rehabilitation and restoration plan are fully completed.

The committee's membership will be determined as per the regulations established under the Act, and it will comprise at least one representative from the Eastmain Band Council, **the Waswanipi Band Council and the Waskaganish Band Council or a deisgned member from their communities** one from the business community, one from the City of Eastmain and one from the Eeyou-Istchee James Bay Regional Government (EIJBRG). Furthermore, **GLCI would also like to include the tallymen from RE1, RE2, RE3, VC33, VC35 and R08 or one of their family members to the monitoring committee.**

6 DESCRIPTION OF THE RECEIVING ENVIRONMENT AND ASSESSMENT OF ENVIRONMENTAL IMPACTS

6.1 BASELINE CONDITIONS

The local study area essentially comprises the mine operating site, **including the footprint of all infrastructure planned under the project, as well as the** right-of-way inside which some components may be affected by the project. **These** components **are, more specifically, those related to** the physical and biological environments such as soils, water, sediments and flora, to name but a few. The local study area lies on either side of the **Billy-Diamond Highway**, at Km 381, at the site of the Km 381 truck stop, well known to visitors who travel by this road to James Bay and is located at 52° N. The local study area covers 36.9 km^2: 6.7 km from east to west and 5.5 km from north to south. Map 4 shows the study areas of the various components of the environment under study.

6.1.1 PHYSICAL ENVIRONMENT

6.1.1.1 GEOLOGY

Lying at the core of the Canadian Shield, the study area is situated in the northeast part of the geological Superior province and is part of the volcano-plutonic La Grande subprovince (MRNF, 2004). This area contains a volcano-sedimentary assembly assigned to the Eastmain group.

The study area is part of the Eastmain greenstone belt, and more specifically lies in the Lower Eastmain group. This is dominated by metavolcanic rock (mafic to felsic grade amphibolites associated with the Komo Formation), metasedimentary rock and minor gabbroic intrusives (Broad Oak, 2009 in SRK Consulting, 2010).

The Auclair Formation dominates the study area's surface geology (Broad Oak, 2009 in SRK Consulting, 2010). A large part of the area is occupied by a paragneiss with metamorphic minerals (probably of sedimentary origin). There are outcrops of amphibolitized basalt and amphibolite belonging to the Komo Formation on either side of the **Billy-Diamond** Highway. Immediately to the south of the basalts are spodumene-bearing pegmatite dikes. More specifically, these are composed of solid-phase mineralized lithium in the form of spodumene, of igneous origin. They are associated with the lithium-cesium-tantalum family and the albite-spodumene type (SRK Consulting, 2010). Lithium is present in spodumene in green-and-white striated prismatic crystals and in the form of mica containing lithium in flat pseudomorphic aggregates (Broad Oak, 2009 in SRK Consulting, 2010).

In the northeast part of the study area, a monogenic to polygenic and sandstone conglomerate belongs to the greenstone belt (Broad Oak, 2009 in SRK Consulting, 2010). Also, a diabase dike crosses the central portion of the study area in a north-to-south axis. Lastly, felsic to intermediate tuff is found at the northern extremity of the study area.

6.1.1.2 STRUCTURE AND SEISMIC ACTIVITY

Eastern Canada is in a stable continental region of the North American plate and therefore has relatively low seismic activity. The Superior Province in which the study area is located has generally experienced tectonic stability for the past 2.6 Ga (Percival, 2007; RNCan, 2017a).

Seismic hazard represents the most violent ground motions likely to occur in a region, according to a given probability. Ground motions are defined by ground spectral acceleration values, used in designing foundations. In the study area, the National Building Code 2015 established the probability of an event at 0.000404 per year. This means that, for a 50-year recurrence interval, there is a 2% chance that an earthquake will cause greater than expected ground motion (RNCan, 2017b). The site is in an area of very low seismic hazard. In this respect, there is no issue related to discriminant geological aspects of the ground in the area under study.

6.1.1.3 PHYSICAL GEOGRAPHY

The study area is in the James subregion of the Canadian Shield (RNCan, 2006). It occupies the northern part of the Abitibi Lowlands natural province, almost at the intersection of the La Grande River low hills provinces and the Highlands of Mistassini. The relief of this natural province is a plain slightly inclined towards James Bay (MDDELCC, 2017).

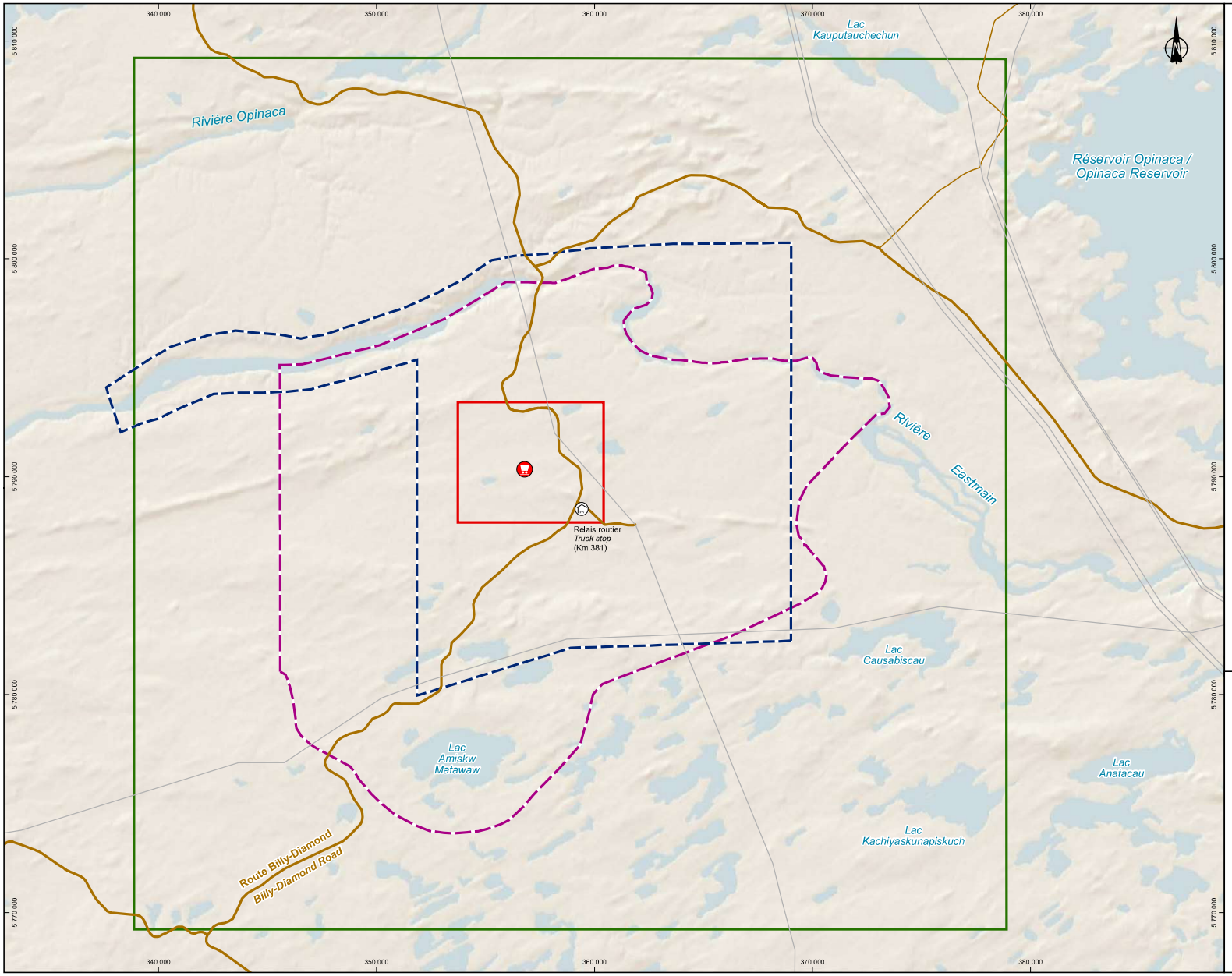
The topography of the Abitibi Lowlands and the James Bay is low and gentle and varies between 200 and 350 m of altitude. Rock outcrops are frequent and are often composed of spodumene hills or ridges, striated with dikes, that rise up to 30 m above the surrounding plain. They are separated by depressions varying from a few hundred metres to over 10 km. Inside the study area, the elevation varies by no more than a few dozen metres.

6.1.1.4 GEOMORPHOLOGY

The study area has undergone a complex sequence of quaternary episodes: glaciation, and marine and lacustral invasions. This pattern has left thick layers of fine deposits (clay, silt and fine sand) in depressions, occupied by peatland. The project site is close to organic deposits, rock outcrops and fluviatile deposits. Moreover, a large part of the surface is covered with peatland.

The territory was entirely covered by the Wisconsin glaciation during the last glacial episode. This ice cover led to glacial scouring of summits in the region, overdeepening of valleys, and the laying down of glacial deposits in valleys.

At the project site, the bedrock can be encountered starting at 1.8 m deep. The rock surface is in places covered with sandy units about 3 m thick, with particle size varying from fine to coarse. These units are interstratified with gravel beds. In other places, the base of some exploratory trenches reveal silt and clay beds. These sandy units are covered by a peat horizon varying between zero and 0.8 m in thickness. Also, some areas may be characterized by the presence of isolated permafrost islands, since the region is in a sporadic permafrost zone. These islands are essentially found in peatland. Given the small difference in elevation in the study area, there are no particular problems with regard to the stability of surface deposits.



