



Côte-Nord Mining Railway

Project Description



Côte-Nord Mining Railway

Project Description

Approved by:

Martin Larose, Project Director



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EXECUTIVE SUMMARY

Côte-Nord Mining Railway Company Inc. proposes the construction and operation of a railway network (including the possibility of using existing rail infrastructures) as well as an ore handling and storage terminal in the Côte-Nord and Labrador regions, a project entitled “the Côte-Nord Mining Railway”. The railway right-of-way (ROW) will extend between Sept-Îles in Quebec and Wabush/Labrador City area in Labrador, where the ROW will join the Tshiuetin Railway, subject to commercial agreement. The handling and storage facilities will be located at the port of Sept-Îles, in Pointe-Noire.

Many options are currently under consideration to add the required railway capacity to serve the mining operations located between Sept-Îles and the northern area of Schefferville. Given the numerous components to address in a sustainable development perspective, the final railway line option that will be selected has not been determined yet. The potential for increased economic development in the region, the minimization of costs, the environmental footprint of the project, the impacts to stakeholders and the ability to use, wherever possible, the existing rail facilities are among the important parameters that will guide the decision on the selected option.

The facility in Pointe-Noire will be principally dedicated to the handling and storage of ore coming from existing and future mines in the regions of the Côte-Nord and Nord-du-Québec as well as Labrador. The facility will be designed for a final annual capacity of 125 million tonnes of ore, transported daily on trains marshalled with up to 250 cars and 5 locomotives (annual capacity of 35 to 70 million tonnes of ore) on a rail distance up to 550 km. The ore will be unloaded from the trains by tandem car dumpers in Pointe-Noire terminal and will be transferred to stockpiles using conveyors and to Port of Sept-Îles central tower before being loaded to ships by the Port of Sept-Îles shiploading facility. Administrative buildings, railway maintenance facilities and equipment are also planned in Pointe-Noire. The construction phase of the project should begin in early 2014 and is believed to require between one year and a half to three years. The operation phase is expected to be progressive, starting in 2016. The railway and the handling and storage facility are expected to be under perpetual operation.

The project mainly comprised within the Quebec’s Central Laurentides mountains and the Nord-du-Québec central plateau natural provinces and Labrador’s Smallwood reservoir – Michikamau ecoregion. These boreal forest regions are rich in wetlands, extensively covered by the hydrographic networks and likely contain up to 34 flora and 26 wildlife species at risk. Additionally, up to five fish species are likely present in the waterbodies located in the project’s vicinity, including the St. Lawrence River.

Due to its geographic location, the project is likely to be of interest for certain Aboriginal communities of Quebec and Labrador. These communities, as well as different stakeholders will be informed of the project and met to gather their comments and concerns which will be used to propose mitigation measures minimizing the social and environmental impacts of the project.

Reference for citation:

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1 INTRODUCTION

Côte-Nord Mining Railway Company Inc. (hereafter referred to as the “Company”) proposes the construction and operation of a railway network (including the possibility of using existing rail facilities) as well as an ore handling and storage terminal in the Côte-Nord and Labrador regions. GENIVAR inc. (hereafter referred to as “GENIVAR”) has been chosen by the Company to assist in the completion of the environmental assessment required for this project.

This document presents the preliminary information that must be submitted to the Canadian Environmental Assessment Agency (CEAA), as part of a project designated as *physical activity* under the *Canadian Environmental Assessment Act 2012* (“the Act 2012”). The Table provided in page iii indicates where in this document the information required in a project description under the Act 2012 can be found, as stated in the *Guide to preparing a description of a designated project under the Canadian Environmental Assessment Act 2012*¹.

The railway right-of-way (ROW) will extend between Sept-Îles in Quebec and Wabush/Labrador City area in Labrador, where the ROW will join the Tshiuetin Railway. The handling and storage facilities will be located near the port of Sept-Îles, in Pointe-Noire.

Many options are currently under consideration to add the required railway capacity to serve the mining operations located between Sept-Îles and the northern area of Schefferville. Given the numerous components to address in a sustainable development perspective, the final railway line option that will be selected has not been determined yet. The potential for increased economic development in the region, the minimization of costs, the environmental footprint of the project, the impacts to stakeholders and the ability to use, wherever possible, the existing facilities are among the important parameters that will guide the decision on the selected option.

The Company plans to begin the construction phase of this railway project in early 2014 and to begin the operational phase in 2016.

¹ Canadian Environmental Assessment Agency, July 2012.

2 GENERAL INFORMATION

2.1 Contacts

2.1.1 Proponent

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2.2 Project Name

Côte-Nord Mining Railway

2.3 Project Nature and Location

The Company plans to construct and operate a railway network in the Côte-Nord and Labrador regions, as well as an ore handling and storage terminal in Pointe-Noire. Depending on the chosen option, the project will extend between 510 and 550 km (315 and 340 miles) from Sept-Îles to the Emeril Junction area (Labrador).

Many options are currently under study (see Figure 2-1 and the detailed description in section 4).

The geographic coordinates localizing the project are presented in Table 2-1.

Table 2-1: Geographic Coordinates of the Project

Component of the project	Latitude (dd° mm' ss,sss'')	Longitude (dd° mm' ss,sss'')
Railway – southern end	50° 12' 34.413" N	66° 33' 34.049" W
Railway – northern end	53° 05' 37.044" N	66° 12' 31.028" W
Handling and storage facility - center	50° 10' 38.814" N	66° 33' 44.602" W

2.4 Land Property

The majority of the project will be located on provincial Crown lands. The railway ROW is expected to be under long-term lease to the Company. A number of private lands will be crossed by the railway in the Pointe-Noire area and, as the case may be, in the Fermont, Wabush and Labrador City areas (see Figure 2-1). These lands may be subject to ROW easements, purchases by the Company or held under long-term leases.

Additionally, the Company's future facilities at the Pointe-Noire terminal for the material handling and storage of ore could require easements, purchases or long-term leases from private landowners and an expected lease from the Port Authority of Sept-Îles (see Figure 2-1). This potential lease relates to federal Crown land. No other federal Crown land is expected to be touched by the project.

Given the various options under consideration, the land status and land owners along the various railway options and in the Pointe-Noire area have not yet been fully inventoried. In a similar way, the actual land use (land and water) has not yet been documented. These elements will be studied further when a decision regarding the selected option will be made and they will be analysed in the environmental impact statement.

2.5 Public and Aboriginal People Information and Consultation

2.5.1 Past Activities

The Company has had numerous calls/meetings with the City of Sept Îles and the Port Authority of Sept Îles to advise about the geotechnical and hydrogeological sampling works. In addition to this, advertisements of this work was provided to the public in two newspapers and on the radio. No other public information or consultation activity has been undertaken by the Company.

The Tshiuetin Railway administration has been met three times and Chiefs of Uashat mak Mani-Utenam and Matimekush-Lac-John were present at one meeting to discuss the project (June 20th, 2012).

No other authorities or stakeholders were consulted to date.

2.5.2 Future Activities

Given the various options under consideration, the Company has not yet determined the various public information and consultation processes that will be used for this project. Public open house information and consultation sessions will be held in Sept-Îles, Wabush/Labrador City, and Fermont. The number of sessions, their locations and the exact nature of the information provided during these sessions will be determined once the final option is chosen and confirmed. The stakeholders that may be concerned by the project includes, without being limited to, Aboriginal communities, general public of the area, the municipalities where the project will take place, the Sept-Îles Port Authority, the Tshiuetin Railway administration, and numerous non-governmental organizations.

Numerous meetings with Aboriginal communities concerned by the project will also be held. It appears that the project may interest the following Aboriginal communities:

- The Innu community of Uashat Mak Mani-Utenam, which comprises the Uashat reserve, located in the western end of Sept-Îles (Quebec), and the Maliotenam reserve, located 16 km east of Sept-Îles (Quebec);
- The Innu community of Matimekush-Lac-John, which comprises the Lac-John reserve, about 3.5 km north-east of Schefferville (Quebec) and the Matimekush reserve, along the shores of Pearce Lake in Schefferville (Quebec);
- The Naskapi community located in Kawawachikamach, 16 km north-east of Schefferville (Quebec), near the Quebec-Labrador border.

Depending on the chosen option for the southern end of the railway project (see section 4.3), an additional Innu community may also be contacted, namely the Innu community of Pessamit. In fact, a part of the Québec-Cartier option, notably in the Petit lac Manicouagan sector, could touch Pessamit's Nitassinan. The Betsiamites reserve is located 54 km south-west of Baie-Comeau.

The railway project could be of interest to the Innu Nation (composed of two Innu communities of Labrador: Natuashish and Sheshatshiu) respectively located at 260 km and 25 km north of Happy-Valley-Goose Bay, which is situated approximately 575 km from the Quebec-Labrador border.

The northern end of the railway project could also be of interest to the community of Southern Labrador known as NunatuKavut Community Council.

The contact information of each of these Aboriginal communities is presented in the Appendix A.

The CEEA and the Company will discuss concerning the communities that may be affected due to potential Aboriginal rights of Aboriginal communities in the region where the project will be built.

All concerned Aboriginal communities will be contacted by the Company and introduced to the project early in the environmental assessment process. The documents produced will be provided for their comment. These documents should

include the environmental impact statement, the environmental assessment report and other documents, as required by the environmental assessment process. Public open house information and consultation sessions will be held in the municipalities of Sept-Îles, Wabush/Labrador City and Fermont during the environmental assessment period and the Aboriginal communities will be invited to attend. Specific meetings will be held with the Aboriginal communities for which the project is of interest. Communities will be invited to provide comments and concerns, either written or verbal, on the documents received during the information sessions organized by the Company or by the CEEA. The company does not yet know the communities potential comments or concerns.

2.6 Legislative and Regulatory Requirements

Federal Legislative and Regulatory Framework

The Company will be majority owned by CN, and by the Caisse de dépôt et placement du Québec in a minority proportion. The Company will be operated by CN, a railway company as defined in the *Canada Transportation Act* (S.C. 1996, c. 10) and to which a certificate of fitness was issued by the Canadian Transportation Agency (CTA) pursuant to section 92 of this Act.

Subsection 8(1) of the Act 2012 provides that a project description is required for any project which includes a *physical activity* designated by regulation.

The *Regulation Designating Physical Activities* (RDPA) enumerates the activities that may trigger the application of subsection 8(1) of the Act 2012. The construction, operation, decommissioning and abandonment of a railway line more than 32 km in length on a new right-of-way is a designated *physical activity* in accordance with section 28a) of the RDPA. Further to the screening of the project by the CEEA pursuant to subsection 10 of the Act 2012, the CEEA will decide if an environmental assessment of the project is required.

The following federal legislative and regulatory requirements could in particular apply for the implementation of the designated project.

The CTA will have to grant an approval for the construction of the railway line pursuant to subsection 98 (2) of the *Canada Transportation Act*.

Fisheries and Oceans Canada (DFO) will issue an authorization pursuant to subsection 35 (2) of the *Fisheries Act* (R.S.C., 1985, c. F-14), given the potential impact of the project on fish habitat.

Transport Canada (TC) should grant an approval relating to bridge construction pursuant to paragraph 5 (1)a) of the *Navigable Waters Protection Act* (R.S.C., 1985, c. N-22), and possibly also pursuant to subsection 10 (1) of the *Railway Safety Act* (R.S.C., 1985, c. 32 (4th Supp.)).

