



**ENVIRONMENTAL
IMPACT ASSESSMENT**

**Construction of access
roads «I» and «H » by
Matériaux Blanchet and
the beneficiaries of FMU
86-65**

Presented to the
*Direction des évaluations
environnementales*

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1. Introduction

As part of the long-term planning of their exploitation and forest management works, and in the objective to ensure the timelessness of their provisioning, Matériaux Blanchet Inc. and the other beneficiaries of the Forest Management Unit (FMU) 86-65 (Scierie Landrienne Inc., Norbord Inc., and Abitibi-Consolidated Inc.) (Hereafter, beneficiaries of FMU 86-65) project the construction of two access paths, roads “H, Section ouest” and “I”, in the sector of the km 105 of James Bay road and Quenonisca Lake . These ways will be used to achieve the forest operations envisaged in the General Forest Management Plan (GFMP), according to Chief Forester strategy.

The present study aims to answer to the directive emitted in October 2009 by the *Comité d'évaluation* (COMÉV) under the terms of article 158 of the Environment Quality Act (L.R.Q., Q-2 chapter). Indeed, this project is subject to the assessment process applicable to the Baie-James territory. According to the paragraph h of the Appendix A of Chapter II of the Environment Quality Act (L.R.Q. C.Q-2), “any road or branch of such road of at least 25 km in length which is intended for forestry operations for a period of at least 15 years” is obligatorily subjected to the assessment process. This document thus presents the details of this evaluation.

The two (2) projected road axes are represented on plan A-0919. It should be noted that the section of the way “I” located before the intersection with the road “H, Section ouest” is already built and is not included in the assessment process. Thus, the combined length of the subjected ways is 74 km. The length of way “I” is approximately 52 km, whereas it is of 22 km for way “H, Section ouest”.

1.1 Objectives of the study

The environmental impact assessment is used to evaluate the consequences that will have a project on the biophysics and social environments. This tool takes into account all the stages of a project, from the design phase until closing. The study presented in this document thus makes possible to answer to the following objectives:

- To explain the reasons justifying the layout choice, to justify this last and to describe it;
- To document and evaluate the impacts, as much negative than positive, on the biophysics and social environments;
- To consult the people related to the project;
- To suggest avoidance, mitigation and/or compensation measures to the impacts coupled to an adequate monitoring program;
- To elaborate a monitoring program aiming to verify the extent of the identified impacts, to verify the effectiveness of the mitigation measures and to confirm and/or specify some impacts.

The roads are located on category III lands (see description in section 4.4.2). That thus implies, such as defined in the James Bay and Northern Quebec Agreement, that Crees must be presents in the process of project planning and in decision makings. A special attention must be carried to the respect of their traditional values and to their rights. Thus, the step used integrates the listening of their concerns and requests. Those were taken into account as much in the analysis of the impacts that in the development of mitigation measures. In a general way, an impact assessment must also integrate the sustainable development principles. More concretely, that means that the impacts analysis was thought according to promoting a project that tends towards a better balance between economic consequences, effects on social environment and environment safeguarding. This was made possible in proposing measures aiming improving the positive impacts and minimizing the negative effects of the project. A special attention has been given to the following elements:

INSERTION PLAN A-0919
LOCALISATION GÉNÉRALE

-
- The consultation and the participation of the Crees during the impact assessment process;
 - The environment protection, in particular respecting the sensitive elements valued by the interveners and/or the scientific community;
 - The protection and the respect of the traditional Cree activities;
 - The maximization of economic benefits for the region of Nord-du-Québec

1.2 Study contents

This study was based on the analysis of the available data and by the consultation of the concerned interveners. It is based on recognized and frequently used methods of the impact assessment process. Methodology is explained in a more complete way in section 5.

In addition to this section, the study includes five chapters:

- Context and project justification
- Description of the adopted project
- Environment description
- Impact assessment and mitigation measures
- Surveillance and monitoring program

The references and the list of the people consulted during this study are respectively presented at the end of this document and in appendix 1.

2. Context and justification

2.1 Project initiator and his consultant

2.1.1 Presentation of the initiator

The initiators of the project are the four beneficiaries of FMU 86-65. Matériaux Blanchet Inc. is a forest company including two sawing factories, first one in Amos and the other in Saint-Pamphile, and has nearly 650 employees during its time of greater activities. Of these two factories, only the Amos one is supplied in FMU 86-65. About Scierie Landrienne, it is a sawing factory located at Landrienne in Abitibi-Témiscamingue. More than 140 employees work there. Abitibi-Consolidated is an important company specialized in the production of newspaper paper and commercial paper, in addition to other wood products. It gathers nearly 50 factories. The factory supplying itself in FMU 86-65 is located in Comtois, in Abitibi-Témiscamingue. The species exploited by these three beneficiaries are Fir, Spruce, Jack Pine, and Larch. For its part, Norbord Industries is an international company which produces panels derived from wood of leafy trees. It is made up of 15 factories in North America and Europe. In Quebec, Norbord mainly supplying itself of aspens and operates two factories in Abitibi-Témiscamingue, first one is in La Sarre, which is associated to this study, and the other is in Val-d'or. Norbord generates more than 250 direct employments in the region. Table 2.1 presents the addresses and numbers of the people to be contacted and table 2.2 shows volumes allocated for each beneficiary of FMU 86-65 in the General Forest Management Plan (GFMP) 2008-2013 (Consultants forestiers DGR Inc., Septembre 2007 révision 2008). Please note that Matériaux Blanchet was delegated by the other beneficiaries in order to represent them during the process of impact assessment and to take care of the related communications.

Table 2.1 People to contact for each beneficiary

Beneficiary	Person to contact	Phone number
Matériaux Blanchet	Roch Plusquellec	(819) 732-6581 #231
Matériaux Blanchet	Gilles Audet	(819) 732-6581 #230
Matériaux Blanchet	Gilles Lajeunesse	(819) 732-6581 #250
Norbord	Dominic Lévesque	(819) 825-1373 #363
Scierie Landrienne	Maryse Bélanger	(819) 732-2876 #221
Scierie Landrienne	Anabelle Simard	(819) 732-2876 #222
Abitibi-Consolidated	Catherine Tardif	(819) 737-2300 #245

Table 2.2 Wood volume allocated to each company by tree species

Company	Volume allocated (m ³ / year)	
	FSPL*	Poplars
Abitibi-Consolidated	109 000	---
Industries Norbord	---	28 800
Matériaux Blanchet	47 300	---
Scierie Landrienne	59 900	---
Total	216 200	28 800

Sources : Consultants forestiers DGR Inc. (Septembre 2007 révision 2008) and MRNF (2009d)

* Fir, Spruce, Jack Pine, Larch

2.1.2 Presentation of the consultant

Matériaux Blanchet mandated EnviroCree Ltd. to realize the impact assessment. Here are the addresses and numbers of this firm:

Name :	EnviroCree Ltd.
Address :	210, 9 th Street, Suite 108 Rouyn-Noranda, Québec J9X 2C2
Phone number :	(819) 762-2888
Fax number :	(819) 762-4814
E-mail :	info@envirocree.com
Project Managers :	Project Director : M. Dany Bouchard Environmental Project Manager : Mrs. Karine Gauthier-Héту



2.2 Context and justification

The activities related to the exploitation of natural resources are primordial for the economy of Nord-du-Québec. Mines, hydroelectricity and commercial logging have an undeniable importance for the region. The commercial forest surface of Nord-du-Québec is central to the spruce-moss bioclimatic domain, where the project is located. Since 2002, the forest crisis which prevails in Quebec limits the activities of this industry. The government thus set up assistance programs for forest companies. Among those, a temporary refundable tax credit, allocated by *Ministère des Ressources Naturelles et de la Faune* (MRNF), for the construction of access paths and bridges of public interest in forest was announced on March 23, 2006. It makes possible for eligible companies to obtain a tax credit on 90% of the costs generated by some stages of the project and this, until January 1, 2011 (MRNF, 2007 update 2009). To be acceptable, the built road must, amongst other things, has the following characteristics:

- To be built on public Quebec lands;
- To be a penetration road or to have a part of such way allowing management works and to which at least two secondary roads are attached;
- To have a lifespan of more than 3 years (to be suitable for motor vehicles);
- To appear in an Annual Forest Management Plan (AMP).

Matériaux Blanchet and the beneficiaries of FMU 86-65 are eligible to this program. The creation of these two ways will facilitate the access to the forest masses of north of FMU 86-65, thus ensuring wooden supply and realization of forestry work, while reducing the construction costs considerably.

2.3 Analysis of the alternatives

2.3.1 Alternatives

Considering the absence of an access network in the northern sector of FMU 86-65, the construction of a forest road to have access to the logging zones

envisaged in the GFMP 2008-2013 is the only strategy possible to fulfill the requirements of the Chief Forester. Indeed, it is essential to build an access in order to exploit allocated wood volumes and to realize forest management works. For these reasons, there is no alternative presented to the construction of an access path. On the other hand, some alternatives are possible for the choice of the type of forest road and for its layout.

2.3.2 Access strategy to the territory – Type of forest road

Taking into account the distance to cross to reach the whole territory aimed by the ways “H, Section ouest” and “I”, it would be almost impossible to consider a winter road like alternative to a permanent forest road. Indeed, this type of road would force the activities of forest exploitation at wintry time, in addition to prevent the realization of silviculture works such as reforestation, which must be made in summer. In addition, a winter road is susceptible to affect the profitability of the forest operations at medium to long term and to increase the environmental impacts. For example, a period of temperature rising which arrives prematurely in the year would make block the progress of the logging works and of wooden supply, endangering this way the profitability of the factories and the upholding of employment. The construction of a permanent road also gives an opportunity of distributing work over all the year, thus making possible to provide employment in an annual way and not only in a seasonal way. Moreover, this road will make possible to trappers to reach more easily their trapping areas and their camp, a concern that has been raised during the consultations.

From an environmental point of view, rutting risks are higher for a winter road used in a long run than for a permanent road. Rutting generates modifications in the surface drainage of the ground. In a long run, a repeated passage can also affect the bearing capacity of the grounds, particularly on organic grounds level, and in period of temperature rising. Practice also teaches us that removal of temporary infrastructures of watercourses, as used for winter roads, can generate impacts on banks and water quality. Moreover, as mentioned previously, a winter road does not allow silviculture works at a reasonable cost following the activities of exploitation (e.g. reforestation), since the contractors and workers assigned to these tasks do not have an easy access to the concerned sites. For all these reasons, the alternative of winter road has not been retained.

There are various classes of permanent forest roads defined according to their features. The choice of the most appropriated class is determined by the summation of quotations associated to features, and according to the needs of the user (MRNF, 2008). A summary grid of forest road classes is presented in appendix 2. Assuming the needs of the beneficiaries of FMU 86-65 (see section 3.1 for a detailed description), it was established that a class 3 road (4 seasons) would be the most adapted for this project.

2.3.3 Determination of the layout

The layout was established by taking into account technical, environmental and social criteria. These criteria are presented in table 2.3. Thus, the selected layout tries to avoid or minimize the negative impacts on the environment, while optimizing the access to mature forest areas, to the available resources (competent surface deposits), and by minimizing the technical and lawful constraints. The layout suggested is the one that integrates better all these criteria.

Table 2.3 Criteria considered during the layout design phase

Criteria	Description
Technical	To maximize the access to logging areas (mature stand)
	Proximity of potential surface deposits
	To minimize passing on sensitive soils to rutting
	To maximize passing in competent surface material
	Favorable topography
Environmental	To avoid excavation and fullfill areas
	To minimize the number of watercourses
	To avoid passing in sensitive environment (wildlife habitat, wetlands, threatened species habitat)
	To avoid protected areas
Social	To respect the minimal distances prescribed by the RNI (ex. distance from water environment)
	Consideration of the objectives of protection and enhancement, and harmonization measures related to the Cree traditional activities recorded in the General Forest Management Plan

The layout was also determined according to the tallymen requests, in order to respect their traditional practices. Many consultations took place, and made possible to target the most important aspects for the tallymen and their family. For example, way

“I” which passes to the south of the Salamandre Lake at the request of Louis Ottereyes, tallyman of trapping area W4 (Sorfor, 2008; Consultants forestiers DGR, 2007, September 2008 revision).

2.4 Other projects related to the studied roads

Impact assessment for Donohue (December 1998)

In 1998, an impact assessment entitled *Project to build an access road to the Broadback sector*, realized by the firm Soprin ADS for Abitibi Consolidated - Donohue, has presented impacts that could have the construction of an access road in the same sector as the current project (Soprin ADS, 1998). The road alignment proposed at that time corresponds partly to the layout of way “H, Section ouest” of this study (see appendix 3). This project had the objective to permit to the company to supply itself of 120 000 m³ of wood. The proposed way envisaged was crossing Broadback River. The project had to be abandoned, because the promoters did not seem to have adapted their study according to *La Paix des Braves* of 2002. The project did not integrate engagements nor the planning process envisaged following the modification of the forest system. Moreover, the communities were not in agreement with the construction of a way crossing Broadback River. This stake still remains very sensitive in the communities presently.