Zone d'étude de la sauvagine / *Study area for waterfowl*

Zone d'étude locale / *Local study area*

Zone d'étude du milieu humain / *Social environment study area*

Zone d'étude du caribou / *Study area for caribou*

Infrastructures / *Infrastructure*

Projet mine de lithium Baie-James / *James Bay Lithium Mine Project*

Route principale / *Main road*

Route d'accès / *Access road*

Relais routier / *Truck stop*

GALAXY

Mine de lithium Baie-James / James Bay Lithium Mine

Résumé de l'étude d'impact sur l'environnement /

Summary of the Environmental Impact Assessment

Zones d'étude / *Study Areas*

Sources :

World Shaded Relief, ESRI. 2018

Données du projet / Project data : Galaxy, 2018

No Ref : 201-12362-00_c4_RES_EIE_ZE_projet_220707.mxd

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UTM 18, NAD83

Carte / *Map* 4

wsp

6.1.1.5 HYDROGEOLOGY

Five hydrostratigraphic units were identified when conducting **the investigation campaigns carried out in 2017, 2018, 2020 and 2021**, from the surface down:

- Peatland: Many peatlands developed on the poorly drained surface of highly compact marine deposits. They are vast and very numerous, so much so that they cover deposits over close to 72% of the territory. Some peatland also developed in depressions in rock and till. The abundance of these wetlands testifies to the poor drainage conditions of soils. The peat unit is characterized by organic deposits that can reach **4** m in thickness.
- Littoral sand: Some areas feature sandy deposits laid down during the retreat of the Tyrrell Sea. These littoral deposits covered the marine deposits. They were rarely identified during investigation work, except for one sector to the south of the pit.
- Clay: A layer of clayey deposits (marine deposits) is found on the lowest terrains, between the rocky ridges and till. The thickness of the clayey deposits can reach 10 m, judging from the drillings conducted. In the study area, this unit is entirely covered by the peatland unit.
- Till: In the region, glacial material coverage is somewhat discontinuous. These forms are elongated and oriented on a WSW–ENE axis that indicates the direction of regional ice flow. The till in the region is characterized by a very dense material having no apparent structure and by the sporadic presence of sand and gravel lenses. This till is mainly comprised of silty and gravelly sand with traces of clay. Drillings carried out suggest that it may be as great as 20 m in thickness.
- Rock: This unit is essentially formed of metasedimentary rock such as paragneiss and shale as well as mafic and intermediate rock such as basalt, andesites, volcanicastic rock and, locally, alkaline volcanic rock.

Soil samples were taken during drilling for the purpose of particle size analysis. The surface soils identified in the study area are mainly tilled and the clayey deposit. The till is mainly made up of silty sand (**79.6**%) with varying proportions of gravel (**18.2**%) **and traces of clay (2.1%)** . The clayey deposit is made up of silt (**58.6**%) and clay (**36.8**%) including traces of sands (**4.6**%).

PIEZOMETRIC LEVELS

The sector of the pit represents a piezometric head. Groundwater flow would occur radially from this piezometric head toward the surrounding watercourses. Water levels recorded prior to snowmelt in February 2018 are between 0.03 m and 0.84 m lower than those recorded at the beginning of May 2018, for an average variation of 0.36 m. Surveys carried out at different times of the year (February, **March**, May, **July and August**) show seasonal variations in water levels.

In the future pit sector, the water depth levels of the bedrock aquifer range from 0.40 to 4.98 m, and the piezometric elevation ranges from 213.03 to 224.89 m. A variation of -0.03 to 0.84 m is observed between August 2017 and May 2018 and a variation of -0.67 to 0.13 m between February 2018 and May 2018 in the wells of this sector.

In the area to the south of the pit, the water depth levels of the bedrock aquifer range from -0.25 to 1.16 m, while the piezometric elevation ranges from 205.6 to 212.98 m. A variation of 0.19 to 0.73 m was observed between February and May 2018 in the wells of this sector.

Lastly, in the future **plant, east waste rock stockpile and nearby basin sector**, the water depth levels of the bedrock aquifer range from **1.1** to **4.65** m, while the piezometric elevation ranges from **209.15** to **211.74** m. **The water depth levels of the surface aquifer were measured in July 2020 at 2.74 m, for a piezometric elevation of 213.31 m. The plant sector is located on a topographic high, which explains the higher water depth levels and higher piezometric level (BH20-P-06 and BH20-P-07).**

In the area of the future southwest stockpile, located near pit JB-1, the water depth level measured was measured in March 2021 at 1.26 m, for a piezometric elevation of 209.99 m. This value is similar to the levels measured in the pit sector.

In the future west stockpile and basin sector (located to the north of creek CE3), the water depth levels of the bedrock aquifer range from -0.04 to 1.34 m, and the piezometric elevation ranges from 201.01 to 207.23 m. The water depth levels of the surface aquifer range from -0.04 to 0.99 m and the piezometric elevation varies from 199.64 to 211.93 m. A variation of 0.02 m was observed between February and May 2018 in the WSP-MW8R well.

Finally, in the future north waste rock stockpile sector (located to the north of the plant and CE3 creek), the water depth levels of the bedrock aquifer range from -0.03 to 0.86 m, whereas the piezometric elevation ranges from 205.11 to 209.31 m. The water depth levels of the surface aquifer range from -0.11 to 1.92 m and the piezometric elevation varies from 204.62 to 209.50 m. A variation of 0.26 to 0.58 m was observed between February and May 2018 in the wells of this sector.

The horizontal gradient in the study area ranges from 0.03 to 0.001.

AQUIFER CLASSIFICATION

Based on the information collected as part of the investigations for this study, the rock corresponds with a class II aquifer (MDDEFP, 2012), meaning the aquifer is a potential source of drinking water. The extent of the glaciofluvial deposits (till unit) naturally has good potential as an aquifer. Therefore, it is considered to be a class II aquifer.

The till in the study area is mainly comprised of silty and gravelly sand with traces of clay. It is moderately permeable and has low aquifer potential. The rock is a fractured aquifer, with low potential. The rock aquifer is most vulnerable where the rock is flush, in fracture zones or where the granular deposits are thin. Metamorphic rock does not have strong filtering properties. Overall, the rock aquifer must be considered to be vulnerable, but with a weak potential.

The DRASTIC[3] system for measuring the vulnerability of groundwater reflects the level of contamination risk based on hydrogeological properties. Based on the hydrogeological properties of the site, a groundwater vulnerability index of 137 was assessed for surface deposits and of 105 for the upper portion of the rock, which equates to a medium[4] level of vulnerability based on the levels described in the Water Withdrawal and Protection Regulation (WWPR, section 53).

6.1.1.6 HYDROGRAPHY

The study area is located inside the Eastmain River drainage basin. It has an area of approximately 46,000 km² and drains water from several lakes and rivers. In the study area, creeks CE1, CE2 and CE6 flow to the west, toward the Miskimatao River, and then join the Eastmain River. Creeks CE3, CE4 and CE5 flow to the east and also join the Eastmain River. The watersheds of the watercourses in the study area are generally undeveloped, very small and negligibly sloped and include many wetlands that cause a significant reduction in watercourse flow. The hydrographic system in the local study area represents approximately 0.1% of the Eastmain River's watershed.

The annual specific flow of watercourses in the study area is estimated to be 18.7 L/s/km². The specific flood flow varies between 0.3 and 1.7 L/s/ha for the two-year return period.

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3 Aquifer vulnerability index: D=Depth to water; R=Recharge, A=Aquifer media, S=Soil media, T=Topography (slope), I=Impact of the vadose zone media, C=Hydraulic conductivity

4 Vulnerability ratings: "Low": a rating equal to or less than 100 for the entire protection zone; "Medium": a rating less than 180 for the entire protection zone, except if a "low" rating has been assigned; "High": a rating equal to or greater than 180 in any part of the protection zone. (WWPR, section 53).

6.1.1.7 SURFACE WATER QUALITY

The pH and dissolved oxygen concentration of surface water at the study site are lower than the water quality recommendations/criteria. Flooding vegetation and forest soils consumes dissolved oxygen and releases minerals and nutritious elements, including carbon dioxide (CO2), which contributes to the acidification of water. This acidification also slows down the decomposition of organic material.

Based on the surface water analysis, it was possible to determine that the number of suspended solids is low, the amount of dissolved organic carbon is high, and the amount of all nutrients is low. With respect to the parameters analyzed in the laboratory, only one sample did not follow the CALC criteria for nitrites. Since the sampling of nitrogenous elements is sensitive to external contamination, contamination cannot be excluded as an explanation of this excess.

Levels of aluminum, arsenic and iron exceeded the MDDELCC's CPC(EO) (MDDEFP, 2013) criterion at many stations. This is the most restrictive criterion. In addition, levels of aluminum and iron do not respect CCME recommendations in most samples. Concentrations of beryllium and lead were higher than the MDDELCC's CALC criterion in many samples. The amounts measured, in spite of criteria exceeded, are within the acceptance regions for natural conditions.

6.1.1.8 GROUNDWATER QUALITY

The pH values measured in groundwater samples ranged from 4.38 to 8.98. Electrical conductivity levels are generally low and range from 4 µS/cm to 543 µS/cm, indicating that the water in the study area is low in minerals. Conductivity tends to be lower in groundwater coming from unconsolidated deposits, and higher in water from rock wells. Temperatures measured varied between zero and 10 °C.

Of the samples analyzed during the sampling campaigns, four metals exceeded the RSW criteria (Beaulieu, 2016): silver, copper, manganese and zinc. All these metals, including barium, exceeded the alert threshold. If we compare the results with drinking water criteria, aluminum, arsenic and manganese would exceed the criteria or recommendations. For arsenic, all samples exceed criteria, except for three samples taken from unconsolidated deposits.

Ammonia nitrogen, cyanides, fluorides, nitrates, nitrites and total sulphides were analyzed in all samples. All samples have a concentration below RSW criteria or the laboratory's detection limit.

From the statistical analysis results, natural background levels were evaluated. The calculated values offer an initial concentration that represents the natural environment before development.

Parameters for which natural background levels were assessed are aluminum, arsenic, barium, copper, iron, lithium, manganese, **nickel, lead** and zinc. Copper, barium, manganese and zinc exceed the RES or threshold alert and more than 50% of the samples are above the laboratory's limit of detection. **Arsenic, nickel and lead did not exceed RSW or threshold alert criteria, but the background level gave a representative picture of the study site. Aluminium, iron and lithium did not have any RSW or threshold alert criteria, but the results provided an estimate of the natural levels. For silver, the concentrations show that natural levels could exceed the criteria (RES or threshold alert). However, the number of analyses with concentrations below detection limits was too great to perform a statistical analysis.**

6.1.1.9 SEDIMENT QUALITY

Among all the granulometric analyses conducted, it is the sand portion that generally dominates samples. On average, samples are composed of approximately **58**% sand, **26**% silt and clay and **16**% gravel.

The mean value of samples analyzed, for total oils and grease is **1 949.3** mg/kg, but the standard deviation is fairly large (**2,626** mg/kg). Regarding petroleum hydrocarbons, the mean value is **151.44** mg/kg and the standard deviation reached is **200.37** mg/kg.

The total oil and grease concentrations of Lake Asiyan Akwakwatipusich was 937 mg/kg and below detection limits for petroleum hydrocarbons. No sign of past contamination is visible. However, the oils and grease could likely come from the road located upstream from this lake.

The mean value measured for total organic carbon (TOC) is **16.67** mg/kg. With regard to Lake Asiyan Akwakwatipusich, the TOC concentration was 2.9 **%**.

Seven metals and non-metals exceeded Canadian sediment quality recommendations (CCME, 2014) and/or freshwater sediment quality assessment criteria (EC and MDDEP, 2007): arsenic, cadmium, total chromium, copper, mercury, lead **and zinc**.