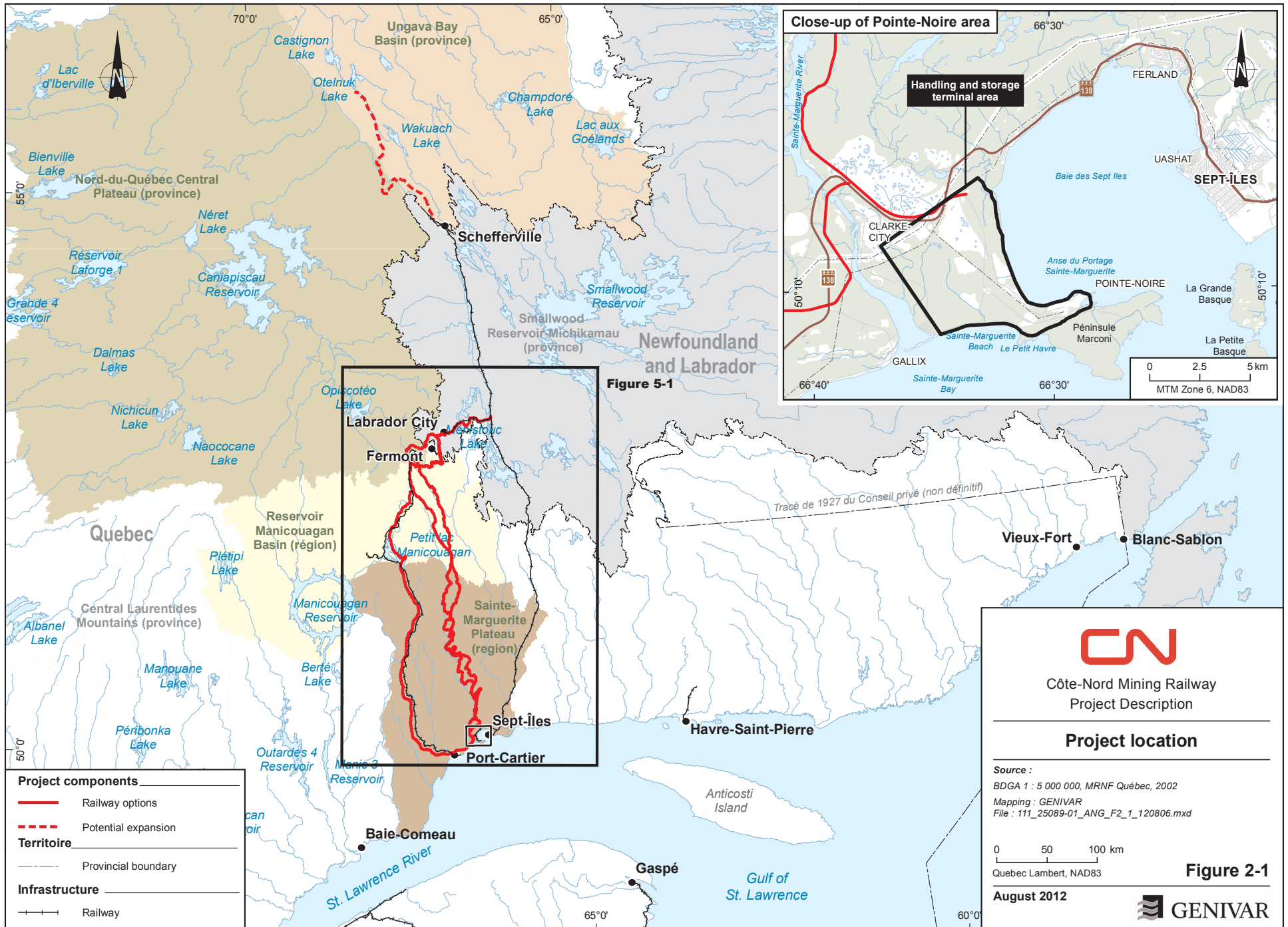


Figure 5-1

Close-up of Pointe-Noire area

Handling and storage terminal area

0 2.5 5 km
 MTM Zone 6, NAD83

Tracé de 1927 du Conseil privé (non définitif)

Natural Resources Canada (NRCan) should issue a permit under subsection 7 (1) of the *Explosives Act* (R.S.C., 1985, c. E-17), given that explosives will be used and stored for the construction of the railway project.

Since the project is designated under the RPDA, the CEAA must act as the responsible authority with respect to the environmental assessment. An environmental assessment following the standard federal environmental assessment procedure will apply south of the 53rd parallel in Quebec and in Labrador.

The CEAA (Quebec regional office) has been met once by the Company at the early stage of the project for guidance regarding the environmental assessment procedure.

Provincial Legislative and Regulatory Framework

The project will be reviewed under the federal environmental assessment process and no review is required provincially. Prior to construction, specific provincial permits may be required for certain aspects of the project for agencies such as Ministry of Sustainable Development, Environment and Parks in Québec and from Labrador Department of Environment and Conservation in Newfoundland and Labrador. The specifics of these permits and agencies involved will be determined once final designs of the proposed project are complete.

3 PROJECT JUSTIFICATION

Global demand for iron ore in recent years has generated extensive exploration activities and commissioning of new mines in the region of the Labrador Trough. The economic development of Côte-Nord and Northern Quebec has recently been identified as a strategic priority by the government of Quebec (development project called “Plan Nord”). Mining operations represent a major component of the economy of the Côte-Nord, of Northern Quebec and of Labrador, where the exploration of mineral resources is far from being fully established. As the world demand for iron ore grows, Quebec offers a strategic opportunity to fulfill part of this demand and to maximize its economic potential.

Numerous mining projects in these regions are at various stages of completion, offering insight on new production and anticipated volumes of 50 to 125 million tonnes of ore per year between 2015 and 2019.

This new production requires the establishment of transportation facilities to carry the ore from the mine to the port of Sept-Îles as well as handling and storage facilities. Several mining companies had planned to build their own railway line and their own handling and storage terminal, which would have led to a proliferation of facilities in the region.

The Company plans, by the completion of this project, to support the mining development in the Côte-Nord, Northern Quebec and Labrador regions by building a multi-user railway network primarily dedicated to ore transportation as well as by building a multi-user ore handling and storage terminal in the Pointe-Noire area. The railway may also provide transportation services for other products such as fuel, construction equipment, and building materials depending on customer demands. Both the Pointe-Noire terminal and the railway will be designed with the intention of serving multiple clients. This approach significantly differs from the traditional approach in the mining industry of building and operating facilities dedicated for a single mining company. The multi-user aspect of both components of the project will generate synergies and will allow to significantly reduce the environmental footprint while ensuring capacity required for ore transport, storage and handling.

4 PROJECT DESCRIPTION

4.1 Project Components

The Company's project is composed of two distinct but complementary components:

- Railway network serving the transportation needs of the mining industry;
- Ore handling and storage terminal at the port of Sept-Îles, in the Pointe-Noire area.

These two components are described in the following sections. The general descriptions refer to both components of the project. When required, sub-sections have been created to distinguish the information strictly concerning one facility.

At this stage, only a general description of the facilities that will be required for the project is available. A more detailed description will be presented in the environmental impact statement. No federal government funding is being provided for the completion of this project.

4.2 Ore Handling and Storage Terminal

The port of Sept-Îles plans to build an all-season shiploader accessible to multiple users (project currently under environmental review). The Company's handling and storage terminal facilities will be connected to the port's shiploading facility.

4.2.1 Ore Handling and Storage Facility, Receiving/Departure Yards and Loop Track

The facilities will be built in steps in order to accommodate demand as volumes increase (potential of 4 steps for up to 125 million tonnes per year). Step 1 is expected to have a capacity of 50 million tonnes per year. The volumes of steps 2 to 4 will each add an additional capacity of 25 million tonnes per year. These facilities are included in the project described in this document.

The site of the facilities will include a receiving yard, a departure yard and loop tracks between yards containing tandem rotary car dumpers. The ore storage area will be located inside of the loop tracks. An overland conveyor network will connect from the storage area to the port of Sept-Îles shiploader. An area will also be allocated for a facility to handle inbound materials.

Each receiving and departure track will be conceived to accommodate up to 250 cars and five locomotives. As the volume of processed ore increases, additional tracks capacity and tandem car dumpers will be added.

The total trackage length of the railway comprising the receiving yard, the departure yard and the loop tracks may reach 90 to 120 km (55 to 75 miles). All track construction is assumed to be 136 lbs rail on hardwood ties, with standard fasteners.

4.2.2 Tandem Car Dumper

A car unloading system comprised of a tandem rotary car dumper capable of maintaining a 6,000 tonnes per hour dumping rate will be used. The car dumper will utilize an indexer, or car positioner (in most cases) to move cars throughout the dumping process. The car dumper will allow locomotives to stay attached to the train throughout the dumping process, therefore minimizing operational delay.

The car dumper building will have a below-grade ore hopper to receive the customer's product, which will be dumped onto a conveyor belt heading to the storage facility. The conveyor network will allow the product to be carried to the storage area and to the shiploader central tower.

4.2.3 Storage and Handling Facilities

The loop tracks will circle around the storage area, which has an estimated surface of 600,000 to 1,450,000 m².

Stacking and reclaiming operations will be independent from each other, so that ore can be stacked on any pile and reclaimed from any pile, at any time. Each expansion of the project will have its own conveyor connecting to the shiploader and to the intermediate storage facility of the port of Sept-Îles. The total conveyor length will cover from 24 to 42 km (15 to 26 miles).

This intermediate storage area, located adjacent to the port of Sept-Îles shiploading facility will temporarily store the excess ore on the conveyor during shipment. This storage facility must be adjacent to the end of the conveyor system and will be built on pillars or backfill material covering an area between 75,000 and 350,000 m².

4.3 Railway Network

The railway line will begin in the Pointe-Noire industrial area, where it could connect to the existing railway network (Arnaud railway; CFA). From Pointe-Noire, the mainline will extend north for a distance of 510 to 550 km (315 to 340 miles; depending on the selected option) to connect to the existing Tshiuétin Railway at Emeril Junction. The main line will be located near the Fermont and Wabush/Labrador City areas.

Several potential route options are currently under review.

South of Champion Minerals' proposed Fire Lake Nord mine, three new construction options are under consideration (Figures 2-1 and 5-1):

- The Sainte-Marguerite-A option, which starts from Pointe-Noire and generally follows the east bank of the Sainte-Marguerite River (hereafter referred to as "Sainte-Marguerite-A option");
- The Sainte-Marguerite-B option, which starts from Pointe-Noire and generally follows the orientation of the Sainte-Marguerite-A option at a distance varying from about 0 to 20 km on its east side (hereafter referred to as "Sainte-Marguerite-B option"); and

- The Quebec-Cartier option, which starts from Pointe-Noire and generally follows a line east of the Quebec Cartier Railway (hereafter referred to as “Quebec-Cartier option”).

North of Champion Minerals’ Fire Lake Nord mine, two options are also being considered to reach the region of Emeril Junction in Labrador, near the Tshiuetin Railway (Figures 2-1 and 5-1):

- The Alderon-Emeril option heads eastward from 27 km southwest of Fermont, turns north to pass in the Alderon mining project sector and east of Fermont, then continue east approximately following the existing Northernlands Railway to the Tshiuetin Railway (hereafter referred to as the “Alderon-Emeril option”). The length of this option in the territory of Newfoundland and Labrador is approximately 94 km; and;
- The Cliffs-Emeril option heads east in the Bloom Lake mine area, follow the existing Bloom Lake Railway and continue east approximately following the existing Northernlands Railway to the Tshiuetin Railway (hereafter referred to as the “Cliffs-Emeril option”). The length of this option in the territory of Newfoundland and Labrador is approximately 95 km.

The connection with the Tshiuetin Railway is subject to commercial agreements with the latter.

Concurrently with the new construction options, the Company plans to continue discussions with the railways of the region in order to arrive, if possible, to commercial agreements that could lead to the use of existing facilities wherever it may be relevant to do so.

The mainline will have a planned ROW width between 30 and 105 m (100 to 350 ft). The ROW will be wider in some areas to provide enough space for machinery and storage of materials during the construction phase. The planned track speed is 55 to 70 km/h (35 to 45 mph). Track construction is planned to be 37 tonne axle load, 136 lbs rail on hardwood ties with standard fasteners, 12” ballast depth and standard roadbed, in accordance with industry standards. Track targeted grades are 0.4% against loads and 1.3% against empties.

The mainline will contain many sidings of approximately three km each and will include double tracks in certain areas.

A number of spurs will connect to the mainline (north-south axis) which will allow to service the mining projects. However, these spurs are not included in this project description because their construction will be the responsibility of the mining companies that want to connect to the main line.