In the impact assessment realized by Soprin ADS, two (2) alternatives of layout were analyzed to reach Broadback River. The first, alternative “A”, was at North-West of way “H, Section ouest” (see plan in appendix 3). The option illustrating this winter road had not been selected because of the number of rock exposures, and the presence of many peat bogs in the layout that would have generated big filling operations. The authors also noted an insufficient number of potential borrow pits to satisfy the need in granular material necessary to the construction of the road. The second alternative suggested in the study, the alternative “C”, was localised at south of the currently proposed ways. It had been planned to connect the km 105 camp to the layout corresponding to the way “H, Section ouest”. Because a section of 21 km was already built to reach the studied territory starting from the forest road R-10-23 (in the past N-823) close to the km 105 camp, the alternative “C” is not considered any more.

Finally, the optimal layout that had been retained at this time to reach Broadback River is the one corresponding to a part of “H, Section ouest”. This decision comes to support the choice of a similar layout that was retained for this project.

3. Description of the adopted project

The retained access strategy to the territory implies two permanent forest roads of class 3 (4 seasons) which will permit to maximize the access to the logging areas. The main axis “I” begins around km 5 of forest road R-10-23, passes to the south of Salamandre Lake and goes up towards north while skirting Quenonisca Lake, to finish approximately at 2,8 km of the projected limit of the project of Cree Patrimonial Assinica Park. The second way, “H, section ouest”, begins around km 21 from the principal axis “I”, goes up towards the North-East and finishes to approximately 7,7 km of the limit of the project of the Cree Patrimonial Assinica Park. The combined length of these two access paths is of approximately 74 km. The localization of the two ways is illustrated on plan B-0952.

3.1 Technical characteristics

The following table illustrates the technical features of the forest roads.

Table 3.1 Description of the forest roads technical characteristics

Technical characteristics	Road	
	H, Section ouest	I
Length	22 km	52 km
Clearance width	30 m	
Clearance width near from the streams	Clearance narrowing of 15 meters on both sides of watercourses (20 meters length)	
Right-of-way	6 m	
Road shaping	8 m	
Material used for road shaping	Gravel	
Material used for the foundation	Wood, sand, till	
Number of lanes	One way lane	
Number of meeting points per kilometer	6 (size 25* 10 or 15 m)	
Design speed	70 km/h	

The clearance width of 30 m permit to take a part of the required material for the foundation and the right-of-way directly in the material taking away, having for consequence to limit opening of borrow pits. Deforestation will be mechanized and commercial wood will be transported in entirety or will be cut up at the beneficiaries factories. Woody remains and not-commercial wood will be integrated in the sub grade (roadshaping) of the way. There will be no accumulation or burning area. Work will be made by subcontractors.

Taking into account the relatively uniform topography of the sector, no excavation/backfill works of importance are envisaged. However, in the areas where the microrelief would be problematic, operations of excavation/backfill of low importance could be necessary.

The center of the way, the deforestation areas and the watercourses crossing will be delimited directly on the spot by using eco-forest maps and GPS. During this activity, preliminary statements will permit to validate the final alignment of the layout, the quality of the clearance material and of the identified potential borrow pits, and to identify the areas requiring excavation/backfill operations.

3.2 Borrow pits

The needs in granular material were estimated at 5 000 m³/km, for a total of approximately 260 000 m³. Potential borrow pits were located by photo-interpretation and by the study of surface deposits (see plan B-0947). Since they are potential deposits, the quality of materials remains to be validated by preliminary statements. The latters will be made during the construction of the ways. Borrow pits adjacent to the ways will be privileged.

The required material is fine sand, till and natural gravel. The opening, the exploitation and the restoration of borrow pits will be made according to the applicable regulation. In a general way, the borrow pits will have a surface of 1 ha or less and will be closed within one year following the end of the exploitation. These pits will be restored by using an adequate regulation and if possible with the same species as the original forest. Slopes will be also flattened, as need.

3.3 Watercourses crossing

The construction of the two sections of way will require the installation of 15 closed culverts and a lightweight bridge, in order to cross the permanent flow rivers (see plan B-936). Thus, four (4) culverts will have to be installed for the way “H, Section ouest” and 11 culverts in the case of the way “I”. Theoretical debit calculations were realized for the seven (7) principal watercourses. The detail of these calculations is presented in appendix 4. The size of the infrastructures necessary to cross the other permanent watercourses, and intermittent watercourses, will be progressively determined during the construction works using observations and preliminary statements. The clearance of the way will be reduced to 15 meters on both sides of permanent watercourses, and this on a distance of 20 meters.

One (1) lightweight bridge will be installed on Salamandre River in the axis “H, Section ouest” (see plan B-936). It will be localised on a narrowing of the river. The theoretical debit calculation is presented in appendix 4. The width of the crossing point was estimated at eight (8) meters. The bordering vegetation is made up of conifers and shrubs. A threshold is present upstream and a zone of fast current is located downstream. The figure in appendix 5 illustrates the localization of the projected bridge of Salamandre River. Watercourse characteristics instead of the crossing point indicate that the potential of spawning site is average, even if no spawning ground were listed in the study area. Indeed, there is presence of rapids and rock substrate. The crossing point will thus be the subject of a monitoring and surveillance program.

The roadway will take seated on two abutments installed on the banks of the river. Those will be installed beyond the natural limit of high water, which will have been preliminary determined on the spot. The bridge will comprise only one way and will have a range of 70 tons. The standard plan of the bridge that will be used is presented in appendix 6.

All the installations of watercourses crossing, as much for permanent flow watercourses than those with intermittent flow, will be done respecting the *Règlement sur les normes d'intervention dans les forêts du domaine de l'État* (RNI), the guide *Bonnes pratiques pour la conception et l'installation de ponceaux permanents de moins de 25*

mètres (MPO, 2007) and the *Guide sur l'aménagement des ponts et des ponceaux dans le milieu forestier* (MRN, 1997). A special attention will be paid to the stabilization works of the banks and slopes of the way in approach of watercourses and on the deviations of surface waters. The various techniques recommended by the MRNF will be combined in order to prevent at maximum the risks of sediments contribution.

3.4 Workers

It is estimated that approximately 35 workers will be necessary during the various stages of the road construction. In wintry time, an additional employee will be hired to execute the maintenance of the ways. No new camp is designed to accommodate the workers. Those will be placed in a forest camp already existing localised at 12,5 km of the access path R-10-23 (see plan B-0952). This camp has a capacity of 100 people, it's estimating that the maximum number of workers who stayed there is of approximately 70 people during the most stocked periods. Caravans could also be used to accommodate the workers in a temporary way in the most isolated sections of the ways.

3.5 Safety standards and emergency plan

The standards and rules connected to health and safety will be the same ones as those applied to such construction sites elsewhere in Quebec. The subcontractors will have the responsibility to ensure that the construction operations proceed according to the standards. Those will be also responsible to manage dangerous materials, as well as accidental spills. Matériaux Blanchet has a management procedure in case of dangerous materials spills, as well as a plan of emergency measures. Those are presented in appendix 7 and will have to be applied by the other beneficiaries unless those does already apply equivalent procedures. The subcontractors will also have to observe these procedures.

INSERTION PLAN B-0952

LOCALISATION DES CHEMINS PROJÉTÉS

INSERTION PLAN B-0947

BANCS D'EMPRUNT POTENTIELS

INSERTION PLAN B-0936

TRAVERSES DE COURS D'EAU

All the residual materials will have to be routed to the camp or to an authorized place.

Concerning road safety, the installation of adequate indications (e.g. speed limit, presence of native camps...), the use of radios between the operators and the communication of the work progress to the other users, will be used to ensure the safety of all. The installation of meeting points will allow a safe circulation on these simple way forest roads.

3.6 Traffic

During the construction works, the number of vehicles related to the beneficiaries of FMU 86-65 which will daily circulate on the road is estimated between 10 and 20 heavy trucks, and 10 to 15 vans. Circulation should be limited between 6 am and 6 pm. No non-standard vehicles will be used by the beneficiaries of FMU 86-65. Regarding to the other users, the number of vehicles is not easily estimable. The current users seem to use only off-road vehicles, but it is to be provided that the use of vans will increase following the construction of the way. The principal users are the tallymen and their families. Vacationers could also take these access paths. Radios will be used all the time to ensure the communication between the workers who will prevent each others about the presence of other users.

During the forest activities, road traffic is estimated between 30 and 50 trailer trucks in all time, day and night, in addition to 15 to 30 vans. Once again, the frequentation of the territory by the other users during this period is difficult to estimate.

The prevention of fires is realized according to the advices transmitted by the *Société de protection contre les incendies de forêt* (Sopfeu). A meeting is held at the beginning of the season with the forest operations staff, and an other during the season to check the conformity of the forest machinery and the presence of the equipment necessary in case of fire. The procedure to be followed in case of fire is in appendix 8.

It is expected that the construction of the two sections of forest road will be done simultaneously. Here is the preliminary calendar of the construction activities:

November 2009- March 2010 - Realization of the study

March to May 2010

- Tender offer
- Works planning
- Preliminary surveys

2010, June 1 to December 31

- Construction

Labor costs are estimated at approximately 40 000 \$ per kilometer, 880 000\$ for way “H, Section ouest” and 2 208 000\$ for way “I”, for a total of 2 960 000\$.

4. Description of the environment

The description of physical, biological and human environments comes from information collected in scientific literature, data gave by the ministries, cartographic databases, and from the consultations of the Cree community of Waswanipi and with the concerned people. The references and information sources are specified for each section.

4.1 Delimitation of the study area

In order to make an impact analysis wich will be the most complete as possible, two (2) study areas were delimited: a limited area and a wide area. Those are represented on plan B-0931. The limited study area includes all the direct apprehended impacts. It corresponds to a corridor of 1 km, measured starting from the center of the way, on each side of the layout suggested for the two access roads. The wide study area includes, for its part, the direct and indirect apprehended impacts, as well as the cumulative impacts. In a general way, this one recovers all the adjacent or bordering traplines to the projected ways, Quenonisca Lake, Salamandre Lake and all the rivers crossed by the projected ways. On the other hand, since the extent of the impacts can vary according to the component analyzed, the limits of the wide study area can extend beyond the limits represented on plan B-0931. The impacts on the socio-economic activities of Waswanipi community or James-Bay municipality are an example of components for which the impacts extend beyond the adjacent sector of the project. If necessary, the limits of the study area are specified in the corresponding sections.

The following sections describe the characteristics of the physical, biological and human environments. Synthesis plans of the biophysics and social environments are presented in sections 4.3 and 4.4. In order to facilitate their consultation, those are presented in format 11x 17" in the text (B-0932 and B-0933). We can however find them under their original format at the end of the document (D-0932 and D-0933).

4.2 Physical environment



4.2.1 Climate

The wide study area is located in the natural province F, Abitibi and James bay Low-lands, which has a surface of approximately 99 000 km² (Li and Ducruc, 1999). The climate of the area is cold and wet, and the growth season is average, from 120 to 130 growth days per year. The annual temperature average is approximately of -2,5°C. The annual precipitation average varies between 700 mm and 800 mm (Bergeron and Grondin, 1998).

4.2.2 Physiography and deposits

From a physiographical point of view, the sector belongs to a glaciolacustrine plain, associated to the Abitibi territory. The immense regional argillaceous plain extends slightly to the north of Broadback River, in the James Bay low-lands. The argillaceous deposits thus prevail in the sector (approximately 52% of the surface of the sector according to the ecological chart of the *Société de développement de la Baie-James*). Clay soils develop on this non-filter substrate mainly under conifers cover, and occasionally under mixed cover with leafy trees (poplar plantation with resinous tendency).

Organic soils (approximately 17%), fens and bogs, are also present on clay in badly drained depressions. Contrary to the clay soils found in some areas of Quebec, the argillaceous sediments of the area where will be built the accesses are relatively stable by their microstructure and their physicochemical properties¹. In a general way, clay of this sector is presented under massive and firm conditions; it is cohesive because of the various forces that retain the particles between them. On bare soils, compared to filter deposits (of silto-sandy and other types), it resists erosion better and thus decreases the sediments contribution by the streaming of surface water. This soil includes the necessary requirements for an effective transport support.