6.1.1.10 AIR QUALITY

According to the National Pollutant Release Inventory (Gouvernement du Canada, 2018), the closest industrial activities are over 100 km from the project site. Due to the location of the project, air quality in the sector is considered to be very good.

6.1.1.11 AMBIENT SOUND

The project site is located near two main sources of noise: the **Billy-Diamond** Highway and the km 381 truck stop. Residual noise at the project site varies between 38 and 48 dBA during the day and between 32 and 48 dBA at night. Recorded levels at the truck stop were 48 dBA during the day and 47 dBA at night. The **Billy-Diamond** Highway represents the greatest source of noise in the study area with average sound levels between 56 and 61 dBA during the day, and maximum values of between 83 dBA and 86 dBA.

6.1.1.12 NOCTURNAL LUMINOSITY

In the study area, the only stationary artificial lighting at night comes from the km 381 truck stop on **Billy-Diamond** Highway. Little light is emitted by the truck stop and the effect it has on the night sky fades quickly as you drive away from it. The project site is located within this zone of influence in light of its proximity to the truck stop.

6.1.2 BIOLOGICAL ENVIRONMENT

6.1.2.1 VEGETATION

Regionally speaking, the study area is situated at the northeastern boundary of the Abitibi and James Bay Lowlands natural province, a zone characterized by large even plateaus dotted with hills and featuring vast fens and bogs often beginning at the shores of James Bay and extending 100 km inland (DUC, 2016).

The mapping of recent fires (1970 to now) in the study area (**MFFP, 2020**) shows forest fires caused by lightning in 2005, 2009 and 2013. The 2009 burn did not cover the entire study area, having mostly impacted the western section. The 2005 and 2013 fires, however, wreaked havoc on large sections of the study area, among them the zone near the truck stop at km 381 and the project sector.

Land environments account for **668.11** ha—or a mere **18.2**%—of the study area. In general, the land groups are mostly found along and east of the **Billy-Diamond** Highway. The presence of rocky outcrops and the many recent forest fires have resulted in the lack of a tree stratum in several land groups. The main plant groups in the land environments are scrubland (6.6%), burns (4.4%), black spruce stand with lichen (3.1%) and black spruce stand with moss (**1.4**%). Green alder, woodlands, dry barrens, jack pine stand and land footprint account for 1.6% of land groups. The study area also includes human environments (over 43.52 ha or 1.2% of the surface area), among them the km 381 truck stop facilities, the **Billy-Diamond** Highway, the off-road trails and the access roads for drilling activities, as well as a remote landfill.

Wetlands prevail in the study area, covering 2**,890.95** ha (**78.6**% of the total surface area being studied). Following the field inventories, the wetland plant groups of the study area were classified into four types, namely open peatlands (**36.1**%), shrub peatlands (**20.3**%), wooded peatlands (**21.8**%) and the wetland zones in the right-of-way for Hydro-Québec transmission lines (0.4%). Some larger ponds were also found inside the peatlands (0.2%). Hydrous environments, which include lakes and watercourses (drainage bed and adjacent wetlands comprising the littoral), cover **73.57** ha or **2.0**% of the study area.

PLANT SPECIES WITH A SPECIAL STATUS AND INVASIVE ALIEN PLANT SPECIES

The CDPNQ registers include no mention of threatened or vulnerable plant species within a 20-km radius of the centre of the study area. **No plant species with a current special status (April 2021) were identified during the 2017 and 2020 surveys.**

No invasive alien plant species was observed in the study area during the inventories.

PLANT SPECIES OF TRADITIONAL INTEREST FOR ABORIGINAL PEOPLE

Overall, 27 of the plants present in the field are used by the Cree. Five of them are tree species, sixteen of them shrub species, five herbaceous species and one nonvascular muscinal species. **This list also includes mushrooms that grow after a fire.** The species with medicinal uses observed in the field are common to both the study area and this part of the Québec territory.

6.1.2.2 TERRESTRIAL FAUNA

LARGE FAUNA

Three species of large mammals are likely to frequent the study area of the natural environment: caribou (*Rangifer tarandus caribou*), moose (*Alces americana*) and black bears (*Ursus americanus*). **The grey wolf (*Canis lupus*), sometimes considered to be a fur-bearing animal, is also likely to use the study area.**

Caribou, and woodland caribou especially, are a sensitive component of the natural environment. This species benefits from dual protection, at both the federal and provincial levels. Areas providing the highest probability of occurrences are generally residual forest islands formed after forest fires. The habitat available within a 10-km range of the centre of the projected mine is very fragmented. On this matter, Environment Canada specifies that to ensure self-sustainability for the local populations, the latter must have access to continuous tracts of undisturbed habitat with the biophysical characteristics needed to meet their needs during their life cycle (EC, 2012). Therefore, due to its high disturbance rate, the study area offers poor habitat conditions for woodland caribou.

The low density of the moose in Québec's boreal forest is mainly due to an unproductive habitat. It is during winter that low food availability and quality are the most critical. The moose's typical winter habitat is almost always made up of mixed stands, where the arrangement of the coniferous and deciduous trees provides it with cover in proximity to feeding areas. The moose density in hunting zone 22, which the study area is a part of, is among the lowest in Québec. It was estimated at 0.26 moose/10 km2 in 1991 and at 0.31 moose/10 km2 in 1997. Applying a 3% growth rate from 1991 to 2012, the moose population is estimated at 0.5 moose/10 km2, or 9,872 individuals (Morin, 2015). In hunting zone 22, an average of **120** moose per year were hunted from **2016** to **2020** (MFFP, **2021**). Among these, based on slaughtering data provided by the MFFP, an average of 15 moose per year were sampled in the moose study area (Map 4).

In hunting zone 22, the black bear population density was estimated at 0.2 bears/10 km² in 2003. This density represents a population of approximately 5,600 bears (Lamontagne and al., 2006). In the study area, the availability of food used by the black bear is likely determined by the occurrence of wetlands and disturbed habitats. The latter are key for the production of berries on which the bear relies to build up its fat reserves (Samson, 1996). Disturbed habitats are primarily represented by habitats undergoing regeneration following two fires. Moreover, Cree users reported that bears visit the remote landfill in search of food, making this a good hunting area for this species. In short, the overall study area represents a potential suitable habitat for the black bear.

Although the grey wolf (*Canis lupus*) is more often linked to fur-bearing animals than to large mammals, it nevertheless represents one of the main predators of the moose and caribou. During the field inventories performed, namely, the March 2018 aerial moose and caribou survey, no signs of wolf activity were observed in the study area. However, the tallyman mentioned a wolf pack sighting in August 2018 near the km 381 truck stop.

SMALL WILDLIFE

Twenty (20) small terrestrial wildlife species are potentially present in the study area. Among these species, two have a special status:

- the least weasel (*Mustela nivalis*), which is on the list of species likely to be designated as threatened or vulnerable in Québec (MFFP, 2006a);
- the wolverine (*Gulo gulo*), designated as threatened in Québec (MFFP, 2006b) and endangered in Canada (Gouvernement du Canada, 2017).

The least weasel is North America's smallest carnivore. It is found in the Nord-du-Québec region, but likely in very localized areas. Its presence was namely reported in the Eastmain area (FAPAQ, 2003). A single specimen, captured near Eastmain, proved to be a least weasel (CRRNTBJ, 2010) from 2009 to 2011. No weasel is reported in the 2015–2016 trapping data for *l'unité de gestion des animaux à fourrure* (UGAF) 92, which Eastmain and the study area are part of (MFFP, 2016).

The wolverine is the largest terrestrial member of the mustelidae family (EC, 2016). In 2006, a systematic survey over 100,000 km2 in the Abitibi and James Bay Lowlands natural province identified two potential wolverine track networks some dozen kilometres from La Sarre and Matagami (EC, 2016; Fortin, 2006). **Consequently, in the absence of sufficiently abundant and diverse prey, the real potential for wolverines to be present in the study area is not considered to be significant.**

SMALL MAMMALS

During a 2011 survey, 117 specimens, belonging to eight different species, were sampled. Three of these species are insectivores: the cinereous (*Sorex cinereus*), smoky (*Sorex fumeus*) and pygmy (*Sorex hoyi*) shrews. The five other species belong to the family of rodents: the Gapper's red-backed (*Clethrionomys gapperi*), meadow (*Microtus pennsylvanicus*) and rock (*Microtus chrotorrhinus*) voles, the eastern heather vole (Phenacomys ungava) and the deer mouse (*Peromyscus maniculatus*). Among these species, only one is on the list of species likely to be designated as threatened or vulnerable in Québec, that is, the rock vole (MFFP, 2006a). Only nine specimens belonging to two species were sampled during a 2017 survey: the cinereous shrew, an insectivore, and the deer mouse, belonging to the rodent family.

Since mature forest environments virtually disappeared from the study area (WSP, 2019a) after repeated fires, the accumulation of wood debris on the soil and the presence of certain plant species that grow after fires will not meet the habitat needs of this species over the short- or medium-term and rock voles are unlikely to still be present.

6.1.2.3 ICHTYOFAUNA

There are seven fish species in all of the lakes and watercourses in the study area. The white sucker is the most abundant species and is found in three lakes and watercourses inventoried in the study area (Lake Asiyan Akwakwatipusich, CE3 and CE5). The yellow perch was caught only in Lake Kapisikama; no other species was caught in this lake. The yellow perch were small, a sign of the poor quality of the habitat.

Northern pike were caught in Lake Asiyan Akwakwatipusich and in the CE5 stream. The large flood plains dominated by herbaceous vegetation along the CE5 creek on either side of **Billy-Diamond** Highway could be used during the spring floods for northern pike spawning.

Brook trout were caught in streams **CE1,** CE2, CE3, CE4 and CE5. The brook trout was found in creek CE2 even though the habitat available is not suitable for salmonids (prevalence of fine particles, low current, low concentration of dissolved oxygen and low pH). No adequate spawning area for brook trout was observed in this watercourse.

The brook stickleback was the only species caught in Lake Asini Kasachipet **and has been sighted in creek CE1**. Trout perch was only caught in creek CE5, where lake chub accounted for more than 60% of the catch.

Benthos samples collected at depths not exceeding 0.5 m had a substrate dominated by sand with, for a few samples, a large proportion of silt and clay. In total, 48 species or taxons were identified. The benthic community was least abundant, rich and diverse in September and richest in October. Lastly, the tolerance of the identified organisms to pollution was generally high and remained fairly constant during the three campaigns.

In addition, a complementary inventory aimed at verifying mercury levels in fish flesh was carried out in 2019. Although, all fish have some level of mercury, no sample exceeded the comparison criterion.