4.3.1 Crossings and Tunnels

Depending on which option is chosen, an estimated 10-50 utility crossings will be required.

The terrain on which the mainline will be built is extensively covered by stream networks. As a result, it is estimated that numerous bridges and culverts will be required along the railway.

Depending on the selected option, between 3 and 10 tunnels will be constructed.

4.3.2 Access Roads

The number and location of access roads will be determined when a final option is chosen. It is estimated that 30-60% of the chosen option will have a parallel road.

Perpendicular access roads are also planned to provide access to the construction camps. It is estimated that one perpendicular road segment could be required for every 50 km (30 miles) of railway, for a total potential of 11 segments. In addition, in areas where existing road networks are present, road crossings will be required.

4.3.3 Railyards and Support Facilities

A railyard is planned in the Pointe-Noire area. Maintenance shops for cars and locomotives, maintenance-of-way equipment shops, a fuelling facility and office facilities are also planned in Pointe-Noire. It is possible that another one or two smaller support yards will be required in the northern portion of the project.

4.3.4 Other Facilities

It is estimated that one or two crew bunkhouses will be required, 275 to 375 km (170 to 200 miles) apart to provide crew accommodations and crew changes.

4.4 Construction

Construction of the handling and storage terminal will respect the sequence, the standard construction procedures and the requirements of the port of Sept-Îles. The required construction activities will include site clearing and grading, excavation and infilling, construction of access roads and yards as well as construction of the handling and storage facility and buildings. Pictures of the area where the handling and storage facility will be built are shown in the Appendix A.

The railway construction will follow the standard construction sequence and industry standard construction procedures. This sequence begins with clearing the ROW, constructing earth fill for surface with levels that must be increased, cutting embankments for surface that levels must be lowered, construction of the access road and railway. Construction of the railway could require the use of explosives. Pictures of typical landscapes where the railway will be built are shown in the Appendix A.

The required borrow pits will be identified when the final option is chosen. However, it is planned that most embankments required for construction will be salvaged from cuttings. Borrow pits, if any, could be located 10 km apart. Quarries are estimated to be required at 100 km spacing.

The majority of surplus cuts will be used in access roadbed backfills, hence decreasing the need for overburden disposal locations. Earth disposal sites could be required in certain areas at 10 km intervals.

It is estimated that around 10 temporary construction camps will be required to provide construction crew accommodations during railway construction.

4.5 Operation

The material handling and storage facility will accommodate four to eight loaded trains per day. Yearlong operation is planned, 7 days per week and 24 hours per day.

The terminal will process up to 250 car trains and up to five locomotives in different configuration (possibly 2-1-2). The cars will have a capacity of up to 315,000 lbs (116 tonnes net of product per car).

The railway is expected to provide transportation services for mining customers, with an estimated tonnage of 35 to 70 million tonnes of ore annually.

In order to ensure transport of this quantity, the railway will run four to eight trains loaded with ore per day, as well as four to eight empty trains per day. Depending on customer demand, the number of trains running daily could vary over the life of the railway. Yearlong operation is planned, 7 days per week and 24 hours per day.

Outbound products will principally be iron ore. Inbound products will consist of limestone, bentonite, diesel, bunker fuel, ammonium nitrate, grinding balls, construction material, rail cars, locomotives and mining equipment.

4.6 Waste Generated and Emission in the Environment

Various solids, liquids and gases will be generated during the railway project construction and operation. These products are presented in Table 4-1.

Some atmospheric emissions will occur during the periods of construction and operation of the facilities, both in the material handling and storage facility (construction equipment, car dumpers, conveyors, etc.) and along the railway (construction equipment, rock blasting, trains and locomotives, etc.). These emissions are particularly associated to particulate matter and greenhouse gas.

All disposals of waste, liquid discharges and air emissions will be managed according to applicable regulations. More detail on that subject will be included in the environmental impact statement.

Table 4-1: Waste and Emissions to be Potentially Generated

Facility/Activity	Waste/Emission			
	Solid	Liquid	Gaseous	Hazardous
Handling and storage terminal				
Construction	<ul style="list-style-type: none"> Residual material (various) 		<ul style="list-style-type: none"> Greenhouse gas from machinery and explosive uses Dust from machinery movements 	<ul style="list-style-type: none"> Contaminated soils from spills/leaks Used oil Lubricants
Operation	<ul style="list-style-type: none"> Contaminated soils from spilled iron ore Dust from piles and conveyor 	<ul style="list-style-type: none"> Stormwater Waste water from the dock facility 	<ul style="list-style-type: none"> Greenhouse gas from train, vehicle and heavy equipment movements Dust from handling activities and machinery movements 	<ul style="list-style-type: none"> Contaminated soils from spills/leaks Used oil Lubricants
Office building	<ul style="list-style-type: none"> Domestic residual material 	<ul style="list-style-type: none"> Sanitary water from sanitary installations 		
Railway and associated facilities				
Rail Construction	<ul style="list-style-type: none"> Wood Soil Rock material Concrete particles 	<ul style="list-style-type: none"> Used oil Lubricants Sanitary water 	<ul style="list-style-type: none"> Greenhouse gas from machinery and explosive uses Dust from machinery movements 	<ul style="list-style-type: none"> Contaminated soils from spills/leaks Used oil Lubricants
Construction camps	<ul style="list-style-type: none"> Domestic residual material 	<ul style="list-style-type: none"> Sanitary water 	<ul style="list-style-type: none"> Dust from machinery movements 	<ul style="list-style-type: none"> Contaminated soils from spills/leaks Used oil Lubricants
Train	<ul style="list-style-type: none"> Domestic residual material 		<ul style="list-style-type: none"> Greenhouse gas from train traffic Dust from train traffic 	
Crew bunkhouses	<ul style="list-style-type: none"> Domestic residual material 	<ul style="list-style-type: none"> Sanitary water 		<ul style="list-style-type: none"> Contaminated soils from spills/leaks Used oil Lubricants
Yards/ repair shops	<ul style="list-style-type: none"> Batteries Brake shoes General refuse Metal products Wood waste 	<ul style="list-style-type: none"> Sanitary water Stormwater Hydrocarbons 	<ul style="list-style-type: none"> Greenhouse gas from train traffic Dust from machinery movements 	<ul style="list-style-type: none"> Used oil Lubricants Anti-freeze/glycol Solvents Contaminated soils from spills/leaks

4.7 General Schedule

The environmental assessment process leading to project authorization and permit issuance is expected to extend until early 2014.

Construction for both the railway and handling and storage facilities could begin as soon as the permits are delivered, potentially in early 2014. The construction will begin by the development of access roads and by site preparation (deforestation, land stripping, camps, etc.). Construction is believed to require between one year and a half to three years. Construction works logistic (construction by section, number of building site) is not yet determined.

The planned operational date is expected to be progressive, starting early 2016 with completion by December 2017. The railway and the handling and storage facility are expected to be under perpetual operation. Thereby, no decommissioning has been planned.

Further details on the construction schedule and sequencing of realization of the project will be detailed in the environmental impact statement once the final route option has been chosen.

Some of the general descriptions contained in this section refer to both the railway and the material handling and storage facilities areas. When required, sub-sections were created to distinguish information that applies to a particular area. Note that several reference documents were consulted to describe the project's receiving environment (see Chapter 7).

CONSORTIUM ROCHE-DESSAU. 1995. *Aménagement hydroélectrique Sainte-Marguerite 3. Suivi environnemental 1994-1995. Inventaire de la grande faune et de la petite faune*. Sainte-Foy, Québec : le Consortium, octobre 1995. Pagination multiple.

GENIVAR. 2008. *Construction d'une aciérie à Sept-Îles. Inventaire des espèces d'oiseaux et de plantes menacées ou vulnérables. Rapport descriptif*. Présenté à la Corporation de promotion Industrielle et Commerciale de Sept-Îles. Pagination multiple.

GENIVAR. 2005. *Prolongement du quai 41, Sept-Îles*. Examen environnemental préalable présenté à l'administration portuaire de Sept-Îles. Rapport final. 150 p. et annexes.

HYDRO-QUÉBEC. 1991. *Aménagement hydroélectrique Sainte-Marguerite 3, rapport d'avant-projet, Partie 4 – Description du milieu*. 199 p.

MORNEAU, F. 2008. *Aménagement hydroélectrique Sainte-Marguerite-3 – Étude de l'aigle royal et de la sauvagine 1994-2007*. Rapport synthèse préparé pour Hydro-Québec Production. Montréal. François Morneau Biologiste conseil. 82 p.

PROCÉAN. 1999. *Projet de développement du « Terminal de vrac – pointe Noire », Étude environnementale*. Rapport d'évaluation environnementale présenté à la Corporation du Port de Sept-Îles.

An exhaustive literature review of the available environmental studies will be done during the environmental assessment report writing.

5.1 Study Area

The study area considered consists of the whole territory where the realization of the railway project described above could potentially have environmental impacts:

- All railway options presented in Section 4.3 and Figure 2-1, including a buffer zone of 5 km on each side of the options to ensure better representation of the territory;
- Most of the Pointe-Noire territory, which is the receiving environment for the ore handling and storage terminal.

The entire territory covered by the project is presented in more detail in Figures 5-1 to 5-3.

5.2 Physical Components

5.2.1 Climate

The study zone is characterised by a cold and moderately humid climate. The area near the St. Lawrence River's north shore displays milder climatic conditions and a vegetation growing season qualified as average. The latter varies from short to very short as we move further northward (Li and Ducruc, 1999).

5.2.1.1 Temperature and Precipitations

Milder climatic conditions prevail at the Sept-Îles meteorological station (south portion). The average maximum temperature observed in July is 15.3 °C and the average minimum is – 15.3 °C in January. The average annual temperature is 0.8 °C. The frost-free period lasts approximately 163.2 days (Environment Canada, 2012).

Further north, at the Fermont meteorological station (also representative of Wabush/Labrador City climate), the average maximum temperature recorded in July is 13.2 °C and the average minimum is -23.2 °C in January. The average annual temperature is - 3.8 °C (Environment Canada, 2012).

Each year, the Sept-Îles meteorological station, located in the south section of the options, records the highest rainfall (757.4 mm of rain versus 515.0 mm for Fermont). As for snowfall, it reaches an average of 412.0 cm at Sept-Îles and 291.5 cm at Fermont. The first snowfall generally occurs in October (Environment Canada, 2012).

5.2.1.2 Winds

Wind statistics from the Sept-Îles meteorological station show a marked dominance of easterly winds, with an average annual speed of 14.7 km/h. Wind data is available from Wabush Lake airport. The average annual wind speed is 14.4 km/h, with a dominance of westerly winds (Environment Canada, 2012).

5.2.2 Ambient Air Quality

The National Air Pollution Surveillance Program (NAPS) does not have any air quality monitoring stations in the project's vicinity. The two closest stations are located near the north shore of the St. Lawrence River, in Forestville (240 km south-west of Sept-Îles, forested rural area) and in Mingan (180 km east of Sept-Îles, undeveloped rural area).

In Sept-Îles, especially in the Pointe-Noire area and Port-Cartier there are extensive industrial zones where atmospheric emissions like particular matter, carbon monoxide (CO), carbon dioxide (CO₂), sulfur (SO₂), nitrogen oxides (NO_x) and polycyclic aromatic hydrocarbons (PAH) occur. Up north, few settlements are found and industrial activities are rare. However, near Fermont, Wabush and Labrador City, mining sites in operation can produce atmospheric emissions.