Note sur la minéralogie des sédiments fins du lac Ojibway, en particulier ceux de la région de Matagami, Québec. *Géographie physique et quaternaire*, 1984, vol. XXXVIII, n° 1, p. 49-57

The plain is also characterized by its undulated to hummocky relief with average to extended unevenness of about 45 meters, but able to reach up to 92 meters in the north-eastern part of the sector. The average altitude of the plain is between 290 and 335 meters. The highest peak of the sector is in the North-East and does not exceed 381 meters. Broken reliefs are thus rare there, and the mountainous landscapes are about non-existent. In addition, the present reliefs are generally directed and profiled in the direction of the glacial episode of New Quebec glacial flow. The fluvio-glacial origin formations (sand and gravel) are relatively rare (lower than 3,5%). The territory has been strongly eroded by the ice. Accumulations of till and glacial erosion of north-eastern and south-western direction thus give a certain structure to the physical environment. This model makes possible the installation of infrastructures such as a projection of ways in the same direction as the topographic features. On the one hand, that can support fitting with landscape and on the other hand, a better use of surface deposits.

4.2.3 Rocky substrate

Rocky substrate of the sector occupies the geological province of Superior Lake, of which the units are largely discussed in the scientific literature. In short, the two independent rock groups are Achaean origin rocks of granitoid type and mafic and felsic green rocks of volcanic type. The rock ground is also composed of sedimentary rocks such as conglomerates and wackes. On bed rock structure level, there are some non-definite breaks which correspond to the orientation of the lakes of this sector.

The territory was, and will remain, a sector of interest for its geological context favourable to mining. The discoveries made to Rocher Lake in 1999 (copper and nickel) caused intensive exploration campaigns in this area. The landscape carries the marks of mining activity (lines cuts in forest, paths, geological scouring, etc.) (Source: air photography Q95205 266). It is the lack of road infrastructures that, in our opinion, has favoured the installation of badly structured paths.

4.2.4 Ecological framework of the territory



Table 4.1 draws up the general portrait of the ecological landscape in which the project takes place.

Table 4.1 Ecological framework of the territory

Forest Type		Varied
Ecological Type		Varied
Land District	L004 L006 L008 L009	Storm Lake Hill Baie du Corbeau Bay Hill Quenonisca Lake Hill Salamandre Lake Plain
Regional Landscape	123	Poncheville Lake
Land Subregion	6a-T	Matagami Lake Plain
Land Region	6a	Matagami Lake Plain
Bioclimatic Subdomain		Western black spruce-feathermoss domain
Bioclimatic Domain		Spruce-moss domain

Source : Consultants forestiers DGR Inc. (2007, revision September 2008).

The following table presents in details the ecological types and the type of physical environment (deposit, drainage and texture) in the corridor of the limited study area of the two forest roads.

INSERTION PLAN B-0931
ZONES D'ÉTUDE

Table 4.2 Ecological type and Physical environment

Code (Ecological type And type of Physical environment)	Description (Vegetation, deposits, drainage and texture)
Way « H, Section ouest »	
RE1 3	Black-spruce lichens forest on thin to thick deposit, of medium texture and mesic drainage
RE2 0	Black-spruce mosses or ericaceous forest on thin deposit, of varied texture and xeric to hydric drainage
RE2 2	Black-spruce mosses or ericaceous forest on thin to thick deposit, of medium texture and mesic drainage
RE2 3	Black-spruce mosses or ericaceous forest on thin to thick deposit, of fine texture and mesic drainage
RE2 5	Black-spruce mosses or ericaceous forest on thin to thick deposit, of medium texture and subhydric drainage
RE2 6	Black-spruce mosses or ericaceous forest on thin to thick deposit, of fine texture and subhydric drainage
RE3 7	Black-spruce sphagnum forest on mineral deposit, of ombrotrophic hydric drainage
RE3 8	Black-spruce sphagnum forest on mineral or organic deposit, of minerotrophic hydric drainage
RE3 9	Black-spruce sphagnum forest on organic deposit, of ombrotrophic hydric drainage
RS2 2	Fir Black-spruce forest on thin to thick deposit, of medium texture and mesic drainage
RS2 3	Fir Black-spruce forest on thin to thick deposit, of fine texture and mesic drainage
ME1 3	Black-spruce Trembling Aspen forest on thin to thick deposit, of fine texture and mesic drainage
ME1 6	Black-spruce Trembling Aspen forest on thin to thick deposit, of fine texture and subhydric drainage
Way « I »	
RE1 2	Black-spruce lichens forest on thin to thick deposit, of medium texture and mesic drainage
RE1 5	Black-spruce lichens forest on thin to thick deposit, of medium texture and subhydric drainage
RE2 0	Black-spruce mosses or ericaceous forest on thin deposit, of varied texture and xeric to hydric drainage
RE2 1	Black-spruce mosses or ericaceous forest on thin deposit, of coarse texture and xeric to mesic drainage
RE2 2	Black-spruce mosses or ericaceous forest on thin to thick deposit, of medium texture and mesic drainage
RE2 3	Black-spruce mosses or ericaceous forest on thin to thick deposit, of fine texture and mesic drainage
RE2 5	Black-spruce mosses or ericaceous forest on thin to thick deposit, of medium texture and subhydric drainage

Code (Ecological type And type of Physical environment)	Description (Vegetation, deposits, drainage and texture)
RE2 6	Black-spruce mosses or ericaceous forest on thin to thick deposit, of fine texture and subhydic drainage
RE3 7	Black-spruce sphagnum forest on mineral deposit, of ombrotrophic hydric drainage
RE3 8	Black-spruce sphagnum forest on mineral or organic deposit, of minerotrophic hydric drainage
RE3 9	Black-spruce sphagnum forest on organic deposit, of ombrotrophic hydric drainage
RS2 2	Fir Black-spruce forest on thin to thick deposit, of medium texture and mesic drainage
RS2 3	Fir Black-spruce forest on thin to thick deposit, of fine texture and mesic drainage
RS2 5	Fir Black-spruce forest on thin to thick deposit, of fine texture and subhydic drainage
ME1 3	Black-spruce Trembling Aspen forest on thin to thick deposit, of fine texture and mesic drainage
ME1 6	Black-spruce Trembling Aspen forest on thin to thick deposit, of fine texture and subhydic drainage

The studied territory is mainly covered by Black Spruce forest. Mixed parcels made up of Firs and Trembling Aspens are presents at some places. The composition of soils and drainage varies a lot according to the sectors, it is often covered of mosses, ericaceous and sphagnum.

4.2.5 Hydrographical network

The study area is included in the hydrographical network of Broadback River, which belongs to the James Bay watershed. Its mouth is localised in Rupert Bay. Several subwatersheds are also presents in the study area, in particular those of Salamandre River, Salamandre Lake and Quenonisca Lake. In a general way, drainage of the study area is made in direction of these water bodies. Broadback River already was the subject of hydro-electric potential studies in the Seventies related to Nottaway-Broadback-Rupert project (Hydro-Quebec, 1971). On the other hand, this project has been abandoned with the realization of the power station project of Eastmain-1-A and Rupert derivation in 2002.

4.2.6 Other territory features

By the nature of the physical environment, sensitive areas to rutting have been identified and classified in the GFMP 2008-2013 of FMU 86-65. In a general way, in the limited study area, way “H, Section ouest” passes mainly in sectors of average sensitivity, whereas way “I” passes in sectors of high sensitivity. It should be noted that the identification of sensitive areas to rutting has been made only for the productive forest areas (Consultants forestiers DGR Inc., 2007 révision 2008). In consideration of these facts, preventive measures will be applied as explained in the management plan, in order to avoid ruts formation.

4.3 Biological environment

4.3.1 Vegetation

Vegetal cover

The study area is inside the vegetation subfield of continuous boreal forest. Its vegetation is dominated by Black Spruces. It is also possible to find Fir plantations and Pine forests in some isolated places. The limited study area thus mainly crosses a resinous vegetable cover. Some mixed parcels are crossed by both way sections, while only one leafy parcel is crossed by way “I”. The leafy trees found in this bioclimatic field are White Birch, Trembling Aspen and, in a smaller proportion, Balsam Poplar (MRNF, 2003). Table 4.3 describes vegetal cover met in the corridor of the limited study area.

Table 4.3 Surface of the vegetal populations located in the limited study area

Code (Ecological type)	Population description	H, Section ouest surface (km ²)	I surface (km ²)	Total
AL	Alder	2,2	0,7	2,9
DH	Humid bare soil	6	12,1	18,1
DS	Dry bare soil	0,15	0,7	0,85
ME1	Black-spruce Aspen forest	7,7	7,3	15
MS2	Fir White-Birch forest	0,14	0	0,14
RE1	Black-spruce lichens forest	0,7	0,7	1,4
RE2	Black-spruce mosses or ericaceous forest	30,1	72,4	102,5
RE3	Black-spruce sphagnum forest	8,5	10,3	18,8
RS2	Fir Black-spruce forest	5,7	4,4	10,1
	Peatlands	0	0,1	0,1
	Water bodies	0,31	3,3	3,61
	Subtotal	61,5	112	173,5

Natural disturbances have affected the limited study area. We can note forest fires zones in the north of way “I” and partial windfallen wood distributed along the two ways. It should be noted that there were epidemics of insects in the wide study area (by Spruce buworm between 1974 and 1979, and by Forest tent caterpillar between 1998 and 2002) (Consultants forestiers DGR Inc., 2007 révision 2008).

Special status plant species

The species appearing in table 4.4 were taken from the document *Les plantes vasculaires menacées ou vulnérables du Québec* (CDPNQ, 2008). They are those identified as being potentially present in the vast area of Nord-du-Québec. More precisely, were retained only the plants being present in the natural provinces F, G, and H (respectively Abitibi and James Bay Lowlands, Mistassini Highlands and Great River Lowhills), and whose habitat was present in the study area. As they are only potential species, it is difficult to confirm or cancel their presence in the study area.

INSERTION PLAN B/D-0932 (format (11x17)

MILIEU BIOPHYSIQUE

Table 4.4 Species of plants with a particular status in the limited study area

Species	Latin name	Presence
Alpine Gentian	<i>Gentiana nivalis</i>	Potential
Alpine Hair-grass	<i>Deschampsia alpina</i>	Potential
American Vetch	<i>Vicia americana</i>	Potential
Beach Heath	<i>Hudsonia tomentosa</i>	Potential
Blue Lettuce	<i>Mulgedium pulchellum</i>	Potential
Canadian Gooseberry	<i>Ribes oxyacanthoides ssp. oxyacanthoides</i>	Potential
Clinton's Bulrush	<i>Trichophorum clintonii</i>	Potential
Elatine Ojibwayensis	<i>Elatine ojibwayensis</i>	Potential
Fairy Slipper	<i>Calypso bulbosa var. americana</i>	Potential
Golden Hedge-hyssop	<i>Gratiola aurea</i>	Potential
Great Northern Aster	<i>Canadanthus modestus</i>	Potential
Holly-fern	<i>Polystichum lonchitis</i>	Potential
Large-leaved Avens	<i>Geum macrophyllum var. perincisum</i>	Potential
Leafy Arnica	<i>Arnica chamissonis</i>	Potential
Longstyle Rush	<i>Juncus longistylis</i>	Potential
McCalla's Willow	<i>Salix maccalliana</i>	Potential
Northern Bush Willow	<i>Salix arbusculoides</i>	Potential
Northern Moonwort	<i>Botrychium pinnatum</i>	Potential
Northern Twayblade	<i>Listera borealis</i>	Potential
Orange Agoseris	<i>Agoseris aurantiaca var. aurantiaca</i>	Potential
Prairie Sedge	<i>Carex prairea</i>	Potential
Purple Meadow Rue	<i>Thalictrum dasycarpum</i>	Potential
Resupinate Bladderwort	<i>Utricularia resupinata</i>	Potential
Richardson's Sedge	<i>Carex richardsonii</i>	Potential
Robinson's Hawkweed	<i>Hieracium robinsonii</i>	Potential
Rock Dwelling Sedge	<i>Carex petricosa var. misandroides</i>	Potential
Rosy Pussytoes	<i>Antennaria rosea ssp. confinis</i>	Potential
Roundleaf Monkeyflower	<i>Mimulus glabratus var. jamesii</i>	Potential
Sartwell's Sedge	<i>Carex sartwellii</i>	Potential
Serviceberry Willow	<i>Salix pseudomonticola</i>	Potential
Siberian Polypody	<i>Polypodium sibiricum</i>	Potential
Silverberry Wolf Willow	<i>Elaeagnus commutata</i>	Potential
Slender-Leaved Sundew	<i>Drosera linearis</i>	Confirmed
Small Round-leaved Orchis	<i>Amerorchis rotundifolia</i>	Potential
Snake Root	<i>Polygala senega</i>	Potential
Spear-leaved Fleabane	<i>Erigeron lonchophyllus</i>	Potential
Spoon-shaped Moonwort	<i>Botrychium spathulatum</i>	Potential
Swamp-pink	<i>Arethusa bulbosa</i>	Potential
Swordleaf Rush	<i>Juncus ensifolius</i>	Potential
Upland White Aster	<i>Solidago ptarmicoides</i>	Potential
Upswept Moonwort	<i>Botrychium ascendens</i>	Potential

Sources : Species list: Centre de données sur le patrimoine naturel du Québec (2008)

Status: Official information request addressed to *Centre de données sur le patrimoine naturel du Québec* (2009a)

* Species that have been designated susceptible to be threatened or vulnerable are in **red**

The only floristic specie with a particular status whose the presence was confirmed in the study area is the Slender-Leaved Sundew. It was seen approximately at 3 km to the east of Opatouaga Lake. This information has been transmitted to us following an official information request made on November 30 2009 at the *Centre de données sur le patrimoine naturel du Québec (CDPNQ, 2009a)*. Slender-Leaved Sundew is a rather rare carnivorous plant that grows generally in bogs, not structured fens, places with a bad drainage, and on watersides. Its fructification takes place in mid-July. It is sensitive to the opening of the forest cover and to minor variations of its biophysical environment (BPH Environment and AFQM, 2002). It remains little known and it's difficult to find information about it.