6.1.2.4 HERPETOFAUNA

Only a few anuran specimens, representing two species, were observed or heard during the inventories. The species were the American toad (*Anaxyrus americanus*), the wood frog (*Lithobates sylvaticus*) and the mink frog (*Lithobates septentrionalis*). These species are common and widespread in Québec.

No reptile species was detected during the inventories, however, one exuvia of a garter snake was found on the **Billy-Diamond** Highway, in a culvert Despite searches in suitable habitats and during periods favourable for detecting urodeles (salamanders and newts), no specimens of this group were observed. As well, no turtles or signs of turtle eggs were detected during field trips in the study area.

6.1.2.5 AVIFAUNA

An aerial survey revealed 47 specimens of eight species of waterfowl and aquatic birds. In addition, an osprey (*Pandion haliaetus*) flying over the Eastmain River was observed. No notable area of concentration was observed since the few specimens noted were relatively dispersed in the study area. The most abundant species was the Canada goose (*Branta canadensis*) with 19 individuals counted.

In addition to the waterfowl and aquatic bird specimens counted in the aerial survey, an additional 33 individuals representing six species were noted during ground survey activities. The most abundant waterfowl and aquatic bird species observed on the ground were Wilson's snipe (*Gallinago delicata*), the common loon (*Gavia immer*) and the solitary sandpiper (*Tringa solitaria*).

Thirty-two (32) terrestrial breeding species were counted in the study area. The category with the largest number of species was the wetland habitat with 23 species detected, followed by the open and softwood stand habitats with 16 and 11 species, respectively. The densest category in breeding pairs was found in open habitats, followed by softwood stands and wetlands. The dark-eyed junco (*Junco hyemalis*) and the white-throated sparrow (*Zonotrichia albicollis*) were dominant species in the three areas.

The common nighthawk (*Chordeiles minor*), a designated bird species on the provincial and federal lists, was observed near the project site. Two other species are also inventoried: the rusty blackbird (*Euphagus carolinus*) and the bald eagle (*Haliaeetus leucocephalus*). The second frequents swamps, beaver ponds and peatlands, all of which are still well represented habitats in the study area and the surrounding areas. As for the bald eagle, suitable habitats for feeding and nesting are available in the study area, although the species was not detected during the inventories.

6.1.2.6 BATS

A dramatic increase in bat mortality linked to a disease called white-nose syndrome (WNS) (MFFP, 2017), has been observed since 2006–2007. The presence of WNS has been confirmed in the Nord-du-Québec region. In 2014, due to the spread of this disease, the little brown myotis and the northern myotis were classified as "endangered" in Canada and listed in Schedule 1 to the SARA (Gouvernement du Canada, 2014).

The acoustic monitoring conducted during the breeding and migration periods in 2017 confirmed the presence of the myotis bat, the big brown bat and the hoary bat. **The results of the bat survey did not raise any issues that would call for additional surveys.** The hoary bat, which is a migratory species, essentially roosts in trees, while *Myotis* bats use trees, buildings and rocky structures (Tremblay and Jutras, 2010). For its part, the big brown bat roosts instead in buildings or rocky structures (Tremblay and Jutras, 2010), but also in mature trees with cavities (woodpecker holes, crevices, etc.) (Willis and coll., 2006).

Bats choose swamps, bogs, beaver ponds, lakes and watercourses as hydration and foraging habitats. While most of these key elements are found near the project site, mature forests have almost completely disappeared due to forest fires in the last decade. In addition, since no natural cavity or mine opening was found in the sector there is no likelihood of bat hibernacula in or around the study area.

6.1.3 SOCIAL ENVIRONMENT

The study area is in the Nord-du-Québec administrative region, a region that includes cities, Northern villages, Cree villages and Indigenous land. The region's territories are subject to distinct administrative management procedures depending on whether they are located north of the 55th parallel. The study area is the EIJBRG territory, and more specifically on the territory of the Eastmain Cree community.

The two sites closest to the study area are the Cree villages of Eastmain and Nemaska, which are respectively 100 km and 82.5 km away. Each community is administered by a band council and the communities as a whole are governed by the Grand Council of the Crees (GCC). Each community has its own representatives from various regional governments and agencies, among them the Cree Nation Government (CNG), the Cree Trappers' Association, the Cree Nation Youth Council and the Cree Hunters and Trappers Income Security Board.

6.1.3.1 TERRITORY PLANNING AND DEVELOPMENT

Nearly all of the social environment study area considered for the purposes of this project is found on Category III lands, and a portion northwest of this area cuts into Category II lands. Responsibility for managing and developing resources on Category II and Category III lands in the study area is shared among three primary authorities: the CNG, the EIJBRG and the MERN.

Various development agencies are also involved in regional planning, among them the Administration Régionale Baie-James (ARBJ) and the SDBJ.

6.1.3.2 POPULATION AND ECONOMY

In 2016, the nine Cree communities comprising the EIJB were home to 17,141 residents, while the population of the James Bay community was 14,232 residents. The Cree community of Eastmain consisted of 866 people in 2016, which placed it in seventh position (from a demographic standpoint) among the Cree communities on the EIJB territory.

The population residing in the Cree communities is very young (Table 7). In 2016, close to a third of the Cree population was aged 14 and under. **In 2019, the average age of the Jamesian population was 41.1 years, which is similar to the situation in Quebec.**

According to the Institut de la statistique du Québec (ISQ), the population of Cree communities should continue to grow in the years to come. From **2016** to **2041**, the population should increase by **30,5**%, to reach **22,600** people. On the other hand, the jamesian population should see a demographic decrease of 6% for the same period, and reach a count of 13,412 people in 2036 (ISQ, 2014).

Table 7 Population statistics, 2016

	James Bay communities		Cree communities		Nord-du-Québec		Québec	
	Number	%	Number	%	Number	%	Number	%
Total population	14,232		17,141		44,560		8,164,360	
Breakdown of groups by age								
0–14	2,470	17.4	5,385	31.4	12,270	27.5	1,333,260	16,3
15–54	7,460	52.4	9,670	56.4	24,520	55.0	4,136,760	50.7
55–64	2,280	16.0	1,175	6.9	4,325	9.7	1,199,145	14.7
65 years and older	2,020	14.2	940	5.5	3,445	7.7	1,495,195	18.3

Source: Statistique Canada (2017)

In 2016, 49% of Cree and 73% of James Bay residents aged 15 and over held at least one secondary-education diploma, versus 80% in Quebec (Table 8). Furthermore, low participation in post-secondary studies is observed. Among other things, this translates into a 2016 university degree rate (all levels combined) that is lower in Cree communities (8.8%) and James Bay (12.1%) than in the population of Quebec (24.1%). According to the James Bay Cree School Board (JBCSB), in **2017-2018**, there were **511** students enrolled in post-secondary education.

The Centre the Formation Professionnel de la Baie-James (CFPBJ) offers an array of programs of study in several fields, including the mining sector. Programs offered are determined in collaboration with the Commission de la Construction du Québec and the Agence de santé régionale or Emploi-Québec to ensure they meet the labour needs of the region. Programs of interest to the mining industry offered by the CFPBJ are as follows: Diamond Drilling; Drilling and Blasting; Mineral Extraction; and Machine Operations, Mineral and Metal Processing (CFPBJ, **2021**). The CFPBJ also works with mining companies to ensure it is able to adapt the training programs to their realities and needs.

Table 8 Educational statistics, 2016

Highest level of education reached	James Bay communities		Cree communities		Québec
	Number	%	Number	%	%
No high-school diploma	3,025	27.0	6,015	51.3	19.9
High-school diploma or some post-secondary studies	1,995	17.8	1,340	11.4	21.5
Diploma or certificate from a trade school (vocational training)	3,015	26.9	1,810	15.4	16.9
Collegiate diploma or certificate or some university studies	1,805	16.1	1,535	13.1	17.6
University diploma, certificate or degree	1,360	12.1	1,030	8.8	24.1

Source: Statistique Canada (2017)

In **2013 and 2017**, per capita disposable income and median employment income of workers aged 25 to 64 were lower in Cree communities than in Jamesian communities (Table 9). On the other hand, the median after-tax income of Cree families with a couple was higher than that of the Jamesian families.

The Cree Hunters and Trappers Income Security Program is designed to encourage the Crees to continue their traditional hunting, fishing or trapping activities by providing income support to participants. For the **2017-2018** period, the ISP participation rate was **8**% in Eastmain compared to **13.4**% for all Cree communities. There were **68** people (**52** adults and **16** children for **39** family units) from Eastmain enrolled in **2017-2018**. It should be noted that ESP provided average revenues of almost $ 17,000 per provider unit (family) in 2016-17 (OSRCPC, 2010 and **2019**).

Table 9 Income statistics in 2013 and 2017

	Cree communities		James Bay communities		Nord-du-Québec		Québec	
	2013	2017	2013	2017	2013	2017	2013	2017
Per capita disposable income	**$22 374**	**$27 582**	**$28 536**	**$31 921**	**$23 452**	**$27 365**	**$25 968**	**$29 020**
Income of employees aged 25 to 64	**$37 710**	**$41 184**	**$46 302**	**$51 657**	**$37 533**	**$41 469**	**$37 793**	**$41 058**
Median family income	**$81 979**	**$88 620**	**$80 686**	**$86 540**	**$80 655**	**$87 380**	**$70 009**	**$75 210**

*Sources : ISQ (**2021d, 2020a, 2020b, 2019c**).*

From 2012 to **2020**, the participation rate for the Côte-Nord–Nord-du-Québec region increased from **60.8%** to **63.0%** while the employment rate gained **almost** two percentage points, ranging from 56.4% to 58.**1**%. Table 10 presents the main labor market statistics of the Cree and Jamesian communities compared to Quebec as a whole in 2016.

In the **last** half of **2017**, among the **51** occupations in demand in the Nord-du-Québec region, six were associated with the mining sector: underground production and development miners, mining and quarrying supervisors, work site and industrial mechanics, geology and mineralogy technicians, **mining** technicians (Emploi-Québec, 2017).

Table 10 Employment statistics, 2016

	Cree communities	James Bay communities	Québec
Participation rate	67.7%	66.7%	60.5%
Employment rate	57.8%	61.0%	56.7%
Unemployment rate	15.0%	9.0%	7.2%

Note: The participation rate is the employed population as a percentage of the total population aged 15 years and older. The employment rate indicates the number of employed people versus the population aged 15 years and older. The unemployment rate represents the number of unemployed in relation to the working population.

The structure of the Cree economy is mainly based on the tertiary sector, particularly band councils and school and health institutions. However, traditional hunting, fishing and trapping remains important to Cree communities. Economic activities in Eastmain are primarily related to these sectors: services, restaurants, transportation (including airport management), construction (three companies), trapping and to a lesser extent, trade as well as outfitter sectors (**GCC, 2021**).