Côte-Nord Mining Railway Project Description

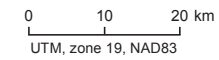
Railway options environment description

Sources :

BDGA, 1 : 1 000 000, MRN Québec, 2002
 CanVec, 1 : 50 000, RNCAN, 2010
 SDA, 1 : 20 000, MRNF Québec, mai 2010
 Gestion des titres miniers (GESTIM), MRNF Québec, décembre 2011
 Territoires récréatifs du Québec (TRQ), MRNF Québec, septembre 2009
 Ministère du Développement durable, Environnement et Parcs (MDDEP) : MRNF, 2011
 CCAE, 2M, 2012

Mapping : GENIVAR

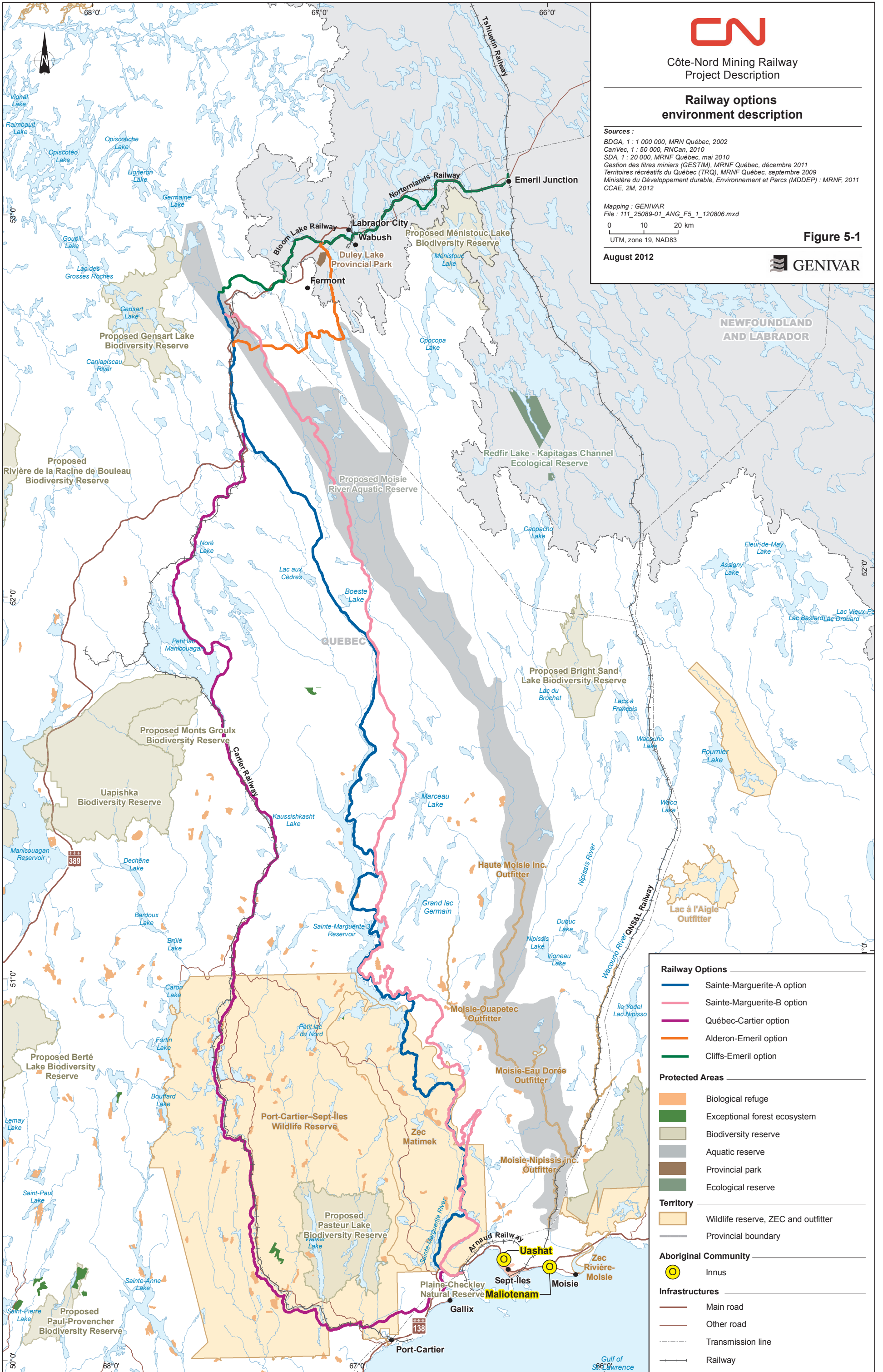
File : 111_25089-01_ANG_F5_1_120806.mxd



UTM, zone 19, NAD83

Figure 5-1

August 2012





CN

Côte-Nord Mining Railway
Project Description

**Material handling and storage facility area
Vegetation and protected
areas description**

Sources :
BDTQ, 1/20 000, MRNF Québec, 2007
Système d'information écoforestière (SIEF), MRNF Québec, 2010
Centre de données sur le patrimoine naturel du Québec, MDDEP, 2011
CCAE, 2M, 2012

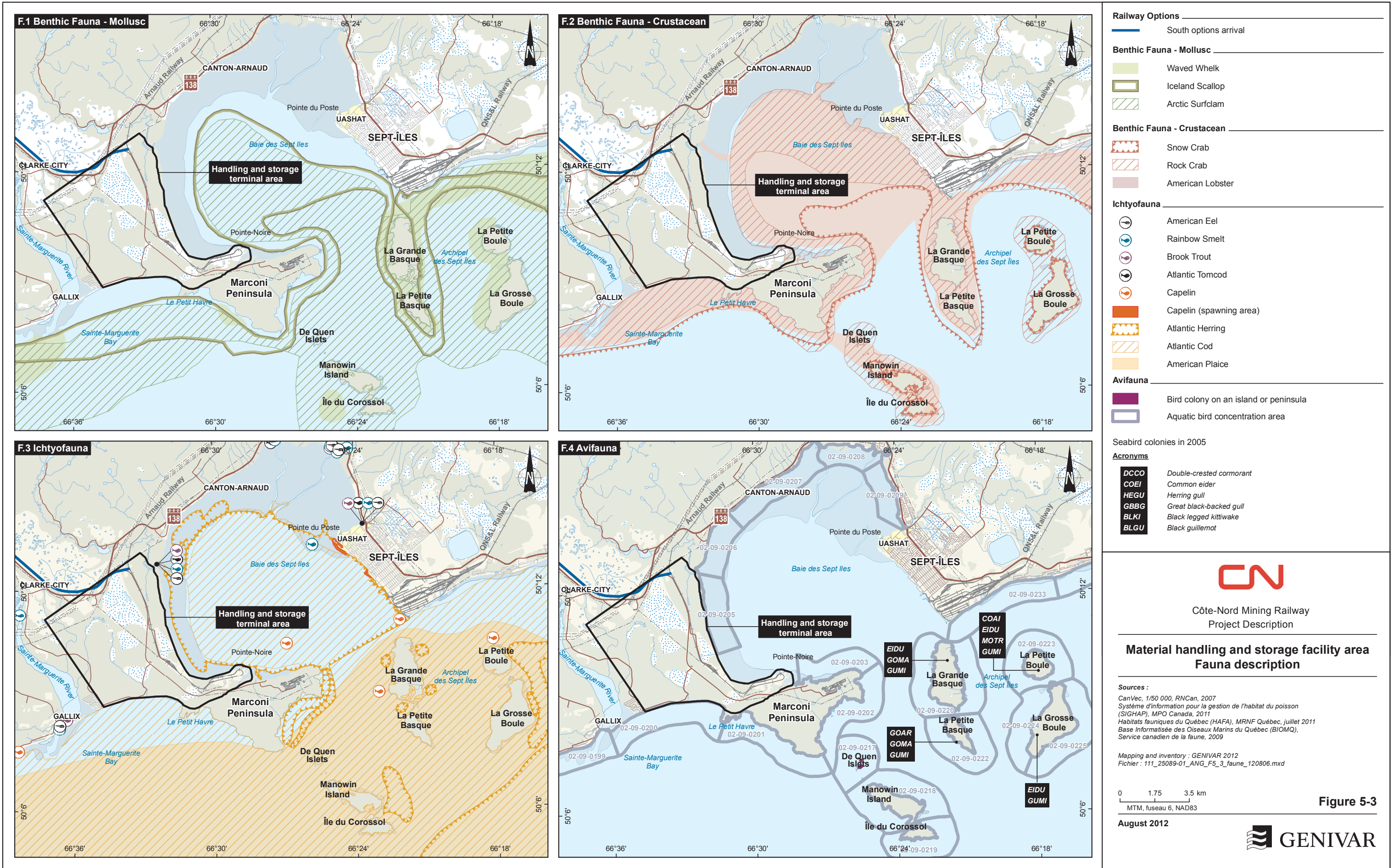
Mapping and inventory : GENIVAR 2012
File : 111_25089-01_ANG_F5_2_veg_120806.mxd

0 750 1 500 m
MTM, NAD 83, fuseau 6

Figure 5-2

August 2012

GENIVAR





 Côte-Nord Mining Railway
 Project Description
Material handling and storage facility area
Fauna description

Figure 5-3

5.2.3 Soil, Geology and Geomorphology

The options cross two of Quebec's natural provinces and one of Labrador's ecoregions:

- Central Laurentides mountains (Quebec);
- Nord-du-Quebec central plateau (Quebec); and
- Smallwood reservoir – Michikamau (Labrador).

The natural province of Central Laurentides mountains (see Figure 2-1), with a size of 205 000 km², is crossed by the southern options. Mainly built of gneiss, anorthosite and granite, it overlies on the geological Grenville Province (1.2 Ga to 950 Ma) (Li and Ducruc, 1999; MRNF, 2012a). In this area, most of the population inhabits the littoral plain of the St. Lawrence River which is limited to the north by the presence of a large and broken-up plateau. This plateau, dominated by the Groulx Mounts massif is formed by hills separated by sunken and rectilinear valleys. The hills rise to an elevation of 400 to 600 meters, whereas the massif exceeds 1,000 meters of elevation. The presence of hills is higher in the south of this natural province, whereas in the north, the landscape is much flatter. Although thin glacial deposits associated with numerous rock outcroppings are dominant in this natural province, thick glacial deposits are also found in the northern section of this territory. Furthermore, the majority of the valley bottoms are covered by glaciofluvial sand and gravel, whereas deltaic and littoral sand covers the littoral plain (Li and Ducruc, 1999).

In Quebec, the northern section of the study zone (Figure 5-1) is positioned in the natural province of Nord-du-Québec central plateau (see Figure 2-1). With an area of 120,000 km², it is situated in the geological Superior Province (4 to 2.5 Ga), or more precisely in the geological Ashuanipi subprovince, which shapes the central section of the Canadian Shield (Li and Ducruc, 1999; MRNF, 2012a). This natural province is characterised by a central depression enclosed by hills with rounded summits and elevation varying from 300 to 700 meters. The basement rock of these hills is dominated by tonalite and gneiss of Archean age. Significant thick glacial deposits dominated by Rogen moraines cover the territory. Thin glacial deposits, in which rises rock outcrops, cover also the top of the hills. Also, glaciofluvial sand and gravel (esker) are present on the territory as well as numerous drumlins. The occurrences of peat bog are fairly common between Rogen moraines and drumlins (Li and Ducruc, 1999).

Finally, the northern end of the study zone in Labrador (Figure 5-1) extends in the Smallwood reservoir – Michikamau ecoregion (Figure 2-1; Newfoundland and Labrador Heritage, 2002). While the southern section of this ecoregion overlies on the geological Grenville Province, the northern portion stands on the geological Churchill Province (Newfoundland and Labrador Heritage, 2000). This ecoregion is characterized by a flat to gently rolling topography with numerous lakes and an altitude ranging between 300 m to more than 500 m above sea level. Drumlins and eskers are common types of landforms. Isolated rugged hills rising approximately 150 m above the general surface are found (Newfoundland and Labrador Heritage, 2002). Humo-ferric podzolic soils are dominant in this region. Permafrost occurs in isolated areas, primarily in wetlands (The ecological framework of Canada, 2012).