Specie of plants of traditional use

This category of plant species groups vascular plants used by the native communities for any use connected to alimentation, dwellings or objects construction, or for traditional pharmacopeia. About fifty plants would be recognized as being vascular plants of traditional use by some Cree communities (Mistissini, Nemaska, Wemindji, Eastmain and Waskaganish) (Foramec Inc., 2004) (see list in appendix 9). These plants were compiled following meetings made during the impact assessment of Eastmain-1-A Rupert derivation in 2002 and 2003 and following the consultation of the following documents (Foramec, 2004): Assiniwi (1972, 1988) and Fleurbec (1987). The majority of these plants are frequently met on the territory of Nord-du-Québec. There is no species of plant of traditional use with a particular status in the study area.

4.3.2 Wetlands and riparian environments

The Canadian system of classification distributes wetlands in five classes: peatlands (bog or fen), swamps, marshes, and shallow waters (Canada Environment, 2006). These environments are frequent and wide in the bioclimatic field of Black-spruce mosses forest. They are of major importance for the environment, because they take part to water filtration, provide habitats to many aquatic and semi-aquatic species, and constitute carbon sinks. The limited study area is included in the distribution zone of semi-forested peat bog. The semi-forested peat bogs are found inside the continents, and are colonized by a forest cover (Rochefort and Payette, 2001). They are supply of water exclusively by precipitations. For this reason the environments are relatively low in minerals. The vegetation is mainly composed of sphagnum and ericaceous. This is a general classification, and it is possible, even extremely probable, to find other types of peatlands in this area. Both proposed ways do not cross any peatland, such as illustrated on plan B/D-0932.

We can find riparian environments near of lakes and rivers. They include littoral, bank and floodplain. These environments play important roles in the maintenance of riparian and aquatic ecosystems. Indeed, the vegetation stabilizes banks and supports the infiltration of surface waters, which decreases the risks of erosion and sediment contribution. The riparian environments are also preferential habitats for some fauna species. In 2005, the government of Quebec has adopted the *Politique de protection des rives, du littoral et des plaines inondables* for these environments. Both proposed ways cross rivers and consequently, riparian environments.

4.3.3 Aquatic fauna

The following table presents the fish species present in the layout sector suggested for both forest roads (confirmed species listed by the MRNF) and species of which the distribution zone extends into the study area (potential species). The list of confirmed species comes from an official information request addressed on December 3, 2009 to the *MRNF - Direction de l'expertise Énergie-Faune-Forêts-Mines-Territoire du Nord-du-Québec* (MRNF, 2009a).

Table 4.5 Confirmed or potential aquatic fauna in the limited study area

Species*	Latin name	Presence
Brook Stickleback	<i>Culaea inconstans</i>	Potential
Brook Trout	<i>Salvelinus fontinalis</i>	Confirmed
Burbot	<i>Lota lota</i>	Confirmed
Emerald Shiner	<i>Notropis atherinoides</i>	Confirmed
Fallfish	<i>Semotilus corporalis</i>	Confirmed
Goldeye	<i>Hiodon alosoides</i>	Confirmed
Lake Northern Chub	<i>Couesius plumbeus</i>	Confirmed
Lake Sturgeon	<i>Acipenser fulvescens</i>	Confirmed
Lake Trout	<i>Salvelinus namaycush</i>	Confirmed
Lake Whitefish	<i>Coregonus clupeaformis</i>	Potential
Logperch	<i>Percina caprodes</i>	Potential
Longnose Dace	<i>Rhinichthys cataractae</i>	Confirmed
Longnose Sucker	<i>Catostomus catostomus</i>	Confirmed
Mooneye	<i>Hiodon tergisus</i>	Confirmed
Mottled Sculpin	<i>Cottus bairdi</i>	Potential
Ninespine Stickleback	<i>Pungitius pungitius</i>	Potential
Northern Cisco	<i>Coregonus artedi</i>	Confirmed
Northern Pike	<i>Esox lucius</i>	Confirmed
Pearl Dace	<i>Margariscus margarita</i>	Potential
Sauger	<i>Stizostedion canadense</i>	Confirmed
Slimy Sculpin	<i>Cottus cognatus</i>	Potential
Spottail Shiner	<i>Notropis hudsonius</i>	Confirmed
Trout-perch	<i>Percopsis omiscomaycus</i>	Confirmed
Walleyed Pike	<i>Stizostedion vitreum</i>	Confirmed
White Sucker	<i>Catostomus commersoni</i>	Confirmed
Yellow Perch	<i>Perca flavescens</i>	Confirmed

Sources : Species list : Bernatchez (2000)

Presence and status: Official information request addressed to the MRNF (2009a)

* Species that have been designated susceptible to be threatened or vulnerable are in red

According to the MRNF data, Walleyed Pike and Lake Trout are present in Salamandre Lake. Walleyed Pike, Sauger, Northern Pike, Lake Trout, Northern Cisco and Lake Sturgeon, are present for their part in Quenonisca Lake (Gauthier, personal com., 2009; Gull, personal com., 2010). Mr. Ottereyes, the tallyman of trapline W4, also indicated that there is a large variety of fishes, like Brook Trout, in Salamandre River (Ottereyes, personal com., 2010). The MRNF was not able to indicate in which water body the other confirmed species were seen.

Of these species, only Lake Sturgeon has the status of species designated susceptible to be threatened or vulnerable in Quebec (MRNF, 2009a). The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) also states that the Lake

Sturgeon populations of south of Hudson Bay and James Bay are at risk (COSEPAC, 2009). Lake Sturgeon is a fresh water fish that mainly eat benthos. Indeed, we generally find it in the depths of big lakes. It is a specie exploited commercially and for subsistence by natives. Its spawning period extends from the beginning of May to the end of June. It is thus a period to avoid making riparian works. Effectives decline is allotted to its sensitivity to the exploitation and to the scarcity of adequate spawning grounds (MRNF, 2009c). Lake Sturgeon spawning grounds are in shallow water bodies and fast water zones, as close to falls. The substrate of spawning ground is composed of rocks.

Table 4.6 presents spawning periods of the other aquatic species confirmed in the study area. Although the MRNF indicated to us that there is no spawning ground confirmed or indexed in the limited study area (Gauthier, personal com., 2010), favourable sites could however be present.

Table 4.6 Spawning period of fishes whose the presence has been confirmed

Species	Latin name	Spawning period
Brook Trout	<i>Salvelinus fontinalis</i>	October to December
Burbot	<i>Lota lota</i>	January to March
Emerald Shiner	<i>Notropis atherinoides</i>	June to August
Fallfish	<i>Semotilus corporalis</i>	May to June
Goldeye	<i>Hiodon alosoides</i>	May
Lake Northern Chub	<i>Couesius plumbeus</i>	May and June
Lake Sturgeon	<i>Acipenser fulvescens</i>	May to June
Lake Trout	<i>Salvelinus namaycush</i>	September to November
Lake Whitefish	<i>Coregonus clupeaformis</i>	September to December
Longnose Dace	<i>Rhinichthys cataractae</i>	May to August
Longnose Sucker	<i>Catostomus catostomus</i>	Mid April to mid May
Mooneye	<i>Hiodon tergisus</i>	April and May
Northern Pike	<i>Esox lucius</i>	April and May
Northern Cisco	<i>Coregonus artedi</i>	September to November
Sauger	<i>Stizostedion canadense</i>	May to June
Spottail Shiner	<i>Notropis hudsonius</i>	June and July
Trout-perch	<i>Percopsis omiscomaycus</i>	May
Walleyed Pike	<i>Stizostedion vitreum</i>	Beginning of April to the end of June
White Sucker	<i>Catostomus commersoni</i>	May to June
Yellow Perch	<i>Perca flavescens</i>	Mid April to the beginning of May

Source : Spawning period : Bernatchez (2000)

4.3.4 Terrestrial fauna

Table 4.7 enumerates mammal species for which the presence has been confirmed and those for which the presence is judged potential relatively to their distribution area.

Table 4.7 Confirmed or potential mammals in the limited study area

Species*	Latin name	Presence
American beaver	<i>Castor canadensis</i>	Confirmed
American Black Bear	<i>Ursus americanus</i>	Confirmed
American Marten	<i>Martes americana</i>	Confirmed
American Porcupine	<i>Erethizon dorsatum</i>	Potential
Black-backed Shrew	<i>Sorex nordicus</i>	Potential
Canada Lynx	<i>Felis lynx</i>	Confirmed
Deer Mouse	<i>Peromyscus maniculatus</i>	Potential
Eastern Chipmunk	<i>Tamias striatus</i>	Potential
Ermine	<i>Mustela erminea</i>	Potential
Fisher	<i>Martes pennanti</i>	Potential
Forest Caribou	<i>Rangifer tarandus caribou</i>	Potential
Gray Wolf	<i>Canis lupus</i>	Confirmed
Heather Vole	<i>Phenacomys intermedius</i>	Potential
Hoary Bat	<i>Lasiurus cinereus</i>	Potential
House Mouse	<i>Mus musculus</i>	Potential
Least Weasel	<i>Mustela nivalis</i>	Potential
Little Brown Bat	<i>Myotis lucifugus</i>	Potential
Long-tailed Weasel	<i>Mustela frenata</i>	Confirmed
Masked Shrew	<i>Sorex cinereus</i>	Potential
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	Potential
Meadow Vole	<i>Micritus pennsylvanicus</i>	Potential
Mink	<i>Mustela vison</i>	Confirmed
Moose	<i>Alces alces</i>	Confirmed
Muskrat	<i>Ondatra zibethicus</i>	Confirmed
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	Potential
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	Potential
Northern Short-tailed Shrew	<i>Blarina brevicauda</i>	Potential
Northern Water Shrew	<i>Sorex palustris</i>	Potential
Norway Rat	<i>Rattus norvegicus</i>	Potentielle
Pygmy Shrew	<i>Sorex hoyi</i>	Potential
Red Bat	<i>Lasiurus borealis</i>	Potential
Red Fox	<i>Vulpes vulpes</i>	Confirmed
Red Squirrel	<i>Tamiasciurus hudsonicus</i>	Confirmed

Species*	Latin name	Presence
River Otter	<i>Lutra canadensis</i>	Confirmed
Rock Vole	<i>Microtus chrotorrhinus</i>	Potential
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	Potential
Snowshoe Hare	<i>Lepus americanus</i>	Confirmed
Southern Bog lemming	<i>Synaptomys cooperi</i>	Potential
Southern Red-backed Vole	<i>Clethrionomys gapperi</i>	Potential
Star-nosed Mole	<i>Condylura cristata</i>	Potential
Striped Skunk	<i>Mephitis mephitis</i>	Potential
Woodchuck	<i>Marmota monax</i>	Potential
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	Potential

Sources : Species list : Prescott et Richard (2004)

Presence: Official information request addressed to the MRNF (2009b)

Status: CDPNQ (2009c)

* Species that have been designated vulnerable are in green, whereas species designated as susceptible to be threatened or vulnerable are in red.

Even if the presence of caribou has not been confirmed in the study area, some testimonials let believe of its presence at the limit of the zone. The only caribou subspecies found in Quebec is the Woodland Caribou (*Rangifer tarandus caribou*). Three ecotypes can be distinguished: Forest Caribou, Tundra or Migratory Caribou, and Mountain Caribou. Migratory Caribous are separated in two herds: George River herd and Leaf River herd. The presence of Migratory Caribous has been noted by satellite telemetry at the north of Broadback River and Evans Lake between December 10, 2007 and May 1st, 2008 (MRNF, 2003-2009).