The Wabannutao Eeyou Economic Development Corporation's mandate is to foster the development of businesses in the Eastmain community. The organization also manages a number of businesses, including hotels, restaurants, mobile phone service stores, amusement centers, construction companies, gas stations and mechanical shops.

The Jamesian economy is largely dependent on the energy, mining and forestry sectors. The experienced labor force related to the primary sector remains more numerous in proportion than in the rest of Quebec. Machinery rental represents a large part of the activities of Jamesian construction companies. The construction and transportation contracts come mainly from mining and forestry companies, but have mainly boomed during the hydroelectric projects of Eastmain-1 and Eastmain-1-A-Sarcelle-Rupert.

The territory of the EIBJ is currently coveted by several mining companies for exploration or exploitation. **These mine projects include Rose (Critical Elements Lithium Corporation) and Whabouchi (Nemaska Lithium), as well as the Eau Claire project (Eastmain Resources/Fury Gold Mines).** These projects are at different stages of development and are within 100 km (or more) of the Galaxy's proposed James Bay lithium mine project. Finally,, a program to repair the **Billy-Diamond** Highway has been underway since 2015, **the latter aiming to bring 50% of the asphalt pavement to satisfactory condition.**

6.1.3.3 QUALITY OF LIFE AND WELL-BEING

In its 2019-2020 annual report, the CBHSSJB presents the state of health of the Cree population where certain health elements are mentioned such as the high level of psychological distress, smoking, drug and alcohol consumption, diabetes, and cancers. **The high level of psychological distress is 38% in this population compared to 28% for the rest of Québec. Diabetes and its consequences are the most common chronic diseases, as well as those that are growing fastest in the region. Smoking rates are about twice as high as they are in Québec while the excessive consumption of drugs and alcohol is much higher than elsewhere in the province.**

Social issues that affect the Cree communities revolve primarily around alcohol abuse, theft and vandalism associated with young people, the use of illegal drugs, child neglect and domestic violence. The general data indicate alcohol consumption in Cree communities to be a relatively recent social problem. According to the CBHSSJB, young Cree are now more exposed to alcohol than previous generations were, since access routes (the road, airport, etc.) have contributed to the increased availability of alcoholic beverages (CBHSSBJ, 2005). Furthermore, compulsive gambling is a significant problem among Indigenous peoples. The effects of gambling are much more evident in the context of poverty in which many Indigenous people find themselves, and compound other serious social problems (INSPQ, 2010).

The Cree in the EIJB territory show a strong sense of belonging to their community. This sense of belonging is equally developed among younger and older people. The near absence of immigration seen in the EIJB territory may contribute to the strong general sense of belonging: population growth in the territory is the result of a combination of high fertility and rising life expectancy (INSPQ, 2006).

Social cohesion in Cree communities is higher than that seen in Québec overall. Despite the changes experienced in the Cree Nation in recent years, it remains very attached to traditional activities and to use of the Cree language, which may contribute to the social cohesion of the Cree nation. A very high proportion of Cree speak mainly Cree at home, although the majority can carry on a conversation in English and some also speak French (CBHSSBJ, 2008).

With the development of numerous major projects in the EIJB territory since the 1970s, the culture and identity of the James Bay Cree have been under significant pressure, characterized by several changes related to contemporary life. As development of projects in the EIJB territory is pursued, the GCC expects that Indigenous communities will be increasingly exposed to non-Indigenous people. Development of the territory must therefore go forward with respect for the traditions and culture of First Nations, meaning efforts to heighten awareness must be put in place so that non-Indigenous people are more enlightened and familiar (GCC, 2011).

The CBHSSJB, in partnership with the Ministère de la Santé et des Services sociaux du Québec (MSSS), manages and organizes health and social services in the nine communities of the Cree Territory of James Bay (MSSS Administrative Region 18) (CBHSSBJ, 20120). Some difficulties the organization currently faces in meeting the community's needs are associated with nurse recruitment, and the availability of only one ambulance.

6.1.3.4 USE OF TERRITORY

The traditional knowledge of the Cree population was considered in the consultations done at the start of the project in 2011-2012 and in 2017-2018 in order to document the use of the land and resources and establish a natural and cultural heritage baseline. In addition, two Cree joined the field teams as land users during surveys, so that the teams could benefit from their knowledge of things like accessible trails to reach sampling stations. This also encouraged sharing of information and instructions. Components related to land use include water quality (especially the Eastmain River and creek CE5), air quality, soil quality, quality of wildlife in general (beavers, moose, geese, sturgeon, trout, porcupines in particular), quality of plants consumed by users and animals (including medicinal plants and berries), as well as land integrity.

Since the creation of beaver reserves in the 1930s, the Cree territory is divided into traplines. Each trapline is under the responsibility of a tallyman who, each year, supervises the dividing of the resources to use and areas to preserve in order to ensure renewal of the species sampled. The territory of the Eastmain community includes 15 traplines. The planned mining infrastructure will be located on the RE2 trapline, which accounts for 5.8% of the overall area of the Eastmain community traplines (15,668 km^2). The study area, located in the trapline's eastern section, covers nearly half of its area.

The principal activities carried out on the traplines are hunting, fishing and trapping of fur-bearing animals. They take place year-round, according to specific practices and timetables. Frequenting the trapline is also considered a revitalizing and curative activity for users. The gathering of blueberries and medicinal plants (and even of mushrooms within a community business project) is carried out in various locations, namely, where access is facilitated by the **Billy-Diamond Highway**. **The food collected on the territory, mainly in the study area for RE2 trapline users, is starting to come back since the lull imposed by the 2013 forest fire.**

Two permanent encampments are found in the study area, along the **Billy-Diamond** Highway. One of these, located 7 km northwest of the project site, consists of a single camp. The second encampment, less than 10 km south of the project site, includes four camps and a tipi. Some temporary encampment sites are also present along the Eastmain River. Tents can be set up there, when needed, mainly during moose hunting or for fishing. There are two MERN vacation lot leases in the study area along the Eastmain River. One of these leases, issued for a cottage, is approximately 4 km east of the **Billy-Diamond** Highway. The second lease, issued for a rustic shelter, is located 13.5 km east of the **Billy-Diamond** Highway.

6.1.3.5 INFRASTRUCTURE

The **Billy-Diamond** Highway is the main road in the study area. This 620 kilometre road, now under the responsibility of the EIJB, was originally built to provide access to hydroelectric project sites in the 1970s (Tourisme Baie-James, 2012). In addition to using the **Billy-Diamond** Highway and several short access roads linked to it (and mainly travelled by quad), travelling in the study area is mainly done by snowmobile. Thinning of the trapline by the 2013 forest fire facilitated travelling everywhere on the territory, without the need for snowmobile trails.

In addition to the Eastmain River, which is frequently navigated along the northern limits of the study area, two waterways allow for long canoe trips, notably for trapping activities. These are possible from the **Billy-Diamond** Highway up to the Eastmain River; either to the west on the Miskimatao River or to the east by the CE5 stream.

There is no airport in the project area. The airfields closest to the project site are the airports located at the Eastmain River (97 km), Nemiscau (88 km) and the Éléonore mine (85 km), which is near the Opinaca Reservoir.

There are two power lines near the human environment study area. From north to south, the 40034004 circuit (450 kV) crosses the study area, where it intersects with the **Billy-Diamond** Highway in three places. The 614 (69 kV) circuit crosses the study area from east to west at its southern part. Neither of these two power lines crosses the planned mining infrastructure.

There is a truck stop in the study area at kilometre 381 of the **Billy-Diamond** Highway. It offers lodging, food services, meeting room rental and mechanical troubleshooting (SDBJ, 2017). This road stop is served with potable water from two **active** artesian wells located on the west part of the site. There is a remote landfill near the location of the planned pit. It is connected to the activities at the truck stop at kilometre 381.

6.1.3.6 LANDSCAPE

At the regional level, the project site is in the northern part of the “natural province” of the James Bay Lowlands. The **Billy-Diamond** Highway forms the backbone of the study area from north to south for approximately 31 km. The sites of most traditional activities (camps, and hunting, fishing and trapping areas) as well as the km 381 truck stop and secondary roads are connected to it. Several snowmobile trails converge on the larger lakes in the southern portion of the study area. The topography of the study area is divided into three distinct parts.

- The deep valley of the Eastmain River borders the northern limit of the area with an elevation ranging between 175 m and 200 m. It is visually isolated from the study area due to its sheltered position. This area is frequented for hunting and fishing, and for its potable-water sources.
- A plateau dominates the landscape in the south of the area with an altitude ranging from 225 m to 250 m. Its terrain is slightly more uneven than the plain, and here the largest lakes and some hills are found. It is a site of traditional activities and a travel corridor.
- A large plain lies between the valley and the plateau, between 175 m and 225 m in altitude, and occupies the majority of the territory studied. The plain is dotted with some elevated rocky outcrops, small hills and power transmission equipment that is visible from afar. It is a site of traditional activities and a travel corridor. The project site is located in the plain.

The plain and plateau are dotted with hills characterized by rocky outcrops. These hills can reach an elevation of about 240 m on the plain and about 280 m on the plateau. A network of lakes and rivers of different sizes forms the natural fabric of the landscape. The largest lakes are clustered south of the study area in the plateau area, while smaller lakes are scattered to the northeast, on the plain.

6.1.3.7 HERITAGE AND ARCHAEOLOGY

The project study area does not have any protected areas. A 453,900-ha biodiversity reserve is planned north of the Eastmain community, on a piece of land that cuts across the Wemindji community's land, over 60 km north of the mining site (Gouvernement du Québec, 2010).

Research to evaluate the archaeological potential of the study area yielded the following findings:

- Hydrographic and topographic features may have made Indigenous groups interested in using the study area. The study area straddles two secondary watersheds that flow more or less parallel to the Eastmain River in opposite directions. These watersheds would have been good alternatives to bypass a section of the Eastmain River that has rapids. Otherwise, resource exploitation in the area could have favoured its use, particularly concerning the attraction that wetland wildlife may hold.
- An archaeological inventory was conducted for the 450 kV power line that runs through the study area. Two nearby areas were visited, the crossings of the Eastmain River and the Pontax River. This inventory did not make it possible to update the archaeological site.
- However, ancient human presence in the study area is evidenced by both the toponymy and the existence of at least one archaeological site (FbGg1) east of the hill where the pit will be excavated (about 400 m). This site is near the km 381 truck stop.

In total, 27 areas with prehistoric archaeological potential have been targeted within the study area. These sites are the areas most likely to contain remains attesting to a human presence from prehistoric time up to the twentieth century. **They also include potential in connection with camp sites and remains.**

Field validation and demarcation of areas of archaeological potential found within the projected project footprint were conducted in July 2021 (Arkéos, 2022).