The material handling facility (Figures 5-2 and 5-3) is contained in the southern end of the Central Laurentides mountains natural province (see Figure 2-1). This area is comprised within two distinct physiographic entities: the coastal plain and the Sept-Îles Archipelago (not shown on map). The coastal plain includes several marine terraces shaped during the flooding of the sector by the Goldwaith Sea, as well as fluvial terraces shaped by the granular fill of the Sainte-Marguerite and Moisie Rivers. This plain covers all the circumference of the Baie des Sept Îles until Pointe-Noire. The Sept-Îles Archipelago includes the Marconi Peninsula, the Corossol Islands, the Grande Basque, the Petite Basque, the Grosse Boule, the Petite Boule, Manowin and the Îlets De Quen, as well as some islets and rocky cay (Procéan, 1999).

5.2.4 Hydrology

Railway Section

In Quebec, the railway options cross the St. Lawrence northeast watershed. From Sept-Îles to Fermont (Figure 5-1), the water drains southward, ultimately reaching the St. Lawrence Gulf. At a finer scale within the St. Lawrence northeast watershed, most of the Sainte-Marguerite options are located in the Sainte-Marguerite River watershed, which is structured by the river itself and the Sainte-Marguerite 3 reservoir, and then slightly overlap the Moisie River watershed and the Manicouagan watershed. Further west, the Quebec-Cartier option runs through the aux Rochers River watershed in its southern end and the Manicouagan watershed up to Fermont area.

In the area where the northern options (Alderon-Emeril and Cliffs-Emeril options) circulate in Labrador, the hydrologic systems drain eastward to the Atlantic Ocean through the Ashuanipi River sub basin.

Numerous lakes of different size are also present along the railway options. When compared to the rest of the Quebec province, the Côte-Nord region is characterized by waterbodies of relatively small size and found in medium density, with the exception of the north-western reach of the region where the lake density is high (MRNF, 2007).

Material Handling Facility Area

Locally, in the handling and storage facility area, the study zone runs between the St. Lawrence Gulf to the north and the Baie des Sept Îles to the east, which extends over more than 100 km² (Figure 5-2). The water depths under 15 m counts for 50% of the bay's surface, while those under 30 m count for more than 90%. The bay's maximum depth reaches 55 m (GENIVAR, 2005). The main watercourses supplying the bay are the Hall, au Foin, du Poste and des Rapides Rivers.

5.3 Biological Components

Throughout this section, the Quebec ecological reference framework will be used to describe the biological components of the study area. This framework is a tool

developed for the ecological classification of the territory based on topography, climate, geology, soil, water and ecology.

Given the geographic proximity between the portion of the northern options (Alderon-Emeril and Cliffs-Emeril options) located in Labrador and the Quebec territory, the same reference framework was used to describe that portion of the study area. From a biological point of view, strong similarities are observed between habitats on each side of the Quebec-Labrador border, thus justifying the extrapolation of the Quebec reference framework.

The study area is located within two different natural provinces (section 5.2.4; see Figure 2-1) which are, from south to north:

- Central Laurentides mountains; and
- Nord-du-Québec central plateau, which extrapolates to West Labrador.

For the Central Laurentides mountains province, a second level ecological reference framework will be added for precision. The area comprised between Sept-Îles and the top of the Sainte-Marguerite river watershed is referred to as the Sainte-Marguerite plateau. The territory north of that region up to Fermont is referred to as the Manicouagan Reservoir basin (Figure 2-1).

5.3.1 Vegetation and Wetlands

5.3.1.1 Vegetation

Railway Area

The study area encompasses various ecosystems from south to north, but they are all included in the boreal vegetation zone. Near the shoreline, in the Sept-Îles region (Figures 5-1 and 5-2), the bioclimatic domain is balsam fir – white birch. The maritime climate near the coastline allows the balsam fir, the white spruce and the white birch to be the main species in the landscape.

The spruce-moss domain is present in the Central Laurentides mountains region whereas the spruce-lichen domain is found north of that region (Figure 2-1). In the spruce-moss domain, black spruce pure stands are widespread where the undergrowth is mainly composed of hypnaceous mosses and ericaceous shrubs. The spruce-lichen bioclimatic domain is very similar in composition with the spruce-moss domain. However, tree density is much lower and the ground is principally covered by lichens.

Material Handling and Storage Facility Area

The Pointe-Noire area is in the balsam fir – white birch bioclimatic domain. The maritime climate near the coastline allows the balsam fir, the white spruce and the white birch to be the main species in the landscape. This sector can be divided in two: a plateau and a mountainous area in the Marconi peninsula (Figure 5-2).

Forested areas are mainly located on ancient sand beaches. Black spruce lichen stands are mainly located east of the Pointe-Noire road and signs of past logging

are observed. At the proposed receiving yard location, balsam fir is a more dominant species and signs of past spruce budworm outbreaks are visible (dense regeneration with snags and downed woody debris). On both sides of the Pointe-Noire there are beaches where a characteristic floristic composition is found. In the Marconi peninsula, bare grounds are found on hilltops and black spruce is the main species.

5.3.1.2 Wetlands

Railway Area

The maps produced by the Atlas of Canada on wetlands distribution were consulted to determine the proportion of wetlands in different regions crossed by the proposed railway options (NRC, 2012).

The Sainte-Marguerite plateau is not very rich in wetlands. In fact, they cover less than 5% of the territory. However, large peat lands are located in the Pointe-Noire area. The Plaine-Checkley, located near Arnaud Railway (CFA) at Pointe-Noire, is a peat land under a protection project by the MRNF and Ducks Unlimited (Nature Québec/UQCN, 2007) (Figure 5-2). Along the St. Marguerite River and the associated reservoirs, wetlands are less common and mainly composed of swamps related to streams.

The Manicouagan Reservoir basin is more dominated by wetlands (5 to 10% cover). Peat lands are more abundant in this area. In the Nord-du-Québec central plateau, wetlands cover less than 5% of the territory (NRC). However, aquatic ecosystems (lakes, rivers and streams) are dominant in this region.

Fens and swamps are the wetland types that are more likely to contain higher species richness.

Material Handling and Storage Facility Area

The plateau is dominated by peatlands located on both sides of the proposed handling and storage terminal location (Figure 5-2). There is also an ancient river meander where minerotrophic peatland is found.

Fens and swamps are the wetland types that are more likely to harbour higher species richness.

5.3.1.3 Flora Species at Risk

Railway Section

Based on the known geographical range of species distribution, 34 species at risk are likely to be present in the study area (Table 5-1). Many of those species are associated with calcareous habitats, exposed rocks and outcrops, alpine and subalpine environments and wetlands.

Table 5-1: Vegetation at Risk Likely to be Observed in the Railway Area

Species name	Preferential habitats
Orange-flowered false-dandelion	Mountain and subalpine environments, swamps
Clustered lady's-mantle	Sandy shores, swamps and wet meadows
Rosy pussytoes	Outcrop, scree, exposed rocks, shores
Pulvinate pussytoes	Outcrop, scree, exposed rocks, rocky shores, exclusively in calcareous environments
Dragon's mouth	Bogs
American alpine lady fern	Rocky shores, snowbed, subalpine prairies
Large-leaved avens	Undergrowth, clearings, bushes, wet meadows, roadsides and ditches
Alpine sedge	Dry rocks, cliffs, outcrops and sand terrace
Man-hater sedge	Rocky outcrops
Swamp thistle	Alpine tundra
Robinson's hawkweed	Rocky shores, clay banks, dry rocks, sand embankments
Norwegian cudweed	Prairies and mountainous and subalpine creek shores, snowbeds
Woolly beachheather	Pinewood clearings on sand dune, dune, maritime heathlands, sandy shores
Ostrich fern	Rich, wet and shaded deciduous forests
Northern holly fern	Deciduous, mixed and coniferous stands, rocky outcrops
Knotted pearlwort	Maritime rocks and sands
Boreal sweet-vetch	Rocky outcrops, alpine tundra
Hidden-fruit bladderwort	Bog ponds, lakes and ponds stagnant water
Pointed frostwort	Alpine and arctic tundra, snowbeds, tundra ostiole
Northern mushroom-headed liverwort	Alpine and arctic tundra, outcrops and screes
Knobby earwort	Alpine and arctic tundra, outcrops and screes
Marsh earwort	Rocky shores, outcrops and screes
Large notchwort	Bogs, fens and snowbeds
Sprig moss	Temporary pools, sandy shores, outcrops and screes
Tawny fork moss	Alpine and arctic tundra, outcrops and screes
Blind's moss	Outcrops and screes
Beautiful bryum	Rocky shores
Long-leaved hook moss	Marshes, swamps and wet meadows
Hair-pointed grimmia	Cliffs, outcrops and screes
Spring hook moss	Fens and temporary pools
Compact rustwort	Alpine and arctic tundra, outcrops and screes
Patch earwort	Alpine and arctic tundra, snowbeds and sandy shores
Sickle-leaved fork moss	Alpine and arctic tundra, snowbeds
Fine-leaved erect-capsule moss	Alpine and arctic tundra

Sources: CDPNQ (2008), Faubert *et al.* (2010) and DEC (2011).

Material Handling and Storage Facility Area

Based on the known geographical range of species distribution, eight species at risk are likely to be present in the Pointe-Noire area (Table 5-2). Many of those species are associated with wetlands, shores and open habitats. Woolly beachheather and hidden-fruit bladderwort are the most likely species to be observed in the study area. Recently, Woolly beachheather was observed once in this area (GENIVAR, 2008) (Figure 5-2).

Table 5-2: Vegetation at Risk Likely to be Observed in the Material Handling and Storage Facility Area

Species name	Preferential habitats
Dragon's mouth	Bogs
Alpine sedge	Dry rocks, cliffs, outcrops and sand terrace
Woolly beachheather	Pinewood clearings on sand dune, dune, maritime heathlands, sandy shores
Ostrich fern	Rich, wet and shaded deciduous forests
Knotted pearlwort	Maritime rocks and sands
Hidden-fruit bladderwort	Bog ponds, lakes and ponds stagnant water
Hair-pointed grimmia	Cliffs, outcrops and screes
Spring hook moss	Fens and temporary pools

Sources: CDPNQ (2008) and Faubert et al. (2010).

5.3.2 Wildlife and Terrestrial Habitats

5.3.2.1 Reptiles and Amphibians

In the Côte-Nord region, 13 amphibian and 2 reptile species can be observed (table 5-3). The study conducted for the Romaine River hydroelectric complex development project revealed the presence of nine species (3 caudata, 5 anura and 1 squamata) where the most common species were the eastern American toad, the mink frog and the northern green frog (Fortin and Ouellet, 2005). Anura are mostly associated with marshes, swamps and peat lands for their reproduction (Fortin and Ouellet, 2005).

None of these species have been given a specific conservation status by the Quebec, Labrador or federal authorities.

Table 5-3: Reptile and Amphibian Species Likely to be Observed in the Study Area

Order	Species
Caudata	Common mudpuppy
	Red-spotted newt
	Spotted salamander
	Blue-spotted salamander
	Northern two-lined salamander
	Eastern red-backed salamander
Anura	Eastern American toad
	Northern spring peeper
	Wood frog
	Northern leopard frog
	Northern green frog
	Mink frog
	American bullfrog
Squamata	Common garter snake

Sources: Desroches and Rodrigue (2004) and FAPAQ (2001).

While its presence is unlikely, the leatherback sea turtle, an endangered species, is seldom observed in the St. Lawrence Gulf, notably on the lower North Shore and near Anticosti Island (MRNF, 2012b).

5.3.2.2 Avifauna

Railway Section

Nearly 300 bird species can be observed throughout the year in the Côte-Nord region (FAPAQ, 2001). During the breeding period, more than 100 species are expected to be observed between Sept-Îles and Labrador City/Wabush area. For example, a total of 108 species were observed during the breeding season in the Romaine River watershed (Hydro-Québec Production, 2007).

Near Sept-Îles, peatland pools are expected to be important breeding habitats for waterfowl. As a matter of fact, an Important Bird Area (IBA) designed for its numerous aquatic species and the presence of species at risk like the short-eared owl is located in this area. Numerous ospreys also nest near the coastline.

Sainte-Marguerite Plateau

Waterfowl habitats are mainly dominated by the Sainte-Marguerite River and its associated reservoirs. Because it is a deep and narrow valley, lakes are mainly located on hilltops, which could be a potential habitat for Barrow's goldeneye, a species at risk.