Forest Caribou is especially distinguished from migratory caribou by the fact that it does not migrate on long distances. Its presence has been confirmed to us at the north of Broadback River (Bureau AIPRP, 2009), outside the study zone. Forest ecotype was indicated vulnerable in March 2005 according to the *Loi sur les espèces menacées et vulnérables* of the government of Quebec and has been indicated threatened by the COSEWIC (COSEWIC, 2009). Forest Caribou is generally established in mature resinous forests and peatlands. It is a sensitive species to human disturbances, and it has a great traditional importance for native communities (Équipe de rétablissement du caribou forestier, 2008). Habitat loss by fragmentation and forest fires, as well as a strong predation, is the main causes of its status precariousness. It is not allowed to hunt Forest Caribou. On the other hand, as it both of ecotypes can be on the same territory and that it is almost impossible to distinguish them to the naked eye, it

remains risks of bad identification while Migratory Caribou sport hunting. However, it is to note that the study area is not in the authorized caribou hunting zone. Conservation of intact and quiet forests, scientific research and public sensitizing seem to be of primary importance for the conservation of Forest Caribou (Équipe de rétablissement du caribou forestier, 2008).

Concerning amphibians and reptiles, no presence of particular status species was confirmed in the study area (CDPNQ, 2009b). About the species found in table 4.8, their presence was considered potential, because the wide study zone is included in their distribution area (Desroches and Rodrigue, 2004).

Table 4.8 Potential amphibians and reptiles in the limited study area

Species	Latin name	Presence
American Bullfrog	<i>Rana catesbeiana</i>	Potential
Blue-spotted Salamander	<i>Ambystoma laterale</i>	Potential
Common Gartersnake	<i>Thamnophis sirtalis</i>	Potential
Eastern American Toad	<i>Bufo americanus americanus</i>	Potential
Mink Frog	<i>Rana septentrionalis</i>	Potential
Northern Leopard Frog	<i>Rana pipiens</i>	Potential
Northern Spring Peeper	<i>Pseudacris crucifer crucifer</i>	Potential
Northern Two-lined Salamander	<i>Eurycea bislineata</i>	Potential
Wood Frog	<i>Rana sylvatica</i>	Potential

Source : Species list : Desroches et Rodrigue (2004)

4.3.5 Avian fauna

The consultation of literature enabled us to draw up the list of the bird species potentially present in the study zone according to their distribution area. This one is presented in table 4.9. The MRNF has not been able to provide us a list of confirmed species. In a general way, it seems that few inventories or observations by ornithologists groups were made in this sector. An information request has been addressed to *Regroupement Québec Oiseaux* which uses database ÉPOQ (Étude des populations d’oiseaux du Québec). Only one bird observation was indexed and transmitted to us. Common Moorhen (*Gallinula chloropus*) would have been seen by an observer on July 16, 2006 on Evans Lake (ÉPOQ, 2010). On the other hand, considering that the distribution area of this species is limited much more to the south

of Quebec and that it is thus not very probable to see it in an abundant way in the study zone, this one has not been included in table 4.9. In addition, it is not a particular status species.

Table 4.9 Potential avian species in the limited study area

Species*	Latin name	Presence
American Bittern	<i>Botaurus lentiginosus</i>	Potential
American Black Duck	<i>Anas rubripes</i>	Potential
American Crow	<i>Corvus brachyrhynchos</i>	Potential
American Goldfinch	<i>Carduelis tristis</i>	Potential
American Kestrel	<i>Falco sparverius</i>	Potential
American Redstart	<i>Setophaga ruticilla</i>	Potential
American Woodcock	<i>Scolopax minor</i>	Potential
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Confirmed
Bank Swallow	<i>Riparia riparia</i>	Potential
Barn Swallow	<i>Hirundo rustica</i>	Potential
Barred Owl	<i>Strix varia</i>	Potential
Bay-breasted Warbler	<i>Dendroica castanea</i>	Potential
Belted Kingfisher	<i>Ceryle alcyon</i>	Potential
Black-and-white Warbler	<i>Mniotilta varia</i>	Potential
Black-backed Woodpecker	<i>Picoides articus</i>	Potential
Blackburnian Warbler	<i>Dendroica fusca</i>	Potential
Black-capped Chickadee	<i>Poecile atricapillus</i>	Potential
Black-throated Green Warbler	<i>Dendroica virens</i>	Potential
Blue-headed Vireo	<i>Vireo solitarius</i>	Potential
Blue-winged Teal	<i>Anas discors</i>	Potential
Boreal Chickadee	<i>Poecile hudsonica</i>	Potential
Boreal Owl	<i>Aegolius funereus</i>	Potential
Brown Creeper	<i>Certhia americana</i>	Potential
Bufflehead	<i>Bucephala albeola</i>	Potential
Canada Goose	<i>Branta canadensis</i>	Potential
Canada Warbler	<i>Wilsonia canadensis</i>	Potential
Cape May Warbler	<i>Dendroica tigrina</i>	Potential
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Potential
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Potential
Chipping Sparrow	<i>Spizella passerina</i>	Potential
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Potential
Common Goldeneye	<i>Bucephala clangula</i>	Potential
Common Grackle	<i>Quiscalus quiscula</i>	Potential
Common Loon	<i>Gavia immer</i>	Potential
Common Merganser	<i>Mergus merganser</i>	Potential
Common Nighthawk	<i>Chordeiles minor</i>	Potential
Common Raven	<i>Corvus corax</i>	Potential
Common Redpoll	<i>Carduelis flammea</i>	Potential
Common Tern	<i>Sterna hirundo</i>	Potential
Common Yellowthroat	<i>Geothlypis trichas</i>	Potential
Connecticut Warbler	<i>Oporornis agilis</i>	Potential
Dark-eyed Junco	<i>Junco hyemalis</i>	Potential
Downy Woodpecker	<i>Picoides pubescens</i>	Potential
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Potential
European Starling	<i>Sturnus vulgaris</i>	Potential

Species*	Latin name	Presence
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Potential
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Potential
Gray Jay	<i>Perisoreus canadensis</i>	Potential
Great Blue Heron	<i>Ardea herodias</i>	Potential
Great Horned Owl	<i>Bubo virginianus</i>	Potential
Green-winged Teal	<i>Anas crecca</i>	Potential
Hairy Woodpecker	<i>Picoides villosus</i>	Potential
Hermit Thrush	<i>Catharus guttatus</i>	Potential
Herring Gull	<i>Larus argentatus</i>	Potential
Hooded Merganser	<i>Lophodytes cucullatus</i>	Potential
Killdeer	<i>Charadrius vociferus</i>	Potential
Le Conte's Sparrow	<i>Ammodramus leconteii</i>	Potential
Least Flycatcher	<i>Empidonax minimus</i>	Potential
Lincoln's Sparrow	<i>Melospiza lincolni</i>	Potential
Long-eared Owl	<i>Asio otus</i>	Potential
Magnolia Warbler	<i>Dendroica magnolia</i>	Potential
Mallard	<i>Anas platyrhynchos</i>	Potential
Merle d'Amérique	<i>Turdus migratorius</i>	Potential
Merlin	<i>Falco columbarius</i>	Potential
Mourning Warbler	<i>Oporornis philadelphia</i>	Potential
Nashville Warbler	<i>Vermivora ruticapilla</i>	Potential
Northern Flicker	<i>Colaptes auratus</i>	Potential
Northern Harrier	<i>Circus cyaneus</i>	Potential
Northern Hawk Owl	<i>Surnia ulula</i>	Potential
Northern Pintail	<i>Anas acuta</i>	Potential
Northern Saw-whet Owl	<i>Aegolius acadicus</i>	Potential
Northern Waterthrush	<i>Seiurus noveboracensis</i>	Potential
Olive-sided Flycatcher	<i>Contopus cooperi</i>	Potential
Orange-crowned Warbler	<i>Vermivora celata</i>	Potential
Osprey	<i>Pandion haliaetus</i>	Potential
Ovenbird	<i>Seiurus aurocapilla</i>	Potential
Palm Warbler	<i>Dendroica palmarum</i>	Potential
Philadelphia Vireo	<i>Vireo philadelphicus</i>	Potential
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Potential
Pileated Woodpecker	<i>Dryocopus pileatus</i>	Potential
Pine Grosbeak	<i>Pinicola enucleator</i>	Potential
Pine Siskin	<i>Carduelis pinus</i>	Potential
Purple Finch	<i>Carpodacus purpureus</i>	Potential
Red-breasted Merganser	<i>Mergus serrator</i>	Potential
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Potential
Red-eyed Vireo	<i>Vireo olivaceus</i>	Potential
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Potential
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Potential
Ring-necked Duck	<i>Athya collaris</i>	Potential
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Potential
Ruffed Grouse	<i>Bonasa umbellus</i>	Potential

Species*	Latin name	Presence
Rusty Blackbird	<i>Euphagus carolinus</i>	Potential
Sandhill Crane	<i>Grus canadensis</i>	Potential
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Potential
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Potential
Short-eared Owl	<i>Asio flammeus</i>	Potential
Solitary Sandpiper	<i>Tringa solitaria</i>	Potential
Song Sparrow	<i>Melospiza melodia</i>	Potential
Sora	<i>Porzana carolina</i>	Potential
Spotted Sandpiper	<i>Actitis macularia</i>	Potential
Spruce Grouse	<i>Falcapennis canadensis</i>	Potential
Swainson's Thrush	<i>Catharus ustulatus</i>	Potential
Swamp Sparrow	<i>Melospiza georgiana</i>	Potential
Tennessee Warbler	<i>Vermivora peregrina</i>	Potential
Tree Swallow	<i>Tachycineta bicolor</i>	Potential
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Potential
White-winged Crossbill	<i>Loxia leucoptera</i>	Potential
Willow Flycatcher	<i>Empidonax alnorum</i>	Potential
Wilson's Snipe	<i>Gallinago delicata</i>	Potential
Wilson's Warbler	<i>Wilsonia pusilla</i>	Potential
Winter Wren	<i>Troglodytes troglodytes</i>	Potential
Yellow Warbler	<i>Dendroica petechia</i>	Potential
Yellow-bellied Flycatcher	<i>Empidonax flaviventris</i>	Potential
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	Potential
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Potential

Source : Species list : Paquin (2003)
Status: CDPNQ (2009c)

* Species that have been designated susceptible to be threatened or vulnerable are in red, whereas species designated as vulnerable are in green.

Bald Eagle has been indicated as a vulnerable species according to the *Loi sur les espèces menacées et vulnérables* of the government of Quebec and has been indicated not in danger by the COSEWIC (COSEWIC, 2009). As it is a vulnerable species, its habitat is protected by the *Règlement sur les habitats fauniques* of the MRNF. An administrative agreement was concluded in 2001 between the *Ministère des Ressources naturelles*, the *Ministère de l'Environnement*, and the *Société de la Faune et des Parcs*, suggesting that infrastructures in forest zone must be made at 700 m of the nest (protective strip of 300 m, and buffer zone of 400 m). Presence of the Bald Eagle is confirmed in the wide study area, at 25 km of the intersection of ways "I" and "H, Section ouest", and at 7,5 km of the south-east of the camp.

It nests usually in forest environment close to vast water bodies or reservoirs, because it is a mainly piscivorous species. The contamination of its preys by organochlorinated pesticides or heavy metals, disturbance by human activities, accidental trapping, fragmentation and invasion of its habitats seem to be the main causes of its decline (Comité sur le rétablissement du pygargue à tête blanche au Québec, 2002). Observations were made showing that Bald Eagle naturally establishes its nest between 1 or 2 km of human disturbances sources (MRNF, 2009c). Bald Eagle vital domain is on average from 10 to 15 km² (Comité sur le rétablissement du pygargue à tête blanche au Québec, 2002).

Shorted-ear Owl (*Asio flammeus*) has the status of species susceptible to be designated threatened or vulnerable according to the *Loi sur les espèces menacées et vulnérables* of the government of Quebec. Its presence is potential, since its distribution area is adjacent to the study zone (2009c).

4.3.6 Protected wildlife habitats

An information request addressed to the MRNF allowed us to realize that there would be presence of two (2) heronries in way to be legally recognized ¹(see plan B/D-0932). One of these two heronries is adjacent to the restricted study area of way “H, Section ouest”. Two other sites are considered to be potential heronries, but require to be validated, because the related information could date of more than five years, and no follow-up has been made (Morin, personal com., 2010). The legally recognized heronries are controlled by the *Règlement sur les habitats fauniques* of the MRNF. There are not other fauna habitats recognized in the sector.