The archaeological inventory of potential areas included the realization of boreholes measuring 0.50 m by 0.50 m dug at intervals varying from 4 to 10 m depending on the local topography. In all, 322 boreholes (80.5 m^2) were carried out, without revealing any evidence of ancient occupations. Visual inspection of the areas, facilitated by the removal of some of the surface vegetation during fires in 2005, 2009, and 2013, led to the same result.

6.2 CHANGES AND ANTICIPATED IMPACTS, MITIGATION MEASURES AND THE IMPORTANCE OF RESIDUAL IMPACTS

This section includes a description of residual impacts which emerge from the environmental impact assessment for the James Bay Lithium Mine project. The project's impact summary is outlined in Table 11. This table presents any anticipated change to the physical, biological and social environments, the suitable mitigation measures, the value of each assessment parameter and the importance of residual impacts.

6.2.1 PHYSICAL ENVIRONMENT

For the construction phase, the assessment of residual impacts, after the implementation of mitigation measures, shows that their importance is minor for all physical components assessed. For the operation and rehabilitation phases, including post-rehabilitation work, most components will only be subjected to minor impacts, except the hydrogeology and hydrological regime for which medium residual impacts have been determined. In terms of hydrogeology, the major impacts affecting the components, and by their intensity, scope and duration, causing residual impacts of medium importance, are the drawdown of the water table (operation phase only), the modification of the water flow pattern and the flooding of the mine pit (rehabilitation phase only).

6.2.2 BIOLOGICAL ENVIRONMENT

Of the biological components assessed, only the vegetation (including wetlands) will be affected by impacts of medium importance resulting from the project. During the construction and operation phases, the direct loss and modification of natural environments represent the main impact. Despite the implementation of several mitigation measures, the intensity, scope and duration lead to a residual impact of medium importance on this component.

Even though vegetation and wetlands are a key link to the habitat of most wildlife components, the surface area of affected territory during the various phases of the project does not cause a significant impact on the integrity of communities. All environmental impacts on other biological environment components are minor.

6.2.3 SOCIAL ENVIRONMENT

For the social environment components, the assessment of residual impacts shows that for most components the mitigation measures to be implemented will suffice so that environmental impacts are minor. However, for impacts on the everyday use of lands and resources for traditional purposes, on the quality of life and on the landscape **in the study area and along the Billy-Diamond Highway**, residual impacts of **minor and** medium importance have been assessed. **For the construction and operation phases, it is possible that traditional Cree activities across the territory be disrupted as well as noise and dust disturbance and an increased risk of accidents. More specifically, in the operating phase only, the landscape is expected to be transformed by the presence of the pit, the stockpiles and the disposal sites as well as by the other mining infrastructures.**

Table 11 Assessment of residual impacts

Environmental component	Project phase	Potential source(s) of impact	Description of impact	Mitigation measures and/or applicable standards	Significance of residual impact			Significance of residual impact
					Intensity	Extent	Duration	
Physical environment								
Soil	Construction	• Site preparation and infrastructure construction. • Hazardous and waste materials management.	• Risk of soil erosion. • Risks of soil contamination due to the potential leak of petroleum products or accidental spills of hydrocarbons or other products.	SUR 01 to SUR 04, QUA 01 to QUA 04, QUA 08 to QUA 13, NOR 02 to NOR 04 and NOR 09	Low	Local	Short	Minor
	Operation	• Management of economic material, overburden and waste rock. • Hazardous and waste materials management.	• Risks of soil contamination due to the potential leak of petroleum products or accidental spills of hydrocarbons or other products.	SUR 01 and SUR 02, QUA 01 to QUA 05, QUA 10, QUA 12, NOR 02 to NOR 04, NOR 09 and NOR 10	Low	Local	Moderate	Minor
	Rehabilitation	• Infrastructure dismantling Hazardous and waste materials management.	• Risk of soil erosion. • Risks of soil contamination due to the potential leak of petroleum products or accidental spills of hydrocarbons or other products.	SUR 02, QUA 01 to QUA 04, QUA 07, QUA 08, QUA 12, NOR 01 to NOR 04, and NOR 10	Low	Local	Short	Minor
Hydrogeology	Construction	• Site preparation and infrastructure construction. • Water management.	• Alteration of runoff flow patterns, surface and groundwater on the periphery of infrastructure.	SUR 01, SUR 02, QUA 01 to QUA 04, QUA 10, and QUA 11 **to QUA 13**	Low	Isolated	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Water management.	• Water table drawdown due to pit dewatering. • Alteration of runoff flow patterns, surface and groundwater on the periphery of infrastructure.	QUA 06, **QUA 14** and NOR 06	Moderate	Local	Long	Moderate
	Rehabilitation and post-rehabilitation	• Infrastructure dismantling Pit rehabilitation. • Water management.	• Natural flooding of pit. • Alteration of runoff flow patterns, surface and groundwater on the periphery of infrastructure.	QUA 06	Moderate	Local	Long	Moderate
Hydrological regime	Construction	• Site preparation and infrastructure construction. • Water management.	• Localized change in the natural flow of surface waters. • Possible increase in surface runoff due to a decreased infiltration caused by soil compaction.	SUR 01, SUR 03, SUR 04, QUA 07, QUA 09, QUA 11, NOR 01, NOR 05, NOR 07, NOR 14, and NOR 15	Low	Isolated	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Water management.	• Encroachment of drainage basins in the study area by project infrastructure decrease their surface area. • Changes in mean and low flows of watercourses in the study area due to pit dewatering. • Changes in the water levels of watercourses in the study area.	SUR 01, QUA 05, UTT 03, NOR 01, NOR 05, NOR 07, NOR 08, NOR 14, and NOR 14	Moderate	Local	Long	Moderate
	Rehabilitation and post-rehabilitation	• Infrastructure dismantling Pit rehabilitation. • Water management.	• Localized change in the natural flow of surface waters.	SUR 03, QUA 07, QUA 09, QUA 11, and NOR 01	Moderate	Local	Long	Moderate

Table 11 Assessment of residual impacts (cont.)

Environmental component	Project phase	Potential source(s) of impact	Description of impact	Mitigation measures and/or applicable standards	Significance of residual impact			Significance of residual impact
					Intensity	Extent	Duration	
Water and sediments	Construction	• Site preparation and infrastructure construction. • Water management. • Hazardous and waste materials management. • Transportation and traffic.	• Risk of change in the quality of water and sediments related to the spreading of ice melters in the winter. • Risks of contamination of water and sediments due to the potential leak of petroleum products or accidental spills of hydrocarbons or other products.	**SUR 01, SUR 03, SUR 04,** QUA 01 to QUA 04, QUA 08 to QUA 13, NOR 02 to NOR 04, and NOR 07 to NOR 09	Low	Local	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Water management. • Hazardous and waste materials management. • Transportation and traffic.	• Risk of contamination of water and sediments by metal leaching and by the ingress of contaminated water under the waste rock stockpile. • Risks of contamination of water and sediments due to the potential leak of petroleum products or accidental spills of hydrocarbons or other products.	QUA 01 to QUA 06, QUA 12, **QUA 13 and QUA 15**, NOR 02 **to** NOR 04, NOR 06, and NOR 09	Low	Local	Moderate	Minor
	Rehabilitation and post-rehabilitation	• Infrastructure dismantling Pit rehabilitation. • Water management. • Hazardous and waste materials management. • Transportation and traffic.	• Risk of changes in the quality of water and sediments related to the spreading of ice melters in the winter. • Risk of contamination of groundwater by metal leaching and by the ingress of contaminated water under the waste rock stockpile. • Risks of groundwater contamination due to the potential leak of petroleum products or accidental spills of hydrocarbons or other products.	**SUR 01, SUR, 03, SUR 04,** QUA 01 to QUA 04, QUA 07, QUA 08, QUA 10 to QUA 12, SUR 03, NOR 01 to NOR 04, NOR 09, and NOR 10	Low	Local	Short	Minor
Atmosphere	Construction	• Site preparation and infrastructure construction. • Hazardous and waste materials management. • Transportation and traffic.	• Deterioration of the quality of the atmosphere by gaseous compounds and total particulate matter limited to the site and its immediate environment.	AIR 01 to AIR 05, and NOR 11	Low	Local	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Hazardous and waste materials management. • Transportation and traffic.	• Increase in concentrations of particulate matter and metals in the air. • Increase in greenhouse gas emissions.	AIR 01 to AIR 05, and NOR 11	Low	Local	Moderate	Minor
	Rehabilitation	• Infrastructure dismantling Pit rehabilitation. • Hazardous and waste materials management. • Transportation and traffic.	• Deterioration of the quality of the atmosphere by gaseous compounds and total particulate matter limited to the site and its immediate environment.	AIR 01 and AIR 02, and NOR 11	Low	Local	Short	Minor
Artificial light at night	Construction	• Site preparation and infrastructure construction. • Transportation and traffic.	• Temporary emission of artificial light into the sky and work site limits, which is likely to disturb nocturnal landscapes and have an impact on the biological and social environments on the periphery.	LUM 01 to LUM 03	Low	**Isolated**	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Transportation and traffic.	• Changes in light at night by adding artificial light could cause local changes in the brightness of the sky and generate light trespass.	LUM 01 to LUM 03	Low	Local	Moderate	Minor
	Rehabilitation	• Infrastructure dismantling Transportation and traffic.	• Temporary emission of artificial light into the sky and work site limits, which is likely to disturb nocturnal landscapes and have an impact on the biological and social environments on the periphery.	LUM 01 to LUM 03	Low	Local	Short	Minor

Table 11 Assessment of residual impacts (cont.)