The numerous cliffs represent potential nesting habitats for the common raven and raptors like the merlin, the red-tailed hawk and the golden eagle. The latter is a vulnerable species in Quebec.

Terrestrial bird densities are expected to be higher in the Sainte-Marguerite plateau area than further north.

Breeding shorebirds are not expected to be very common in the wetlands of the Sainte-Marguerite plateau.

Manicouagan Reservoir Basin

Little information on waterfowl abundance exists for the Manicouagan reservoir basin (Figures 2-1 and 5-1).

Potential breeding habitats for raptors at risk are less present than in the Sainte-Marguerite plateau area. Bald eagles and ospreys could be found near the larger rivers (aux Pékans, Grasse and Carheil rivers).

For terrestrial birds, breeding pair densities and species richness are expected to be lower than with the Saint-Marguerite plateau. In Manicouagan reservoir basin, peat lands, marshes and swamps are frequented by different shorebirds species, which is not the case in the Sainte-Marguerite plateau.

Nord-du-Québec Central Plateau and West Labrador

In the Nord-du-Québec central plateau (Figures 2-1 and 5-1), waterfowl abundance is expected to be high because of the numerous aquatic ecosystems in place.

The presence of cliff-nesting raptor species is not likely in this sector because of the flat topography associated with the plateau. Bald eagles could be nesting near the large rivers.

Habitats for terrestrial birds are mainly open on hilltops (tundra and barren lands). These habitat types are poor in terms of species richness and abundance. However, at this latitude, northern species like the American pipit, the horned lark, the grey-cheeked thrush, the American tree sparrow, the willow ptarmigan and the rock ptarmigan are observed. Wetlands like wet meadows, riparian fens and peat lands are likely to be frequented by breeding shorebirds.

Material Handling and Storage Facility Area

As stated earlier, nearly 300 bird species can be observed throughout the year on the North Shore (FAPAQ 2001). The area including Pointe-Noire, the Baie des Sept Îles and the Archipel des Sept Îles is a significant bird gathering sector (Figure 5-3). As a matter of fact, this was designated as an Important Bird Area (IBA) for the numerous aquatic species present throughout the year, notably concerning species at risk. Most of the islands harbour seabird colonies. Most of the shoreline is located in aquatic bird concentration areas (ACOA), which are designated wildlife habitats by the MRNF. The Corossol Island is also a Migratory bird Refuge.

During the breeding period, around 90 species are expected to be observed in the Pointe-Noire area. For example, a total of 108 species were observed during the breeding season in the Romaine river watershed (Hydro-Québec Production 2007).

Concerning species at risk, several are known to nest near the study area such as the Bald Eagle, the Short-Eared Owl, the Yellow Rail and the Nelson's Sharp-Tailed Sparrow (Nature Québec/UQCN 2007). The presence of Rusty Blackbirds and Olive-Sided Flycatchers is also possible. The Short-Eared Owl is known to nest in the Pointe-Noire peatlands.

5.3.2.3 Mammals

For the Côte-Nord region, a list of 45 mammal species can be observed (Table 5-4).

Railway and Material Handling and Storage Facility areas

Big Game

There are three big game species that can be encountered in the study area: black bear, moose and caribou (woodland and migratory ecotype) (Table 5-4).

Sainte-Marguerite Plateau

Moose density in the Sainte-Marguerite river watershed (Figure 2-1) was estimated at 0.36 moose/10 km² (Consortium Roche-Dessau, 1995).

Black bear is present in Côte-Nord but at low densities (0.3 individuals/10 km² in 2005 for the hunting zone 19; Lamontagne *et al.*, 2006).

Woodland caribou was seldom present in the Sainte-Marguerite valley in 1988 (Hydro-Québec, 1991). This species is not likely to be found in the material handling and storage facility area.

Manicouagan Reservoir Basin

In the Manicouagan reservoir basin (Figure 2-1), moose density is expected to be lower than in the Sainte-Marguerite plateau.

Woodland caribou abundance is expected to be much higher in the Manicouagan reservoir basin compared to the Saint-Marguerite plateau. No densities were available for Carheil and Aux Pékans River areas but the species is known to be present (Hydro-Québec, 1991).

The black bear is present in this area but not very abundant.

Nord-du-Québec Central Plateau and West Labrador

Moose abundance in the Nord-du-Québec central plateau (Figure 2-1) has not been determined but it is expected to be low. In fact, preferential habitats are not abundant.

In this area, the migratory caribou of the George River herd ingress in the woodland caribou range of the Caniapiscau herd during winter (Brown *et al.*, 1986).

Low densities of black bear are found in this sector (Lamontagne *et al.*, 2006).

Small Game and Furbearer Animals

In the Côte-Nord region, 15 furbearer species can be found (Table 5-4; FAPAQ, 2001). The presence of the wolverine, a species at risk, is possible but no recent occurrence is known in the northern part of Quebec province. American Marten, Beaver and Weasel are the species most commonly caught by trappers.

Table 5-4: List of Mammal Species Likely to be Observed in the Côte-Nord and Labrador Regions

Species		Status		
Common Name	Scientific Name	Quebec ¹	Labrador ²	Canada ³
Big game				
Moose	<i>Alces alces</i>			
Woodland caribou	<i>Rangifer tarandus</i>	Vulnerable	Threatened	Threatened
Black bear	<i>Ursus americanus</i>			
Small game and furbearer animals				
Canada lynx	<i>Lynx canadensis</i>			
River otter	<i>Lutra canadensis</i>			
Wolverine	<i>Gulo gulo</i>	Threatened	Endangered	Endangered
American mink	<i>Mustela vison</i>			
Long-tailed weasel	<i>Mustela frenata</i>			
Least weasel	<i>Mustela nivalis</i>	SDTV	-	-
Ermine	<i>Mustela erminea</i>			
Fisher	<i>Martes pennanti</i>			
American marten	<i>Martes americana</i>	-	Threatened	-
Striped skunk	<i>Mephitis mephitis</i>			
Red fox	<i>Vulpes vulpes</i>			
Coyote	<i>Canis latrans</i>			
Wolf	<i>Canis lupus</i>			
Porcupine	<i>Erethizon dorsatum</i>			
Muskrat	<i>Ondatra zibethicus</i>			
Beaver	<i>Castor canadensis</i>			
Northern flying squirrel	<i>Glaucomys sabrinus</i>			
Red squirrel	<i>Tamiasciurus hudsonicus</i>			
Snowshoe hare	<i>Lepus americanus</i>			
Bats				
Hoary bat	<i>Lasirus cinereus</i>	SDTV	-	-
Red bat	<i>Lasirus borealis</i>	SDTV	-	-
Silver-haired bat	<i>Lasionycteris noctivagans</i>	SDTV	-	-
Tricolored bat	<i>Pipistrellus subflavus</i>	SDTV	-	-
Northern long-eared myotis	<i>Myotis septentrionalis</i>			
Little brown bat	<i>Myotis lucifugus</i>			
Big brown bat	<i>Eptesicus fuscus</i>			
Woodland jumping mouse	<i>Napaeozapus insignis</i>			
Meadow jumping mouse	<i>Zapus hudsonius</i>			
Northern bog lemming	<i>Synaptomys borealis</i>			
Southern bog lemming	<i>Synaptomys cooperi</i>	SDTV	-	-
Rock vole	<i>Microtus chrotorrhinus</i>	SDTV	-	-
Meadow vole	<i>Microtus pennsylvanicus</i>			

Species		Status		
Common Name	Scientific Name	Quebec ¹	Labrador ²	Canada ³
Small mammals				
Western heather vole	<i>Phenacomys intermedius</i>			
Gapper red-backed vole	<i>Clethrionomys gapperi</i>			
Deer mice	<i>Peromyscus maniculatus</i>			
Star-nosed mole	<i>Condylura cristata</i>			
Northern short-tailed shrew	<i>Blarina brevicauda</i>			
Pygmy shrew	<i>Sorex hoyi</i>			
Water shrew	<i>Sorex palustris</i>			
Arctic shrew	<i>Sorex arcticus</i>			
Cinereus shrew	<i>Sorex cinereus</i>			
¹ MRNF (2012b). SDTV: susceptible of being designated threatened or vulnerable; ² DEC (2011) ³ COSEWIC (2012).				

Source: FAPAQ (2001), Desrosiers *et al.* (2002), Prescott and Richard (2004), Rodrigues (2010).

Small Mammals and Bats

Up to 16 species of small mammals could be observed in the study area (Table 5-4). The number of species is likely to decrease as we go further north.

Bat distribution in the Côte-Nord region is not well known. At least seven species were able to be observed (Table 5-4), including the red and hoary bats, two species at risk.

Material Handling and Storage Facility Area

Marine Mammals

Two marine mammal groups are commonly found in the Baie des Sept Îles (Figure 5-2: pinnipeds and cetaceans). The list of marine mammals likely to be observed in the study area is shown at Table 5-5.

Marine mammals' use of the bay varies annually according to prey availability. Cetaceans are generally found in the bay and archipelago from April to December. Minke Whale and Common porpoise are often observed near the shores, especially from April to June when Capelin are present (Roche 1991, Hans-Frédéric Ellefsen, MPO, comm. pers. 2011). Belugas can occasionally be observed during winter (Mosnier *et al.* 2009).

Table 5-5: Marine Mammals Likely to be Observed in the Baie des Sept Îles and Archipel des Sept Îles

Common name	Scientific name
Cetacean (mysticeti)	
Minke whale	<i>Balaenoptera acutorostrata</i>
Fin whale ¹	<i>Balaenoptera physalus</i>
Humpback whale	<i>Megaptera novaeangliae</i>
Blue whale ¹⁻⁴	<i>Balaenoptera musculus</i>
Cetacean (odontoceti)	
Atlantic white-sided dolphin	<i>Lagenorhynchus acutus</i>
White-beaked dolphin	<i>Lagenorhynchus albirostris</i>
Common porpoise ¹⁻⁵	<i>Phocoena phocoena</i>
Long-finned pilot whale	<i>Globicephala melaena</i>
Beluga ²⁻³	<i>Delphinapterus leucas</i>
Sperm whale	<i>Physeter macrocephalus</i>
Pinniped	
Grey seal	<i>Halichoerus grypus</i>
Harbour seal	<i>Phoca vitulina</i>
Harp seal	<i>Pagophilus groenlandicus</i>
¹ Species susceptible of being designated threatened or vulnerable (MRNF 2012b); ² Threatened species at provincial level (MRNF 2012b); ³ Threatened species at federal level (Government of Canada 2012); ⁴ Endangered species (Government of Canada 2012); ⁵ Species of special concern (Government of Canada 2012).	

Grey, Harbour and Harp seals are the three pinniped species found in the study area. Grey and Harbour seals use rocky environments and reefs to rest (Bourque and Malouin 2009). Harbour seal is found in small populations along the coast of the St. Lawrence Gulf (Mousseau *et al.* 1997).

5.3.2.4 Wildlife Species at Risk

A total of 26 wildlife species at risk can be observed in the railway and/or material handling facility study area. A brief description of each species preferential habitat and range distribution is given below.

Harlequin Duck

This species is designated as vulnerable in Quebec and Labrador (MRNF, 2012b; DEC, 2011) and of special concern in Canada (COSEWIC, 2012; Government of Canada, 2012). The Harlequin duck's breeding habitat is mainly restricted to rivers with fast streams near a series of falls (Breault and Savard, 1991; Robertson and Goudie, 1999). Rivers of the Côte-Nord region are likely to be frequented by a couple dozen breeding pairs (Robert, 2010a). The species have been observed on the Sainte-Marguerite River (Morneau, 2008) and could also be breeding on the rivière aux Pékans.

Barrow's Goldeneye

The Barrow's goldeneye is designated as vulnerable in Quebec and Labrador (MRNF, 2012b; DEC, 2011) and of special concern in Canada (COSEWIC, 2012; Government of Canada, 2012). The species' nests are located in the periphery of small lakes at high altitudes (Robert *et al.* 2000). Several lakes on hilltops of the Sainte-Marguerite River are favorable to the species' presence.