There is presence of several biological refuges in the study area. Creation of these refuges is part of the eleven Forest Resource Protection and Development Objectives defined by the MRNF. The designation of the biological refuges thus aims the permanent maintenance of old and

¹ Site where are at least five nests all used by Great Blue Heron, Black-crowned Night-Heron or Great Egret during at least one of the five last reproduction seasons and the band of 500 meters width that surround it, or a smaller territory where the configuration prevents the total extension of the band (MRNF :

<http://www.mrnf.gouv.qc.ca/faune/habitats-fauniques/proteges.jsp>)

mature forests determined according to the regional ecology (Leblanc and Déry, 2005). It happens that biological refuges correspond partly to protected wildlife habitats, at exceptional forest ecosystems or ecological reserves. There are six (6) biological refuges present in limited study area.

4.4 Social environment

4.4.1 Socio-economic context of the Nord-du-Québec

Administrative region of the Nord-du-Québec was delimited, such as known today, in 1987 (Emploi-Québec, 2007). It is the largest surface region and the least densely populated of Quebec. Nord-du-Québec is a natural resources region, i.e. the exploitation of the natural resources, by hydroelectricity, forest industries and mining, is the economy basis. The majority of the available employments for the population of North-du-Québec is thus located within these sectors. Mining is developing and many major projects are ongoing. For their part, the hydroelectric stations located in the Nord-du-Québec are the most important of this field of activities. Their construction, like their exploitation, create thousands employments. Also, several companies exploit forest for manufacture of derivative wood products. The forest crisis however hurts the activities of this industry and, at the same time, generates job losses. Let us note for example closing of the Domtar factories of Lebel-sur-Quévillon and Matagami, which caused the loss of 800 employments in 2006 (Emploi-Québec, 2007).

The Nord-du-Québec is divided into three parts: Jamésie, Eeyou istchee (Crees) and Nunavik (Inuit). The study area is included in Jamésie and Eeyou istchee. The administration of Jamésie is carried out by the Municipality of Baie-James and Eeyou istchee by the Grand Council of the Crees.

Socio-economic context of Cree communities (Eeyou Istchee)

Table 4.10 presents social and economic data of the Cree communities adjacent to the studied territory.

Table 4.10 Socio-economic data of Cree communities

Community	Total population (2006)	Average incomes (\$) (2001)	Unemployment rate (%) (2006)
Oujé-Bougoumou	606	22 645	20,4
Mistissini	2 897	20 438	18,9
Waskaganish	1 864	19 910	23,3
Waswanipi	1 473	20 543	13,2

Source : Institut de la statistique du Québec (2001 and 2006)

The general tendency for the territory of Eeyou Istchee from 2001 to 2006 is an augmentation of the population. The population progression is a tool that allows estimating the variations of a population if the current data such as mortality, fruitfulness, migration and life expectancy remain appreciably the same ones. Thus, population progression for the area of Eeyou istchee (variation 2031/2008) is of 32,8%. This increase is due to the high birth rate, which exceeds the loss connected to interregional migrations. Migratory balance for the year 2007-2008 was of -28 habitants (Institut de la statistique du Québec, 2009). In addition, the population is much younger there than elsewhere in Quebec, with a rate of approximately 30% between 0 and 14 years, and of 17% between 15 and 24 years.

Unemployment rate in native communities is considerably higher than for the whole province, this last being approximately of 7% (Institut de la statistique du Québec, 2001 and 2006). The average individual incomes are also a little lowest than for the average of the province. On the other hand, Crees living or working in a Cree community do not have to pay tax. Consequently, their net salary is higher than for the remainder of Quebec. 30% of Cree communities still live partly on a traditional way, i.e. while

having employment and enjoying the facilities of modern life, they continue to practice the activities connected to craft, hunting, fishing and trapping (Consultants forestiers DGR Inc., 2007, révision 2008).

Socio-economic data of Jamesian communities

Table 4.11 presents social and economic data of the Jamesian communities adjacent to the studied territory.

Table 4.11 Socio-economic data of Jamesian municipalities

Municipality	Total population (2006)	Average incomes (\$) (2001)	Unemployment rate (%) (2006)
Chapais	1 630	29 717	14,6
Chibougamau	7 563	27 397	9,5
Lebel-sur-Quévillon	2 729	35 868	11,6
Matagami	1 555	28 464	11,9

Source : Institut de la statistique du Québec (2001 et 2006)

Net interregional migration for year 2007-2008 was of -253 inhabitants. Population progression (variation 2031-2006) is of -25,2% (Institut de la statistique du Québec, 2009). Just like Eeyou Istchee, unemployment rate is higher on the Jamesian territory than for the whole province.

4.4.2 Territorial division

The signature of the James Bay and Northern Quebec Agreement in 1975 and of the North-Eastern Quebec Agreement in 1978, established the current territorial mode which defines three (3) categories of territory, their extent and the rights being attached to it. In a general way, the public has access to the roads, transportation routes, airports, bridges, public seaplanes bases, docks, ports, rivers and principal lakes, public edifices and grounds used at public ends. On the other hand, only members of bands or Cree communities have access to the territories of category I. The local Cree administration however can, by its capacity of regulation, to control the access to territory of category I, as much as the access right is not denied or unduly restricted. In regard to the

exploitation of the fauna resources and management of the territory, here is summary of terms used to specific the three (3) categories:

1. **Category I land:** Reserved exclusively to the uses and the benefits of the Cree and Naskapis communities who sign both conventions.
2. **Category II land:** Natives have exclusive rights of hunting, fishing and trapping. Commercial logging is allowed, according to the methods of the MRNF. The lands management is done jointly with the regional authorities. To be able to hunt in the category II lands, it is necessary to obtain, in addition to the hunting permit required, an authorization by the native authorities concerned (Cree, Inuit or Naskapi) and to observe the conditions they stated.
3. **Category III land:** They are Quebec public lands. Non-autochtones can practise sport hunting and fishing just like commercial fisheries. Some privileges exist concerning hunting rights of the native communities and for the participation in the administration and the development of the territory.

Followed species are reserved to the exclusive uses of natives in territories includes in the convention:

- All mustelids
- Beaver
- Lynx
- Fox
- Polar bear
- Muskrat
- Porcupine
- Marmot
- Black bear (in Cree traplines to the north of 55th parallel)
- Wolf (To the north of 55th parallel)
- Whitefish (non-anadromous)
- Goldeye and Mooneye
- Suckers
- Burbot

- Sturgeon

4.4.3 Territory uses by the native communities

The territory of FMU 86-65, including the site being studied, is localised on a category III territory used by the Cree First Nation of Waswanipi (Hereafter Waswanipi). Seven (7) Cree traplines (W1, W3, W4, W4A, W5C, W6 and W13) cover the totality of the FMU (Consultants forestiers DGR Inc., 2007, révision 2008). Cree traplines are directed by the tallymen responsible of the annual beaver trapping planning and management. They also decide in which measures the activities of hunting, fishing, and trapping of other fur animals must be practised. These territories can be used for the practice of traditional and subsistence activities. Table 4.12 presents the trapping and hunting data for the community of Waswanipi. The tallymen also decide which will be the territories of Cree interests and wildlife interests registered in the GFMP of the forest companies. They are also consulted to localize the biological refuges. The management forest activities are prohibited inside these zones, unless obtaining an authorization of the ministry.

Table 4.12 Community of Waswanipi: Hunting and trapping data

Species	2008-2009
Beaver	286
Lynx	20
Marten	138
Mink	4
Otter	7
Fisher	2
Weasel	7
Muskrat	26
Squirrel	5
Wolf	3
Red Fox	12
Crossed Fox	2
Moose	176

Source : Association des trappeurs cris (2009)

Within the framework of this project, the traplines included in the limited study area are those following (see plan B/D-0933):

- W-4 : Louis Ottereyes
- W-4a : Allan Gull
- W-5c : Wally Saganash
- W-6 : Randy Ottereyes

4.4.4 Current and envisaged uses by the other users

Currently, the territory is used for commercial forest exploitation, forest management and, to a lesser extent, hunting and fishing. According to the MRNF data, there are 10 non-autochthones camps located in the study area. Non-autochthones must have licences in order to practise hunting and fishing activities. In Quebec, there are 28 zones of hunting and fishing, and a zone reserved for fishing only (zone 25). The study area is located in hunting zone 22 south. Table 4.13 enumerates the hunting data of the last four (4) years for the whole hunting area 22, and table 4.14 enumerates trapping data for the last three (3) years. The data of this last table correspond to the number of skins sold by trappers and hunters in fur-bearing animal management unit 88 (FAMU 88). The values presented can thus vary compared to the real number of captured animals. It should be noted that these tables include some catches carried out by natives.

Table 4.13 Hunting data in area 22

Species	2006-2007	2007-2008	2008-2009	2009-2010
Caribou ¹	11 669	12 818	12 137	5 378
Moose ²	139	166	144	143
Black Bear ³	---	---	1	---

Source : MRNF (2006-2010)

¹Hunting caribou is prohibited in area 22 sud

² Excludes reserves

³ Includes reserves

Table 4.14 Trapping data of UGAF 88

Species	2006-2007	2007-2008	2008-2009
Weasel	20	14	6
Beaver	726	386	222
Coyote	4	0	1
Squirrel	34	5	0
Wolf	2	2	2
Otter	23	7	2

Lynx	53	20	8
Marten	407	324	188
Skunk	0	0	0
Black bear	0	0	0

Source : MRNF (2006-2010)

It is actually possible to frequent this territory, but the absence of roads limits the access. It is currently possible to reach this place only by seaplanes, boats and off-road vehicles. The territory is thus not used a lot by non-autochthones. The opening of the territory could thus contribute to increase its frequentation by other users. In addition, we can find a non-exclusive rights outfitter, Americree ltd, on the territory being studied.

4.4.5 Protected areas

There is no protected territory inside the limited study area. On the other hand, the project of Assinica Park is at the northern limit of the study area (see plan B/D-0933). The projected surface of this park is of approximately 6 000 km² and includes the great region of Broadback River and Evans Lake. One of the objectives of the project is the protection of Forest Caribou habitat. Indeed, a projected zone of Caribou protection is located at the north of Broadback River, the Massif Le Gardeur. The sector is also an intact forests and vast water bodies territory, one of the last unfragmented (SNAP, 2009). The Canadian Parks and Wilderness Society (CPAWS) and the Cree community of Waswanipi thus express the emergency to protect this territory. In order to not compromise the conservation projects in progress, Mr. Jean-François Lamarre, of the *Direction du patrimoine écologique et des parcs services parcs* of the MDDEP, and intervener in the creation of this protected area, has been contacted to determine if an additional buffer zone should be preserved from the limit of the projected Park. This last indicated to us that a protection of at least 1,5 km starting from Broadback River should be considered to ensure the safeguarding of the territory aimed by the park (Lamarre, personal com., 2010). This protective strip is based on the standard of 1 (one)

mile applied in the American national forests (“Noise and visual standard impact”). Matériaux Blanchet and the beneficiaries of FMU 86-65 are committed to respect this buffer zone. The proposed ways are now located at 7,7 km and 2,8 km of the projected Park limit, thus improving the recommendation put forth by Mr. Lamarre.

INSERTION PLAN B/D-0933 (format (11x17)

MILIEU SOCIAL

4.4.6 Other activities in the sector

According to GESTIM register of the MRNF, there is no active mining lease in the study area. However, active claims have been seen in the north of the way “I” and historical data indicate that several claims were allotted on the territory (MRNF, 2010). As mentioned in section 4.2.3, the study area has a good mining potential. On the other hand, it is impossible for us to know if some developments are envisaged. In addition, if a mining project would develop, the projected access road could be used by these users, avoiding the formation of badly structured ways and limiting double impacts.

4.4.7 Archaeological and cultural potential

As indicated in the GFMP 2008-2013, two (2) burial sites are localised inside the study area (see plan B/D-0933). A intervener of the *Ministère de la Culture, des Communications et de la Condition féminine* assured us that there is no archeological site indexed in the *Inventaire des sites archéologiques du Québec* (ISAQ) in the study area (Adjizian, personal com., 2010).

No archaeological inventory or archaeological potential study was carried out during this mandate. On the other hand, an archaeological potential study has been made by Mr. Philippe Picard in 1998 within the framework of the firm Soprin ADS impact study. Let us remember that the layout of the way proposed in this study, which was not built, borrows a part of way “H, Section ouest”. Potential archaeological zones were identified in a corridor of 1 (one) km to each side of this road (see table in appendix 10, ZAP 6 to 13).