Environmental component	Project phase	Potential source(s) of impact	Description of impact	Mitigation measures and/or applicable standards	Significance of residual impact			Significance of residual impact
					Intensity	Extent	Duration	
Physical environment (cont.)								
Ambient noise	Construction	• Site preparation and infrastructure construction. • Transportation and traffic.	• Increased ambient noise levels at the work site.	SON 01, **SON 02** and NOR 12	Low	Local	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Transportation and traffic.	• Increased ambient noise levels due to mining activities.	SON 01 to **SON 03**, and NOR 12	Low	Local	Short	Minor
	Rehabilitation	• Infrastructure dismantling Pit rehabilitation. • Transportation and traffic.	• Increased ambient noise levels.	SON 01, **SON 02** and NOR 12	Low	Local	Short	Minor
Vibrations and overpressure	Construction	• Site preparation and infrastructure construction.	• Vibrations and overpressure generated during blasting when the construction quarry is in operation.	VIB 01 to VIB 04 and NOR 13	Low	Local	Short	Minor
	Operation	• Presence and operation of the pit.	• Vibrations and overpressure generated during blasting when the pit is in operation.	VIB 01 to VIB 04 and NOR 13	Low	Local	Short	Minor
	Rehabilitation	• No impact.						
Biological environment								
Vegetation and wetlands	Construction and operation	• Site preparation and infrastructure construction. • Presence and operation of the pit. • Management of economic material, overburden and waste rock. • Hazardous and waste materials management. • Transportation and traffic.	• Direct alteration and loss of natural environments (land and wetland environments) as a result of the work. • Indirect impacts on plant communities preserved through development of the site and planned infrastructure.	VEG 01 to VEG 07, SUR 01 to SUR 04, QUA 01 to QUA 05, QUA 10 to QUA 12, NOR 02 to NOR 04, NOR 10 and NOR 15	Moderate	Local	Moderate	Moderate
	Rehabilitation	• Transportation and traffic. • Infrastructure dismantling	• Potential introduction of invasive alien plant species.	VEG 02, VEG 03 and VEG 06, QUA 01 to QUA 04, QUA 10 to QUA 12 NOR 02 to NOR 04 and NOR 10	Overall positive impact			
Large fauna	Construction and operation	• Site preparation and infrastructure construction. • Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Hazardous and waste materials management. • Transportation and traffic. • Economic development and presence of workers.	• Incidental mortality of large fauna individuals that may occasionally occur due to collisions with vehicles during preparation, construction and operation work. • Alteration of the natural behaviour of large fauna and its movements.	SUR 01 to SUR 04, FAU 03, FAU 05, **FAU 08.** SON 01, CIR 01 to CIR 03 and LUM 01 to LUM 03	Low	Local	Moderate	Minor
	Rehabilitation	• Infrastructure dismantling Transportation and traffic. • Economic development and presence of workers.	• Alteration of the natural behaviour of large fauna and its movements.	FAU 03 and FAU 05, SON 01, CIR 01 to CIR 03 and LUM 01 to LUM 03	Low	Local	Short	Minor

Table 11 Assessment of residual impacts (cont.)

Environmental component	Project phase	Potential source(s) of impact	Description of impact	Mitigation measures and/or applicable standards	Significance of residual impact			Significance of residual impact
					Intensity	Extent	Duration	
Biological environment (cont.)								
Small fauna and herpetofauna	Construction and operation	• Site preparation and infrastructure construction. • Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Water management. • Hazardous and waste materials management. • Transportation and traffic.	• Loss of approximately **450 ha** of land and wetland habitat specific to small fauna and herpetofauna. • Mortality of small fauna and herpetofauna individuals and small mammal species. • Risks of natural environment contamination, mainly because of the potential leak of petroleum products or accidental spills from equipment. • Disturbance of small fauna and herpetofauna individuals, mainly due to noise, nighttime lighting, dust, vibrations and human presence. • Risks of collision related to site traffic.	SUR 01 to SUR 04, QUA 01 to QUA 05, QUA 07 to QUA 13, AIR 01, AIR 02, LUM 01 to LUM 03, SON 01, VEG 01, VEG 02, FAU 02 and FAU 05, NOR 02 to NOR 05, NOR 08, NOR 09 and NOR 14	Low	Local	Moderate	Minor
	Rehabilitation	• Infrastructure dismantling Water management. • Hazardous and waste materials management. • Transportation and traffic.	• Disturbance of small fauna and herpetofauna individuals, mainly due to noise, nighttime lighting, dust, vibrations and human presence. • Risks of collision related to site traffic.	SUR 02, SUR 03, QUA 01 to QUA 04, QUA 07 to QUA 13, AIR 01, AIR 02, LUM 01 to LUM 03, SON 01, VEG 02, FAU 01 and FAU 05, NOR 01 to NOR 05, NOR 08, NOR 09 and NOR 14	Low	Local	Short	Minor
Ichthyofauna	Construction	• Site preparation and infrastructure construction. • Water management. • Hazardous and waste materials management. • Transportation and traffic.	• Risk of changes to the natural flow of water that may alter fish habitat to a certain degree. • Risk of accidental spills of petroleum hydrocarbons associated with machinery use.	**FAU 01**, SUR 01, SUR 03, SUR 04, QUA 01 to QUA 04, QUA 07 to QUA 13, NOR 02 to NOR 05, NOR 09 and NOR 13 to NOR 16	Low	Isolated	Short	Minor
	Operation	• Presence and operation of the pit. • Water management. • Hazardous and waste materials management.	• Loss of fish habitat. • Risk of accidental spills of petroleum hydrocarbons associated with machinery use.	**FAU 01**, SUR 01, SUR 03, SUR 04, QUA 01 to QUA 04, QUA 06 to QUA 13, NOR 02 to NOR 09 and NOR 13 to NOR 16	Low	**Isolated**	**Long**	Minor
	Rehabilitation and post-rehabilitation	• Infrastructure dismantling Water management. • Transportation and traffic.	• Limited change to the natural flow of surface waters and increase in suspended solids in water. • Risk of accidental spills of petroleum hydrocarbons associated with machinery use.	SUR 02 to SUR 04, QUA 01 to QUA 04, QUA 07 to QUA 13 and NOR 01 to NOR 09	Low	Isolated	Long	Minor
Avifauna	Construction and operation	• Site preparation and infrastructure construction. • Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Water management. • Transportation and traffic.	• Loss of approximately **450 ha** of land and wetland habitat specific to avifauna. • Risk of incidental bird mortality due to incidental take. • Risks of collision related to site traffic. • Mortality of avifauna individuals. • Alteration of the natural behaviour of birds and their movements. • Disturbance of avifauna individuals, mainly due to noise, nighttime lighting, dust, vibrations and human presence. • Risks of natural environment contamination, mainly because of the potential leak of petroleum products or accidental spills from equipment.	SUR 01 to SUR 04, FAU 02, **FAU 06, FAU 07**, SON 01, LUM 01 to LUM 03, QUA 05, QUA 09, QUA 08, NOR 07 to NOR 09, NOR 13, NOR 14 and VEG 01	Low	Local	Moderate	Minor
	Rehabilitation	• Infrastructure dismantling Transportation and traffic.	• Alteration of the natural behaviour of birds and their movements.	SUR 01, SUR 02, SUR 03, NOR 01, FAU 02, SON 01, LUM 01 to LUM 03, QUA 07, QUA 08, NOR 14 and VEG 01	Low	Local	Short	Minor

Table 11 Assessment of residual impacts (cont.)

Environmental component	Project phase	Potential source(s) of impact	Description of impact	Mitigation measures and/or applicable standards	Significance of residual impact			Significance of residual impact
					Intensity	Extent	Duration	
Biological environment (cont.)								
Bats	Construction and operation	• Site preparation and infrastructure construction. • Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Transportation and traffic.	• Direct and indirect habitat loss. • Potential mortality of tree bat species if present during deforestation activities. • Disturbance of wetlands (peatlands) potentially resulting in greater movements to alternative feeding sites. • Changes to the habitat structure potentially changing bats' use of the area. • Disturbance of local bat populations, mainly due to noise, nighttime lighting, dust, vibrations and human presence. • Risks of natural environment contamination, mainly because of the potential leak of petroleum products or accidental spills from equipment.	SUR 01, SUR 02, AIR 02, SON 01, VEG 02, FAU 02 and FAU 04, NOR 07 to NOR 09 and NOR 13	Low	Local	Moderate	Minor
	Rehabilitation	• Infrastructure dismantling Transportation and traffic.	• Disturbance of local bat populations, mainly due to noise, nighttime lighting, dust, vibrations and human presence. • Risk of bat mortality that may occur during the dismantling of buildings, wells or exploration drifts used as roosts by bats (day and/or maternity and/or winter roost).	SUR 02, AIR 02, SON 01, VEG 02 and FAU 04	Low	Local	Short	Minor
Social environment								
Current use of land and resources for traditional purposes	Construction	• Site preparation and infrastructure construction. • Transportation and traffic. • Economic development and presence of workers.	• Temporary disruption of the traditional activities of Cree users on territory in the study area. • Loss of use of portions of the territory where mining infrastructure will be located for the practice of certain traditional activities (e.g., berry picking and beaver trapping).	UTT 01 to UTT **06**, CIR 01, CIR 02,CIR 04, **CIR 07, CIR 16, VIE 05,** AIR 01 to AIR 05, SON 01, LUM 01 to LUM 03 and VIB 01 to VIB 04	Moderate	Local	Short	Moderate
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Water management. • Transportation and traffic. • Economic development and presence of workers.	• Disruption of the traditional activities of Cree users on territory in the study area. • Loss of use of portions of the territory where mining infrastructure will be located for the practice of certain traditional activities (e.g., berry picking and beaver trapping).	UTT 01 to UTT **06**, CIR 01, CIR 02, CIR 04, **CIR 07, CIR 16, VIE 05,** AIR 01 to AIR 05, SON 01, LUM 01 to LUM 03 and VIB 01 to VIB 04	Moderate	Local	Moderate	Moderate
	Rehabilitation	• Infrastructure dismantling Water management. • Transportation and traffic. • Economic development and presence of workers.	• Disruption of the traditional activities of Cree users on territory in the study area.	UTT01 to UTT04, CIR01, CIR02 and CIR04, AIR 01 to AIR 05, SON 01, LUM 01 to LUM 03 and VIB 01 to VIB 04	Low	Local	Short	Minor
Current use of land and resources for traditional purposes along the Billy-Diamond Highway	**Construction**	• **Transportation and traffic.**	• **Temporary disruption of the traditional activities of Cree users along the Billy-Diamond Highway.** • **Distrubances of Cree users by noise and dust and increased risk of accidents.**	**UTT 01, UTT 02, CIR 01, CIR 03, CIR 08 to 15, SON 01, VIE 01, VIE 05, VIE 15, NOR 11**	**Low**	**Regional**	**Short**	**Minor**
	Operation	• **Transportation and traffic.**	• **Temporary disruption of the traditional activities of Cree users along the Billy-Diamond Highway.** • **Distrubances of Cree users by noise and dust and increased risk of accidents.**	**UTT 01, UTT 02, CIR 01, CIR 03, CIR 08 to 15, SON 01, VIE 01, VIE 05, VIE 15, NOR 11**	**Low**	**Regional**	**Long**	**Moderate**

Table 11 Assessment of residual impacts (cont.)