Bald Eagle

This raptor species nests nearby large lakes, on islands and along the coastline. There is potential breeding habitat (mature forest stands and large water bodies) for the bald eagle in the study area. This species is designated as vulnerable in Quebec (MRNF, 2012b). The nest is normally built on tall tree tops (more than 20m). It was observed in the Sainte-Marguerite valley (Morneau, 2008) and could be present up to the 55th parallel (Comité de rétablissement du Pygargue à tête blanche, 2002).

Golden Eagle

The Golden eagle, designated as a vulnerable species in Quebec (MRNF, 2012b), builds its nests on cliffs near waterbodies or on open lands where it hunts (Brodeur and Morneau, 1999). In the Sainte-Marguerite valley, six active nesting sites were found (Morneau, 2008). Outside of the Sainte-Marguerite valley, few inventories have been conducted.

Peregrine Falcon

The Peregrine falcon, sub-species *anatum*, is designated as vulnerable in Quebec and Labrador (MRNF, 2012b; DEC, 2011) and of special concern in Canada (COSEWIC, 2012). Like the golden eagle, the peregrine falcon nest on cliffs.

Short-Eared Owl

The Short-eared owl is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b), is designated as vulnerable in Labrador (DEC, 2011) and is a species of special concern in Canada (COSEWIC, 2012; Government of Canada, 2012). This species is most commonly found in the St. Lawrence valley plains. The breeding habitats of the short-eared owl are humid grasslands, pastures and arctic tundra plains. The species is known to be present in the Pointe-Noire area where it was observed during the breeding period (GENIVAR, unpubl. data). The species' presence is also possible near the Labrador limit.

Common Nighthawk

This species is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b) and is threatened in Labrador and Canada (DEC, 2011; COSEWIC, 2012; Government of Canada, 2012). The Common nighthawk nests in open habitats such as burn lands (Poulin *et al.*, 1996). Breeding of this species in the study area is possible.

Olive-Sided Flycatcher

The Olive-sided flycatcher is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b) and is threatened in Labrador and Canada (DEC, 2011; COSEWIC, 2012; Government of Canada, 2012). Its breeding habitat is forested strips near wetlands (COSEWIC, 2007). Potential breeding habitats in the study area are peat lands and beaver ponds. The presence of this species is expected mainly in the Sainte-Marguerite plateau and the Manicouagan basin reservoir.

Bicknell's Thrush

The Bicknell's thrush is designated as vulnerable in Quebec (MRNF, 2012b), threatened by the COSEWIC (2012) and as a species of special concern by the Government of Canada (2012). This species breeds in sub-alpine (altitude > 600 m) forests composed of balsam fir (Rompré *et al.*, 1997). The species can sometimes breed in dense regenerating stands in the Côte-Nord region. Potential habitats could be present in the Sainte-Marguerite plateau area.

Barn Swallow

This common species has experienced a decline in the past decades and has been designated as threatened by the COSEWIC (2012). It frequents a variety of habitats such as open and rural environments. The species' presence is likely limited to the Sainte-Marguerite plateau.

Canada Warbler

The Canada warbler is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b) and is threatened in Canada (COSEWIC, 2012; Government of Canada, 2012). This species breeds in wet mixed and deciduous stands and also in coniferous stands with a well-developed shrub layer (Conway, 1999). Breeding of the species is probably limited to the Sainte-Marguerite plateau in riparian habitats with alders.

Chimney Swift

The Chimney swift is designated as threatened in Labrador and Canada (DEC, 2011; COSEWIC, 2012; Government of Canada, 2012). There is only a single report of the species for Labrador. They concentrate near water where insects are abundant. Historically, they roost and nest in hollow trees, but also use chimneys.

Gray-cheeked Thrush

The Gray-cheeked thrush is designated as vulnerable in Labrador (DEC, 2011). The species breeds in boreal forest across North America and have been observed throughout most of Labrador, but is vulnerable due to recent population decline.

Rusty Blackbird

The Rusty blackbird is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b), is designated as vulnerable in Labrador (DEC, 2011) and is a species of special concern in Canada (COSEWIC, 2012; Government of

Canada, 2012). This species nests in habitats which are similar to those of the olive-sided flycatchers. This species could be observed in the entire study area.

Woodland Caribou

Woodland caribou populations are declining throughout North America. This species is considered as vulnerable in Quebec (MRNF, 2012b), and as threatened in Labrador and Canada (DEC, 2011; COSEWIC, 2012), and is included in the Species at Risk Act (Government of Canada, 2012). Woodland caribou is present in most of the study area.

Wolverine

The Wolverine is an endangered species in Labrador and Canada (DEC, 2011; COSEWIC, 2012; Government of Canada, 2012) and a threatened species in Quebec (MRNF, 2012b). This species have experienced a drastic decline (Fortin *et al.*, 2004) and its presence in northern Quebec is unknown.

Southern Bog Lemming

This species is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b). It is found in peat lands with ericaceous shrubs, marshes and in mixed forests surrounding peat lands. This species could be found in the study area.

Rock Vole

The Rock vole is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b). Preferential habitats are cliffs, rocky outcrops, and wetlands, between mossy rocks and near watercourses. This species could be found in the study area.

Hoary Bat and Silver-Haired Bat

The distribution of these two species could overlap the study zone. Preferential habitat for those two species is similar and consists of wooded and partially wooded areas where they can hunt at night over clearings and waterbodies (MRNF, 2012b). They find shelter in trees, suspended to a branch and they can nest in a tree cavity. They migrate south in early September.

Red Bat

The Red bat is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b). This species is often found hunting near lampposts at heights varying from 2 to 15 m (Hickey and Fenton, 1990).

Tricolored Bat

This species is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b). Little information is available on summer habitat use for this species. It is commonly found in open habitats, near forests, which are not frequent in the Côte-Nord region.

Fin Whale

The Fin whale is susceptible of being designated as threatened or vulnerable in Quebec (MRNF 2012) and is a species of special concern in Canada (COSEWIC 2012, Government of Canada 2012). The species is mainly observed in the Sainte-Marguerite Bay and off the Archipelago.

Blue Whale

The Blue whale is susceptible of being designated as threatened or vulnerable in Quebec (MRNF 2012) and is endangered in Canada (COSEWIC 2012, Government of Canada 2012). This species is not commonly observed near the coastline.

Common Porpoise

The Common porpoise is susceptible of being designated as threatened or vulnerable in Quebec (MRNF 2012) and is threatened in Canada (Government of Canada 2012). This species is often observed in the Baie des Sept Îles.

Beluga

The Beluga is a threatened species in Quebec and Canada (COSEWIC 2012, Government of Canada 2012, MRNF 2012). The Beluga is sometimes observed in winter from Pointe-des-Monts and Sept-Îles.

5.3.3 Aquatic Resources and Fish Habitats

5.3.3.1 Fish Species and Fish Habitat

Railway Section

The proposed railway options cross numerous streams and rivers and are located near several lakes (Figure 5-1). All these aquatic ecosystems are potential fish habitats. Up to 18 species are likely to be observed in the study area (table 5-6). In the Sainte-Marguerite plateau, the Sainte-Marguerite options mainly follow the path of the Sainte-Marguerite River and its associated reservoirs.

In the Manicouagan Reservoir basin, lakes are more predominant than in the Sainte-Marguerite valley. However, it is in the Nord-du-Québec central plateau that lakes, brooks and rivers are most abundant. Deep river valleys are found in the Ungava Bay Basin.

Table 5-6: Fish Species Likely to be Present in the Study area

Species		Species	
Common Name	Scientific Name	Common Name	Scientific Name
Salmonidae		Gasterosteidae	
Lake whitefish	<i>Coregonus clupeaformis</i>	Fourspine stickleback	<i>Apeltes quadracus</i>
Round whitefish	<i>Prosopium cylindraceum</i>	Threespine stickleback	<i>Gasterosteus aculeatus</i>
Brook trout	<i>Salvelinus fontinalis</i>	Ninespine stickleback	<i>Pungitius pungitius</i>
Lake trout	<i>Salvelinus namaycush</i>	Cottidae	
Landlocked arctic char	<i>Salvelinus alpinus oquassa</i>	Mottled sculpin	<i>Cottus bairdi</i>
Atlantic salmon	<i>Salmo salar</i>	Slimy sculpin	<i>Cottus cognatus</i>
Esocidae		Percidae	
Northern pike	<i>Esox lucius</i>	Logperch	<i>Percina caprodes</i>
Catostomidae		Cyprinidae	
Longnose sucker	<i>Catostomus catostomus</i>	Lake chub	<i>Couesius plumbeus</i>
White sucker	<i>Catostomus commersoni</i>	Longnose dace	<i>Rhinichthys cataractae</i>
Lottidae		Pearl dace	<i>Margariscus margarita</i>
Burbot	<i>Lota lota</i>		

Source: Bernatchez and Giroux (2000).

Material Handling and Storage Facility Area

Benthic fauna in the Baie des Sept Îles is relatively abundant and diversified (Procéan 1999). Nearly 30 taxa are present in the Bay according to the various sources consulted.

In terms of commercial species, the Snow Crab, the Red Lobster, the Giant Scallop, the Soft Shelled Clam, the Blue Mussel, the Waved Whelk and the Green Sea Urchin can be found in the Bay (Figure 5-3).

In the St. Lawrence gulf, more than 120 species of fish can be found (Mousseau *et al.* 1997). In the Baie des Sept Îles, 29 species were noted by the various sources consulted (Table 5-7). Among them, six species are at risk depending on the various jurisdictions involved (Table 5-7). The Bay itself is an environment where freshwater and saltwater meet and where clay sedimentation favours salt marsh growth (Bourque and Malouin 2009). These marshes are essential areas for larval retention where numerous fish species complete their first life cycles (Bourque and Malouin 2009). Eelgrass beds are also important fish habitats, especially for the Atlantic Cod and the American Eel, two species at risk (Ellefsen 2008 *In* Bourque and Malouin 2009). Effectively, 21 species were present in eelgrass beds in the Bay (Sophie Roy, MPO, pers. comm. 2010). In addition, the Atlantic Salmon, the Capelin, the Rainbow Smelt, the Atlantic Herring and the Atlantic Cod are species of interest for fishermen (Figure 5-3).

5.3.3.2 Fish Species at Risk

The landlocked arctic char is the only fish species at risk likely to be present in the railway study area, mainly under the 52nd parallel. It is susceptible of being designated as threatened or vulnerable in Quebec (MRNF, 2012b).

More species at risk are likely to be found in the material handling and storage facility area.

Table 5-7: Ichthyofauna Likely to be Observed in the Baie des Sept Îles

Common name	Scientific name	Status		
		Quebec ¹	COSEWIC ²	Canada ³
American Shad	<i>Alosa sapidissima</i>	V	-	-
American Eel	<i>Anguilla rostrata</i>	S	-	SC
Capelin	<i>Mallotus villosus</i>			
Shorthorn Sculpin	<i>Myoxocephalus scorpius</i>			
Little Sculpin	<i>Myoxocephalus aeneus</i>			
Rainbow Smelt	<i>Osmerus mordax</i>			
Blackspotted Stickleback	<i>Gasterosteus wheatlandi</i>			
Three-spined Stickleback	<i>Gasterosteus aculeatus</i>			
Fourspine Stickleback	<i>Apeltes quadracus</i>			
Ninespine Stickleback	<i>Pungitius pungitius</i>			
Atlantic Halibut	<i>Hippoglossus hippoglossus</i>			
Lumpfish	<i>Cyclopterus lumpus</i>			
Atlantic herring	<i>Clupea harengus</i>			
American Sandlance	<i>Ammodytes americanus</i>			
Atlantic Wolfish	<i>Anarhichas lupus</i>	S	SC	SC
Spotted Wolfish	<i>Anarhichas minor</i>	S	T	T
Ocean Pout	<i>Macrozoarces americanus</i>			
Atlantic Mackerel	<i>Scomber scombrus</i>			
White Hake	<i>Urophycis tenuis</i>			
Red Hake	<i>Urophycis chuss</i>			
Atlantic Cod	<i>Gadus morhua</i>	S	EN	-
Fourbeard rockling	<i>Enchelyopus cimbrius</i>			
Greenland Cod	<i>Gadus ogac</i>			
Atlantic spiny Lumpsucker	<i>Eumicrotremus spinosus</i>			
American smooth Flounder	<i>Liopsetta putnami</i>			
Winter Flounder	<i>Pseudopleuronectes americanus</i>			
Atlantic Tomcod	<i>Microgadus tomcod</i>			
Atlantic Salmon	<i>Salmo salar</i>	-	SC	-
Brook trout	<i>Salvelinus fontinalis</i>			
Rock Gunnel	<i>Pholis gunnellus</i>			

Note: S: susceptible of being designated threatened or vulnerable, V: vulnerable, T: threatened, SC: special concern, EN: endangered.
In Labrador, only the American eel is designated vulnerable (DEC, 2011).