We do not have data on archaeological potential zones for the way “I” from another archaeological study. On the other hand, starting from the method used by Picard (1998), we identified zones that could have archaeological potential (see plan B/D-0933). In a general way, Picard determined potential zones following the consultation of historical, ethnological and archaeological information, of literature, databases and talking with the current users of the territory. According to the historical data and the actual Cree

users of the territory, principal camps are always located close to a water body, secondary camps close to favourable zones to harvest and faunal resources, and burial site in busy places, therefore often close to water bodies (Picard, 1998). Besides, the current camps have these characteristics. We also often find these sites on western or northern banks, to be protected from dominant winds. Well drained and flat soils also constitute places with a good archaeological potential. We can find geological outcrops (Lake Evans Series) to the west of Salamandre River (Picard, 1998). The latter are made of rhyolite and porphyritic lava containing sought matters during the prehistoric period for clothes confection and fabrication of tools and weapons.

The beginning of human occupation in the sector of the basin of Broadback River is estimated at 6000 BP. At that time, the vegetation started to look like the one found today. The study area is on a traditional hunting territory for which the Broadback River seemed to be strategic, since it allowed transport between the Ancestor Evans Lake and Tyrell Sea to the actual James Bay, and from the Ancestor Mattawaskin Lake towards its successor Mistissini Lake (Picard, 1998). It is a zone having potentially been useful for terrestrial displacement.

Picard (1998) express that this zone has a strong archaeological potential referring to the furs trade period, and according to the writings describing this period. Cree territory of Waswanipi has always been considered, with Mistassini, like one of the best for beavers trapping and resources abundance. The ancestors of Waswanipi trappers used two main roads to go to Fort Rupert, Hudson Bay Company post, located on Rupert River. One of these ways is formed by Gull Lake, Poncheville Lake, Quenonisca Lake, Broadback River, Evans Lake and Nemiscau Lake. Quenonisca Lake and Evans Lake are thus zones to be supervised as regards at archaeology, more especially because a trade post was located at Evans Lake from 1817 to 1818.

4.4.8 Concerns raised during the consultations

Cree communities

Since the planning of the general forest management plans, beneficiaries carried out various consultations with people touched by their activities.



Consultations were also undertaken by the Joint Working Group (JWG) and The James Bay Advisory Committee on the Environment (JBACE). These general order consultations were related to the activities planned by the beneficiaries. The concerns expressed during these consultations relatively to the access paths were about the following subjects (CCEBJ, 2009):

- The alignment of the accesses;
- The reorganization of the traditional activities on traplines during the construction phase;
- Effects of opening the territory related to the presence of infrastructures on activities and the rights of native users;
- Increase of watercourse crossing structures and impacts of the additional fishing pressure on fishes;
- Impact of the borrow pits.

Specific consultations about the two ways subjected to an environmental assessment were also carried out. These consultations were held by the firm elected for the impact assessment, in collaboration with the beneficiaries. First consultation stage for the concerned ways was led with the local JWG coordinator of Waswanipi of Cree-Quebec Forestry Board, Mr. Allan Saganash. Mr. Saganash works for the Forest Authority Council of Waswanipi and is responsible to coordinate the consultations with the tallymen and with the concerning people. This last was informed of the procedure surrounding the impact assessment of the ways proposed by the beneficiaries of FMU 86-65 and this one presented the main apprehended concerns related to the development of the highway network. He also agreed to contribute to the planning of the other consultations with the other Cree interveners. This informal meeting took place in December 2009.

The second consultation phase was carried out with the Cree community of Waswanipi, and then a third meeting took place with the tallymen. These meetings aimed at supplementing the information available on fauna resources, archaeological sites and use of the territory, in addition to confirming their concerns and collecting their comments about the access paths.

Their suggestions for mitigation measures to be implemented



were also collected. The consultation with the community of Waswanipi took place on January 14, 2010, whereas that one with the tallymen took place on February 3, 2010. Reports are presented in appendix 11. Here is a summary of the subjects covered during these two consultations:

- Communication about the information and the progression of the project;
- Cree interests sites;
- Forest Caribou;
- Consultation process;
- Availability of borrow pits;
- Access to the category II lands and risks of poaching;
- Implication and role of the fauna supervisors;
- Maintenance of the roads relating to beavers dam;
- Protection of the territory surrounding Broadback River;
- Particular requests of each tallyman.

Other interveners

In parallel to the consultations with the Crees, the representatives of the Municipality of Baie-James were also consulted. Meeting took place on January 21, 2010 in Chapais. This meeting aimed to present the two proposed ways, then to collect their concerns and suggestions for mitigation measures to be set up. Here is a summary of their main concerns:

- Social and economic repercussions for the region of Nord-du-Québec;
- Effects of circulation augmentation of heavy machinery on the Baie-James road due to forest activities;
- Effects for the beneficiaries of the Security Program for Cree Hunters and Trappers

5. Environmental impact assessment

The impact evaluation method is based on the determination of the importance of the project activities impacts on biological and social environments. First stage thus consists in identifying the apprehended impacts with a grid of interrelationship between the project activities and environment components. Thereafter, each one of these impacts is evaluated according to the criteria defined beforehand. The final importance is given considering the mitigation measures that will be apply in order to minimize the negative impacts or to improve the positive impacts.

5.1 Impacts identification method

In order to identify the impacts, it is necessary to target the sources of impact. Those are defined like all the activities of the project likely to modify directly or indirectly a component of the environment. Thereafter, these activities are put in interrelationship with the environment components, in order to determine the impact, positive or negative, on these last.

5.1.1 Identification of the activities connected to the project

The activities connected to the project were divided into two phases, are those which will be held during the construction of the ways and those which are envisaged at the time of the exploitation. These activities are generally defined in relation to the project features and working methods usually used.

Table 5.1 List of activities according to each phase of the project

Phases	Activities	Description
Construction	Clearing	Tree cutting Stacking wood Woody debris management
	Excavation and earthworks	Excavation / Backfill Exploitation of borrow pits (temporary access, clearing, scouring, restoration)
	Watercourses and drainage	Installation of bridges and culverts, stabilisation Management of drainage Control of runoff water
	Circulation	Circulation of trucks and heavy machinery
	Purchase of products and services	Hiring of subcontractors and workers
Exploitation	Presence of infrastructures	Road, bridge, culvert, opening of territory
	Utilisation	Local circulation and circulation related to industrial activities
	Maintenance	Snow removal, sanding, grading, ditch maintenance

5.1.2 Identification of the environment components

The next stage in the evaluation process is to bring out the sensitive components of the environment, i.e. those which are likely to be affected by the project activities. From their intrinsic characteristics, the components will not all be affected to the same level by these activities. This is why an environmental value is allotted to them. This one depends, as mentioned previously, of the intrinsic characteristics of the component determined according to the expert judgement. It also results from the social value allotted to the component, determined by the legislation and the interests or concerns of the interveners. The environmental value helps to determine the impact amplitude.

The environmental value allotted to the environment components was checked on the basis of public consultation carried out in the context of the current project and also during the development by the MRNF and the beneficiaries of the GFMP 2008-2013. Communications with Ministry interveners and the consultation of legislative documents supplemented the information sources being used to allot an environmental value to the components. The two following tables respectively present the components of the

biophysics and social environments, and their environmental value.

Table 5.2 List of the biophysical components of the environment

Components	Description	Environmental value
Vegetation	- Coniferous forest - Mixed forest - Deciduous forest - Wetlands and riparian environment - Endangered plant species	Low Medium High High High
Terrestrial fauna	- Protected wildlife habitats - Endangered wildlife species - Other preferential habitats - Species of interest for hunting and trapping	High High Low to Medium Medium
Aquatic fauna	- Spawning sites - Endangered wildlife species - Other preferential habitats - Species of interest for fishing	High High Low to Medium Medium
Avian fauna	- Nesting sites - Endangered wildlife species - Other preferential habitats - Species of interest for hunting	High High Low to Medium Medium
Soil quality	---	Low

Table 5.3 Identified social components of the environment

Components	Description	Environmental value
- Uses of the territory by the Crees	- Camps and traditional activities - Portage path, de ATV tracks - Waterways	High Medium Low
- Other uses of the territory	- Hunting and fishing camps, outfitters - Tourism and recreational activities - Conservation areas - Industrial activities	Medium Medium High Medium
- Archaeological potential	---	High
- Regional economy	Jobs, local benefits, goods and services	Medium

The components have a high environmental value when they have a protection status, are not very abundant or that they constitute a traditional activity. If the component is relatively abundant or that an interest or a particular utility is allotted to him, its value was regarded as medium. Finally, a value is low when the component is abundant, is not used a lot or that little

interest is allotted to him.

5.1.3 Potential interactions

The following table draws up a preliminary portrait of the impacts that could be generated by the project activities on the environment components. Those are the apprehended impacts. They are identified on the basis of past experiments and similar projects, which also makes possible to envisage which types of impacts (positive or negative) an activity can cause.

Table 5.4 Interaction between the project activities and the environmental components

		Construction				Exploitation			
		Deforestation	Excavation and backfill	Watercourses and drainage	Circulation	Purchase of goods and services	Presence of infrastructures	Use	Maintenance
Biophysics environment	Vegetation	■							
	Terrestrial fauna	■			■			■	
	Avian fauna	■							
	Aquatic fauna			■					■
	Endangered species	■							
	Soil quality				■			■	
Social environment	Uses of the territory by the Crees	■					■	■	
	Other uses of the territory					■			
	Archaeological potential		■						
	Regional economy					■	■		■

5.2 Evaluation method of the importance of the impacts

The impacts evaluation aims to determinate the importance of the residual impact of the project activities on the environment components. This importance reflects the resultant of the apprehended impacts following the application of mitigation measures. Thus, to obtain the

environmental incidence, the impacts are evaluated according to defined criteria which are then connected.

This section thus aims to describe the three (3) evaluation criteria selected to evaluate the apprehended impacts and the grid which will connect them in order to determine the impact importance.

5.2.1 Amplitude

Amplitude represents the deterioration degree generated by a project activity on the integrity of an environment component. This one can be positive or negative. On the biophysics environment, amplitude depends particularly of the intrinsic characteristics of the component, its sensitivity to the disturbances and its capacity to recover a condition considered being acceptable (reversibility). For the human environment, amplitude depends of the utilization degree by the individuals. Amplitude criterion is subdivided as follows:

- Low amplitude : Results from an activity that does not alter much the integrity or the use of an environmental component
- Moderate amplitude : Results from an activity that reduces reversibly the integrity or the use of an environmental component
- High amplitude : Results from an activity that significantly alters the integrity or the use of an environmental component

5.2.2 Duration

The duration represents an estimation of the time over which will be felt the project activities.

Duration criterion is subdivided as follows:

- Short duration : Results from an activity which the perturbation is felt in a punctual period, whether during the construction phase of the project (ex. Culvert installation)
- Moderate duration : Results from an activity which the perturbation is felt in a temporary period, whether during the exploitation phase by the beneficiaries
- Long duration : Results from an activity which the perturbation is felt permanently, whether for all the duration of the use of the access roads (ex. Presence of a road, a bridge, a culvert)

5.2.3 Scope

The scope represents the surface of the territory, as well as the number of individuals or elements affected by the activities of the project. It can happen that scope is felt beyond the wide study area, for example as the scope of the socio-economic environment activities. This criterion is subdivided as follows:

- Limited scope : Results from an activity that directly affects a specific area and/or that is just perceived by a small group of individuals (ex. a stream, a hunting camp, a family...).
- Local scope : Results from an activity that touches directly or indirectly an enlarged area and/or is perceived by many individuals (ex. an ecosystem, a hunting territory, the tallymen...).

- Regional scope : Results from an activity that affects a territory with a geographical or administrative structure and/or is felt by large communities (ex. watershed, forest stand, Waswanipi community, James Bay municipality...).

5.2.5 Evaluation grid

The impacts analysis, based on the evaluation criteria described above, will make possible to determine the importance of the residual impact. The synthesis evaluation grid is presented to the following page. The analysis is carried out by a method based on quotation of the evaluation criteria (numbers between brackets). Following the comparison of the three criteria, a final dimension is obtained. These dimensions are gathered in four (4) classes of impact importance. Thus, a residual impact is considered as low if the final dimension is between 3 and 4; moderate between 5 and 6, high between 7 and 8 and then major if the final dimension is of 9. The following table represents the grid of determination of the residual impact importance. In some cases, even if risks to generate an impact are present, the importance will be considered to be negligible if the probabilities that it occurs are weak.