Environmental component	Project phase	Potential source(s) of impact	Description of impact	Mitigation measures and/or applicable standards	Significance of residual impact			Significance of residual impact
					Intensity	Extent	Duration	
Social environment (cont.)								
Infrastructure	Construction	• Transportation and traffic. • Economic development and presence of workers.	• Increased traffic on Billy-Diamond Highway.	CIR 01 to CIR 03, **AIR 03** and NOR 13	Low	Regional	Short	Minor
	Operation	• Transportation and traffic. • Economic development and presence of workers.	• Increased traffic on Billy-Diamond Highway.	AIR 03, VIB **02** to VIB 04, CIR 01 to CIR 04, **CIR 08 à CIR 10** and NOR 13	Low	Regional	Short	Minor
	Rehabilitation	• Transportation and traffic. • Economic development and presence of workers.	• Increased traffic on Billy-Diamond Highway.	CIR 01 to CIR 04	Low	Regional	Short	Minor
Perception of physical environment	Construction	• Site preparation and infrastructure construction. • Water management. • Transportation and traffic.	• Risk of disturbances related to changes in air quality, artificial light at night and noise, and groundwater and surface water quality that may affect Cree users of the territory who practise activities in the mine sector or workers at the km 381 truck stop and its patrons.	PER 01, UTT 02, **CIR 01, CIR 02,** CIR 04, **CIR 05,** VIE 01, **VIE 15, VIE 22,** AIR 01 to AIR 05, SON 01, QUA 01 to QUA 05, QUA 07 to QUA 13, LUM 01 to LUM 03, VIB 01, NOR 2 to NOR 5, NOR 9, NOR 11, NOR 13 and NOR 14	Low **Low**	**Local** **Local**	Short **Long1**	Minor **Moderate**
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Water management. • Transportation and traffic.	• Risk of disturbances related to changes in air quality, artificial light at night and noise, and groundwater and surface water quality that may affect Cree users of the territory who practise activities in the mine sector or workers at the km 381 truck stop and its patrons.	PER 01, UTT 02, **CIR 01, CIR 02,** CIR 04 **to CIR 06**, VIE 01, AIR 01 to AIR 05, SON 01, QUA 01 to QUA 05, QUA 07 to QUA 13, LUM 01 to LUM 03, VIB 01 to VIB 04, NOR 2 to NOR 9 and NOR 11 to NOR 14	Moderate	**Isolated**	**Short**	**Minor**
	Rehabilitation	• Infrastructure dismantling Water management. • Transportation and traffic. • Economic development and presence of workers.	• Risk of disturbances related to changes in air quality, artificial light at night and noise, and groundwater and surface water quality that may affect Cree users of the territory who practise activities in the mine sector or workers at the km 381 truck stop and its patrons.	PER 01, UTT 02, **CIR 01,** CIR 04, **CIR 05,** VIE 01, **VIE 15, VIE 22, SUR 03 and SUR 04,** AIR 01 to AIR 03, SON 01, QUA 01 to QUA 05, QUA 07 to QUA 13, LUM 01 to LUM 03, NOR 1 to NOR 9, NOR 11, NOR 12 and NOR 14	Low	**Local**	Short	Minor
Quality of life – Cree First Nations	Construction	• Site preparation and infrastructure construction. • Transportation and traffic. • Economic development and presence of workers.	• Feeling of loss and damage to the Cree cultural identity. • Decreased sense of safety among Billy-Diamond Highway users. • Cree workers' difficulty integrating into the working environment.	UTT 01 to **UTT 05**, CIR 01**, CIR 02, CIR 04, CIR 05, CIR 08 to CIR 16,** VIE 01 to VIE **22, ELR 05, ELR 06, ELR 13 and PER 01**	Low	Regional	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Transportation and traffic. • Economic development and presence of workers.	• Feeling of loss and damage to the Cree cultural identity. • Decreased sense of safety among Billy-Diamond Highway users. • Cree workers' difficulty integrating into the working environment.	UTT 01 to **UTT 06,** CIR 01, **CIR 02, CIR 04, CIR 05, CIR 08 to CIR 16,** VIE 01 to VIE **22, ELR 05 to** ELR 08, **ELR 13 and PER 01**	Moderate	Regional	Moderate	Moderate
	Rehabilitation	• Infrastructure dismantling pit rehabilitation. • Transportation and traffic. • Economic development and presence of workers.	• Feeling of loss and damage to the Cree cultural identity. • Decreased sense of safety among Billy-Diamond Highway users. • Cree workers' difficulty integrating into the working environment.	**VIE 04, VIE 06 to VIE 10, VIE 12 to VIE 17, VIE 19 to VIE 22, ELR 05, 07, ELR 08 and PER 01**	Low	Regional	Short	Minor
Quality of life – women, youth and elders from the communities of Eastmain and Waskaganish	**Operation**	• **Presence and operation of the pit.** • **Other infrastructure in operation.** • **Management of ore, surface deposits and waste rock.** • **Transportation and traffic.** • **Economic development and presence of workers.**	• **Feeling of loss and offence to Cree cultural identity.** • **Decrease in the feeling of safety for users of the Billy-Diamond Highway.** • **Difficulties in integrating Cree workers into the workplace.**	**UTT 01 to UTT 06, CIR 01, CIR 02, CIR 04, CIR 05, CIR 08 to CIR 16, VIE 01 to VIE 22, ELR 05 to ELR 08, ELR 13 and PER 01**	**Low**	**Regional**	**Moderate**	**Moderate**
Quality of life – community of Matagami	**Operation**	• **Transportation and traffic in Matagami, including the increase of activity in the transshipment yard.** • **Economic development and presence of workers**	• **Risks of disturbances due to traffic increase on the Billy-Diamond Highway and on Road 109 in Matagami.**	**AIR 02, NOR 11, SON 01, CIR 01, CIR 08 à CIR 15, and VIE 01**	**Low**	**Local**	**Moderate**	**Minor**

Table 11 Assessment of residual impacts (cont.)

Environmental component	Project phase	Potential source(s) of impact	Description of impact	Mitigation measures and/or applicable standards	Significance of residual impact			Significance of residual impact
					Intensity	Extent	Duration	
Social environment (cont.)								
Local and regional economy	Construction	• Economic development and presence of workers.	• Increased local demand for goods and services. • Hiring of local workforce. • Development and enhancement of local and regional expertise.	ERL01 to ERL06, **ELR 09 to ELR 15, ELR 17, ELR 18 and VIE 07**	Positive impact			
	Operation	• Economic development and presence of workers.	• Local demand for goods and services. • Hiring of local workforce. • Development and enhancement of local and regional expertise.	ERL01 to ERL08	Positive impact			
	Rehabilitation	• Economic development and presence of workers	• Local demand for goods and services and for workforce. • Hiring of local workforce.	ERL01 and ELR03 to ERL06	Positive impact			
Heritage and archaeology	Construction	• Site preparation and infrastructure construction.	• Fortuitous discovery of remains of archaeological or historical interest.	ARC01, ARC 02 and NOR17 to NOR19	Low	Isolated	Long	Minor
	Operation	• Presence and operation of the pit. • Management of economic material, overburden and waste rock.	• Fortuitous discovery of remains of archaeological or historical interest.	ARC01, ARC 02 and NOR17 to NOR19	Low	Isolated	Long	Minor
	Rehabilitation	• No anticipated impact.						
Landscape	Construction	• Site preparation and infrastructure construction. • Transportation and traffic.	• Transformation of the character of the landscape and change to observers' visual field.	SUR 01 to SUR 04, AIR 01, AIR 03 and AIR 05	Low	Local	Short	Minor
	Operation	• Presence and operation of the pit. • Other infrastructure in operation. • Management of ore, surface deposits and waste rock. • Transportation and traffic.	• Transformation of the character of the landscape and change to observers' visual field.	SUR 01 to SUR 04, AIR 01, AIR 03 and AIR 05	Moderate to High[2]	Local	Long	Moderate to Major2
	Rehabilitation	• Infrastructure dismantling Pit rehabilitation. • Transportation and traffic.	• Potential impacts on landscape and visual field.	SUR 02, AIR 01, AIR 03 and PAY 01	Low	Local	Short	Minor

1 Cree users of the sector consider as irreversible the changes caused by construction activities to their negative perception of the quality of the environment and water. Thus, according to their assessment, the duration of the impact would be long.

2 When the infrastructures are visible in the foreground of the field of vision of the users of the Billy-Diamond Highway, the intensity and the importance of the impact would be considered from time to time strong

7 SURVEILLANCE AND MONITORING PROGRAMS

7.1 ENVIRONMENTAL SURVEILLANCE PROGRAM

Galaxy undertakes to implement an environmental surveillance program that will ensure compliance with laws, regulations and other environmental considerations set out during the development of the project and the impact assessment. Galaxy will perform environmental surveillance for the duration of the project's implementation. This will include overseeing activities that require preventive, corrective or mitigation measures as well as updating the environmental management system.

The environmental surveillance program will be included in the construction site procedures and documented. It will include the following:

- List of elements that require environmental surveillance;
- All measures to be applied and means planned for protecting the environment;
- Detailed monitoring program activities;
- Intervention mechanisms in the event of non-compliance with legal and environmental requirements;
- Commitments with regards to filing monitoring reports and distributing environmental surveillance results to the population affected.

7.2 ENVIRONMENTAL MONITORING PROGRAMS

Environmental monitoring makes it possible to describe the evolution of certain environmental components to determine the actual impact the project has on the most sensitive elements and the effects of the mitigation measures applied. In the context of the James Bay Lithium Mine project, environmental monitoring is proposed during operations for environmental components that are likely to be most affected by the project or that raise concern, namely:

- Monitoring surface water quality;
- Groundwater monitoring (water quality, flow and level);
- **Monitoring drinking water (water quality);**
- **Monitoring sediment physicochemical quality;**
- Monitoring the vegetation **and wetlands** along the periphery of infrastructure;
- Monitoring the introduction and spreading of invasive alien plant species;
- **Monitoring effectiveness of compensation projects for loss of wetlands**;
- **Monitoring air quality;**
- Monitoring the socioeconomic environment;
- Monitoring the current use of land and resources for traditional purposes;
- Monitoring the quality of life and well-being;
- **Monitoring traditional food;**
- **Monitoring noise**;
- **Monitoring wildlife.**

A monitoring program will be included in the site rehabilitation plan. The purpose of the monitoring program is to validate whether the measures applied to the site meet expectations. The following elements will be considered:

- **Geotechnical monitoring;**
- **Monitoring surface and groundwater quality;**
- **Monitoring of vegetation recovery.**

As required under *An Act to amend the Mining Act* (section 101.0.3), Galaxy will establish a monitoring committee to foster the participation of the communities involved in the project's execution. This committee will be created prior to the mine's construction and will remain active throughout its life, until such time as the works provided for in the mining site restoration plan are fully completed.

The committee's membership will be determined as per the regulations established under the Act, and it will be comprised of at least one representative from the Eastmain Band Council, one from the business community, one from the City of Eastmain and one from the EIJBRG. Furthermore, the RE2 Tallyman or a member of his family will be invited on this committee.

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