¹ MRNF (2012);
² COSEWIC (2012);
³ Government of Canada (2012);

Source: Calderon (1996), Procéan (1999), Lemieux and Bégin (2002), Jean Morrisset (MPO, pers. comm. 2003 *In* GENIVAR 2003), Sophie Roy (MPO, pers. comm. 2010).

American Shad

The American shad is a vulnerable species in Quebec (MRNF 2012). This anadromous species could be present in the bay but in general, its abundance is lower than on the south shore of the St. Lawrence River (Robitaille 1997).

American Eel

The American eel is susceptible of being designated as threatened or vulnerable in Quebec (MRNF 2012), is vulnerable in Labrador (DEC, 2011) and is a species of special concern in Canada (COSEWIC 2012). This species can be found on Eelgrass beds of the bay.

Atlantic and Spotted Wolfish

Both species are susceptible of being designated as threatened or vulnerable in Quebec (MRNF 2012). The Atlantic wolfish is a species of special concern and the Spotted wolfish is threatened in Canada (COSEWIC 2012, Government of Canada 2012). The presence of these species is possible but the preferential habitat is not found in the bay.

Atlantic Cod

The Atlantic cod is susceptible of being designated as threatened or vulnerable in Quebec (MRNF 2012) and is endangered in Canada (COSEWIC 2012). Juveniles are found in the bay as well as adults.

Atlantic Salmon

The Atlantic salmon is a species of special concern in Canada (COSEWIC 2012). The species is present in the Moisie River, east of the study area and in several watercourses in the Quebec-Cartier option sector, southwest of the study zone, and in the Sainte-Marguerite-B option, northeast of the study zone.

5.3.4 Protected Areas

There are various protected areas near the proposed railway options. In the Pointe-Noire area, the railway crosses the Plaine-Checkley natural reserve. The Corossol Island, in the Archipel des Sept Îles, is a migratory bird refuge (Figure 5-3).

Near Fermont, the railway project crosses the proposed Moisie River aquatic reserve. The proposed Gensart Lake biodiversity reserve is located west of proposed railway options near Fermont (Figure 5-1). In this region, the Alderon-Emeril and Cliffs-Emeril options near the Duley Lake Provincial Park in Labrador and the proposed Ménistouc Lake biodiversity reserve in Quebec (Figure 5-1).

Also, between Pointe-Noire and the 52nd parallel north, there are some exceptional forest ecosystems and biological refuges found near, or overlapping, the proposed railway options.

5.4 Social Components

5.4.1 Land Use and Socio-Economic Background

The railway line and material handling facility project is mainly included in the Côte-Nord administrative region (Region 09). In Labrador, the railway project overlaps the West Labrador region.

South of the 55th parallel, the railway options encounter, from south to north, Sept-Rivières Regional County Municipality (RCM) and Caniapiscau RCM. In the Sept-Rivières RCM, the railway options touch the territory of the city of Sept-Îles, which counted 25,686 residents in 2011, as well as Lac-Walker unorganized territory. In the Caniapiscau RCM, the studied options cross the unorganized territories of Rivière-Mouchalagane and Caniapiscau. Further north, the options pass in the region of the city of Fermont, where the population was of 2,874 residents in 2011. In Labrador, the railway project crosses the *Hyron Regional Economic Development Corporation* territory, which comprises the cities of Labrador City and Wabush where the populations were respectively of 7,367 and 1,861 residents in 2011.

Most of the land overlapped by the railway option is public, owned by the government of Québec or, for the northern end of the project, by the government of Newfoundland and Labrador. The railway options cross road 389 near Fermont, which is owned by the Ministry of Transportation of Quebec. In the cities of Sept-Îles, Wabush and Labrador City, the land is mainly private.

Segments of the land proposed for the railway project may be used for vacationing, hunting, fishing and trapping activities, as well as for snowmobiling. The ZEC Matimec (control zone) is crossed by the Sainte-Marguerite-A and Sainte-Marguerite-B options in their southern portion (Figure 5-1). Forestry activities are taking place in the southern portion of the territory.

As mentioned earlier, the railway options cross road 389 and the Sainte-Marguerite options follow, for a long distance, the Saint-Marguerite River and Sainte-Marguerite Reservoir, which provides hydraulic power to Sainte-Marguerite-3 power plant (Figure 5-1).

5.4.2 Aboriginal Communities

The railway options and various railway segments pass through territories used by members of Aboriginal communities. The railway crosses the Saguenay beaver reserve, used by the Innu community of Uashat Mak Mani-Utenam (reserves in Sept-Îles region) and the Innu community of Matimekush – Lac-John (reserves in Schefferville regions) (Figure 5-1).

The territory crossed by the railway is also likely to be of interests to the members of Innu Nation in Labrador, the Naskapis of Kawawachikamach and the members of the NunatuKavut Community Council.

Depending on the option chosen, the railway may also be of interest for the Innu community of Pessamit. In fact, a part of the Québec-Cartier option, notably in the Petit lac Manicouagan sector, could touch Pessamit's Nitassinan. The Betsiamites reserve is located 54 km southwest of Baie-Comeau.

The actual traditional land use by Aboriginal communities will be documented during the environmental assessment process. Members of the Aboriginal communities will be consulted regarding this matter, especially to document the territories used by the different communities.

5.4.3 Archaeology

Considering the presence of a well-developed hydrology network in the project area, as well as its past and current human occupation, the project options are likely to contain potential archaeological or heritage sites. A study of archaeological/heritage potential will allow the identification of these sites and enable mitigation plans to be developed.

Table 6-1 presents different impact sources relative to the construction and operation of the railway.

Table 6-1: Impact Sources of the Project

Impact sources
Construction phase
<ul style="list-style-type: none"> • Presence of the worksite (including sanitary facilities) • Local transport of material and equipment • General construction activities <ul style="list-style-type: none"> • Deforestation and grubbing • Grading and ditching • Crossing, diverting and reorganization of watercourses (fish habitat) • Foundation and positioning of the tracks • Establishment of borrow pit and temporary access road • Temporary camps, access roads • Infilling in aquatic and marine environment • Waste management and hazardous waste disposal (storage and recycling) • Worksite withdrawal and environment restoration
Operation phase
<ul style="list-style-type: none"> • Presence and operation of the railway, handling and storage facilities <ul style="list-style-type: none"> • Noise, dust emissions and vibrations (mainly in the area of Pointe-Noire) • Disturbance of fauna and mortality risks by collision • New facilities in the landscape • Economic impact • Potential for spills or releases of hydrocarbons or other products • Maintenance and repair <ul style="list-style-type: none"> • Snow cleaning • Rebuilding of structures, etc. (medium to long term works) • Waste • Increase in harbour activities

Table 6-2 presents some potential impact to key environment components that could results from the project completion. The Pointe-Noire handling facility could touch the Port Authority of Sept-Îles (depending on the option selected). A portion of the proposed railway is also located in Labrador. The list of potential impacts presented at Table 6-2 applies to the entire study zone including a part of Labrador and of Crown lands. A complete list of potential impacts and associated mitigation measures will be presented in the environmental impact statement.

Table 6-2: Potential Impacts of the Project on Key Environment Components

Key environment component	Potential impact
Fish and fish habitat	<ul style="list-style-type: none"> • Temporary deterioration of water quality associated with suspension of sediments. • Loss of fish habitat due to the encroachment of water courses during bridge, culvert and additional facility construction and infill activities in marine environment¹. • Potential introduction of deleterious substances in water. • Disturbance of fish caused by noise and construction activities. • Potential impacts to listed fish species at risk.
Aquatic species	<ul style="list-style-type: none"> • Temporary deterioration of water quality associated with suspension of sediments. • Loss of habitats for aquatic species due to the encroachment of water courses during bridge, culvert and additional facility construction and infill activities in marine environment. • Potential introduction of deleterious substances in water. • Sensory disturbance during the construction and operation activities. • Potential impacts to listed aquatic species at risk.
Migratory birds	<ul style="list-style-type: none"> • Habitat loss or alteration, mainly in Pointe-Noire area. • Sensory disturbance during the construction and operation activities. • Potential impacts to listed migratory species at risk
Aboriginal people	<ul style="list-style-type: none"> • Modification of traditional land use. • Potential impact of archaeological sites <p>Job creation and construction related business development.</p>

¹ Only the potential backfilling works in the marine environment could cause an impact on aquatic species, as defined in subsection 2(1) of the *Species at Risk Act*. These species are: American eel, Atlantic wolfish, Spotted wolfish. The presence of the latter two is possible but their preferential habitat is not found in the Baie des Sept Îles. The American eel uses eelgrass beds and may be impacted by changes to eelgrass in the bay.

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***Appendix A:
Aboriginal Communities Contact Information***

Innu communities

Uashat-Maliotenam Community
Innu TakuaiKAN Uashat mak
Mani-Utenam Council

265, boulevard des Montagnais, P. O. Box 8000
Sept-Îles (Quebec) G4R 4L9
Phone: 418-962-0327
Fax: 418-968-0937
E-mail: mathilda.fontaine@itum.qc.ca
Chief: Georges-Ernest Grégoire

Pessamit Community
Pessamit Innus Council

4, Metsheteu
Pessamit (Quebec) G0H 1B0
Phone: 418-567-8488
Fax: 418-567-2868
E-mail: bureau.politique@pessamit.ca
Chief: Raphaël Picard

Innu Nation community (Sheshatshiu)
Sheshatshiu Innu First Nation

P.O. Box 160
North West River (Labrador) A0P 1M0
Phone: 709-497-8522
Fax: 709-497-8757
Chief: Sebastian Benuen

Matimekosh Community
Schefferville Montagnais Council
Matimekush-Lac-John

P.O. Box 1390
Schefferville (Quebec) G0G 2T0
Phone: 418-585-2601
Fax: 418-585-3856
Chief: Réal McKenzie

Innu Nation community (Natuashish)
Mushuau Innu First Nation

P.O. Box 107
Natuashish (Labrador) A0P 1A0
Phone: 709-478-8827
Fax: 709-478-8841
Chef: Simeon Tshakapesh

Innu Nation of Labrador
Innu Nation

P.O. Box 119
Sheshatshiu (Labrador)
Phone: 709-497-8398
Fax : 709-497-8396
Grand Chef : Joseph Riche

Naskapi community

Kawawachikamach Community
Naskapi Band of Québec

P.O. Box 5111
Kawawachikamach (Quebec) G0G 2Z0
Phone: 418-585-2686
Fax: 418-585-3130
E-mail: kawawa@naskapi.ca
Chief: Louis Einish

NunatuKavut Community Council

NunatuKavut Community Council

370 Hamilton River Road
P.O. Box 460, Stn. C
Happy Valley-Goose Bay (Labrador) A0P 1C0
Phone: 709-896-0592
Fax: 709-896-0594
E-mail: admin@nunatukavut.ca
President: Todd Russell

Appendix B:
Typical Landscapes at the Building Sites



Picture 1: General landscape of Pointe-Noire area – North view



Picture 2: Typical landscape of the Sainte-Marguerite River valley



Picture 3: Typical landscape of the Quebec-Cartier option area