Table 5.5 Evaluation matrix of residual impacts significance

Amplitude	Scope	Duration	Residual impact
High (3)	Regional (3)	Long (3)	Major (9)
		Moderate (2)	High (8)
		Short (1)	High (7)
	Local (2)	Long (3)	High (8)
		Moderate (2)	High (7)
		Short (1)	Moderate (6)
	Limited (1)	Long (3)	High (7)
		Moderate (2)	Moderate (6)
		Short (1)	Moderate (5)
Moderate (2)	Regional (3)	Long (3)	High (8)
		Moderate (2)	High (7)
		Short (1)	Moderate (6)
	Local (2)	Long (3)	High (7)
		Moderate (2)	Moderate (6)
		Short (1)	Moderate (5)
	Limited (1)	Long (3)	Moderate (6)
		Moderate (2)	Moderate (5)
		Short (1)	Low (4)
Low (1)	Regional (3)	Long (3)	High (7)
		Moderate (2)	Moderate (6)
		Short (1)	Moderate (5)
	Local (2)	Long (3)	Moderate (6)
		Moderate (2)	Moderate (5)
		Short (1)	Low (4)
	Limited (1)	Long (3)	Moderate (5)
		Moderate (2)	Low (4)
		Short (1)	Low (3)

The two following sections document the impacts assessment on biophysics and social environments at construction and exploitation phases of the ways. A synthesis chart is presented to the beginning of the first section. The plan in its original format is presented at the end of the document (plan D-0934).

5.3 Impacts during the construction phase

During the construction, the principal sources of impact on the environment will be: road clearance and borrow pits deforestation, exploitation of borrow pits, operations of excavation and backfill, construction of the ways, disturbances due to machinery operation and circulation, as well as bank and water works (culverts installation, bridges construction...). This section presents the impacts of these activities on the biophysics and social environment components.

5.3.1 Biophysics environment

Vegetation

Road clearance deforestation will generate a permanent vegetation cover loss estimated at a total surface of 2,22 km² for both ways. Some significant environments will be affected by this deforestation, such as riparian environments covered mainly with alders. Those will be mainly affected to the river approaches. This deforestation is estimated at 0,017km².

Borrow pits deforestation will also cause a forest surface loss of the size of the borrow pit and the access path. On the other hand, the impacts on forest cover can be considered as low because the majority of the borrow pits will be less than 1 ha (0,01 km²) and will all be restored at the end of their exploitation.

The trees will be cut up to 30 cm of the ground and logging management will consist in sending the commercial value trees to the factories of the CAAF beneficiaries. Woody remains and non-commercial trees will be integrated to the foundation of the road, thus no burning will be realized. The following table summarizes the surfaces affected by deforestation for each type of vegetation cover.

INSERTION PLAN D-0934 (format (11x17))
IMPACTS SUR LE MILIEU BIOPHYSIQUE ET SOCIAL

Table 5.6 Vegetation area loss as a result of road clearance

Forest type	Area (km ²)
Resinous stand	2,046
Mix stand	0,128
Deciduous stand	0,006
Dry bare	0
Wet bare	0,024
Alder (riparian environments)	0,017
Peatlands	0
TOTAL	2,22

¹ Clearance width of 30 m and clearance of 15 meters on both sides of watercourses (20 meters length)

Mitigation measures: In a general way, the *Règlement sur les normes d'intervention dans les forêts du domaine de l'État* (RNI) will be duly applied by the beneficiaries and the subcontractors. Also, a clear delimitation of the surfaces to be deforested will be established by proficient forest technicians before the construction works, which will help the operators to respect the width of the 30 m clearance and the contracting of the clearance in approach of the rivers. As regards to the borrow pits, those will be progressively exploited and closed as the progress of the road works, and then restored in accordance with articles 21,22 and 23 of the RNI.

Residual impact: Since the loss of vegetation cover will be permanent, except for the borrow pits which will be restored, the duration of the impact is long. On the other hand, as the deforestation will be limited to the clearance, not coming to affect the integrity of the forest settlements or the environment use significantly, Amplitude of road clearance and borrow pits deforestation is considered as low and of a specific scope. Thus, the residual impact is evaluated to low.

Floristic species with a particular status

The only species with a particular status confirmed in this sector is Slenderleaf Sundew (*Drosera linearis*). The only observation of this species was carried out to 3 km at the east of Opataouaga Lake, that to say at more than 21 km of the limited study area. Although there always exists a possibility to find other populations of this species on the territory, it is mainly repertoried in peatlands and no wetland is crossed by the projected ways. The following table is a list of

potential species with particular status whose preferential habitats are present in the study area and for which observations were made in the natural province F, where is located the study area, and/or in the province G, Highlands of Mistassini (CDPNQ, 2008), which is adjacent to the zone F.

Table 5.7 Lost of endangered vegetal species preferential habitats

Species	Preferential habitats	Area of lost habitat (km ²)
Roundleaf Orchid (<i>Amerorchis rotundifolia</i>)	Fen Coniferous forest	0 2,046
Dragon's mouth (<i>Arethusa bulbosa</i>)	Bog	0
Canadian Milkvetch (<i>Astragalus australis</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Ternate Grapefern (<i>Botrychium rugulosum</i>)	Dune, exposed sand Deciduous forest	0 0,006
Fairy slipper (<i>Calypto bulbosa</i>)	Shoreline (marsh) Forested fen	0 0
Giant Mountain Aster (<i>Canadanthus modestus</i>)	Marsh	0
Rock Sedge (<i>Carex petricosa</i> var. <i>misandroides</i>)	Rock	0
Prairie Sedge (<i>Carex pairea</i>)	Fen	0
Richardson's Sedge (<i>Carex richardsonii</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Jersey Tea (<i>Ceanothus herbaceus</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel Coniferous forest	0 0 2,046
Hooded Coralroot (<i>Corallorizha striata</i> var. <i>striata</i>)	Deciduous forest Mix forest Coniferous forest	0,006 0,128 2,046
Scrambled Eggs (<i>Corydalis aurea</i> ssp. <i>aurea</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Ram's Head Lady's Slipper (<i>Cypripedium arietinum</i>)	Forested fen Mix forest Coniferous forest	0 0,128 2,046
Sparrow's-egg Lady's-slipper (<i>Cypripedium passerinum</i>)	Outcrops, boulders, exposed gravel	0
Western Tansymustard (<i>Descurainia pinnata</i> ssp. <i>brachycarpa</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Slenderleaf Sundew (<i>Drosera linearis</i>)	Fen	0

Species	Preferential habitats	Area of lost habitat (km ²)
Silverberry (<i>Eleagnus commutata</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel Cliffs, scarps, bank	0 0 0
(<i>Elatine ojibwayensis</i>)	Shoreline (rock,sand,marsh) Marsh	0 0
Short-ray Fleabane (<i>Erigeron lonchophyllus</i>)	Outcrops, boulders, exposed gravel	0
Largeleaf Avens (<i>Geum macrophyllum</i> var. <i>perincisum</i>)	Marsh Mix forest Coniferous forest	0 0,128 2,046
Golden Hedgehyssop (<i>Gratiola aurea</i>)	Shoreline (rock, sand, marsh)	0
Robinson's Hawkweed (<i>Hieracium robinsonii</i>)	Rocky shoreline, gravel	0
Woolly beachheather (<i>Hudsonia tomentosa</i>)	Dune, exposed sand Coniferous forest	0 2,046
Longstyle Rush (<i>Juncus longistylis</i>)	Rocky shoreline, gravel	0
Cream pea (<i>Lathyrus ochroleucus</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Northern Twayblade (<i>Listera borealis</i>)	Coniferous forest	2,046
James Monkey-flower (<i>Mimulus glabratus</i> var. <i>jamesii</i>)	Shoreline (rock, sand, marsh) Marsh	0 0
Leiberg's waterlily (<i>Nymphaea leibergii</i>)	Herbarium creek Herbarium lake	0 0
Russian Blue Lettuce (<i>Mulgedium pulchellum</i>)	Rocky shoreline, gravel	0
Alaska Piperia (<i>Piperia unalascensis</i>)	Coniferous forest	2,046
Senega Snakeroot (<i>Polygala senega</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel Deciduous forest	0 0 0,006
Coastal Jointweed (<i>Polygonella articulata</i>)	Dune, exposed sand	0
Woodland Pinedrops (<i>Pterospora andromedea</i>)	Coniferous forest	2,046
Lakecress (<i>Rorippa aquatica</i>)	River, herbarium creek	0
Littletree Willow (<i>Salix arbusculoides</i>)	Rock	0
McCalla's Willow (<i>Salix maccalliana</i>)	Forested fen Shoreline (marsh)	0 0
False Mountain Willow (<i>Salix pseudomonticola</i>)	Shoreline (rock, marsh)	0

Species	Preferential habitats	Area of lost habitat (km ²)
Pringle's Aster (<i>Symphyotrichum pilosum</i> var. <i>pringlei</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Purple Meadow-rue (<i>Thalictrum dasycarpum</i>)	Marsh	0
Torrey's Manna Grass (<i>Torreyochloa pallida</i> var. <i>pallida</i>)	Marsh	0
Clinton's Bulrush (<i>Trichophorum clintonii</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Hiddenfruit bladderwort (<i>Utricularia geminiscapa</i>)	Herbarium lake Bog	0 0
Mat Vetch (<i>Vicia americana</i>)	Rocky shoreline, gravel Outcrops, boulders, exposed gravel	0 0
Arrowleaf Violet (<i>Viola sagittata</i> var. <i>ovata</i>)	Outcrops, boulders, exposed gravel Dune, exposed sand	0 0

Source : Preferential habitats : CDPNQ (2008)

Mitigation measures: During the surveys that will be made before the construction of the road, some corrective measures could be applied to the layout if particular status plant species are observed.

Residual impact: Since the layout of the two forest roads does not cross any peatland and a few preferential habitats of particular status species, the probability of affecting populations of these species is considered to be low.

Terrestrial fauna and fauna habitats

The impacts apprehended on terrestrial fauna and faunal habitats are noise disturbance and habitat loss caused by deforestation, excavation, works and circulation. Even if deforestation and excavation generate a net habitat loss for fauna, this should not compromise the integrity of the populations. Indeed, the species will be able to move to some environments less disturbed by the activities, because the territory presents several ecosystems similar to those that will be affected. The individuals startled by soundscape will be able to move temporarily far from the source of noise, and then return to those places when the works will be less noisy or completed.

The following table presents the approximate surface of the preferential habitats affected in the limited study area for the species whose presence was confirmed and who are species coveted for hunting and trapping.

Table 5.8 Approximate area of affected preferential habitats

Species	Preferential habitats	Affected area (km ²)
Weasel	Wetland	0
	Field, brushwood	N/A
Beaver	Forest nearby water	0,017
Wolf	Forest	2,222
Otter	River, pond, marsh	0,017
Lynx	Coniferous forest	2,046
Marten	Coniferous forest	2,046
	Mix forest	0,128
Moose	Mix forest (birch-fir)	0,000
	Mix forest	0,128
	Deciduous forest	0,006
	Riparian environment	0,017
Black bear	Deciduous forest	0,006
	Coniferous forest	2,046
Muskrat	River, pond, marsh	0,017
Red Fox	Forest	2,222
Mink	Brushwood nearby water	0,017

Sources : Species : MRNF (2006-2010)
Cree Trappers Association (2009)
Preferential habitats: Prescott et Richard (2004)

No faunal habitat protected by the *Règlement sur les habitats fauniques* will be touched by the project activities. Indeed, none of these habitats was listed in the limited study area. In addition, it is possible that the ways come to affect and/or cross the corridors used by terrestrial fauna to reach preferential habitats (alimentation, yard, etc). Finally, the presence of workers is likely to increase the pressure on faunal populations during the hunting period.

Mitigation measures : Terms associated to the protection of faunal habitats aimed by the *Loi*

sur la conservation et la mise en valeur de la faune, le Règlement sur les habitats fauniques, as well as the measurements recommended in the RNI will be duly applied.

Workers will be sensitized to the respect of the *Loi sur les droits de chasse et de pêche dans les territoires de la Baie-James et du Nouveau-Québec*.

Residual impact: Since the majority of the faunal species present in the sector are not limited to specific or rare habitats on the territory being studied, that those will be able to move to less disturbed environments and that no protected faunal habitat will be affected, amplitude of this impact is judged to be low. Duration is moderate since the effects will especially be felt during the construction and forestry exploitation phases. For its part, scope is considered to be local. The residual impacts are thus considered to be moderate.

Fauna species with a particular status

The presence of forest caribou is confirmed at the north of Broadback River (ATIP, 2010). In order to protect this species still under study, a conservation area was proposed by the MRNF. This one includes a part of at the south of Broadback River, mainly inside the limits of Patrimonial Cree Assinica Park (Office AIPRP, 2010). Thus, the layout planning integrated measurements of the *Plan de rétablissement du caribou forestier 2005-2012* that can be applied by industries, even if the territory aimed by the construction of the proposed forest roads is not a part of the sectors where the re-establishment plan is applied.

Mitigation measures: Since part of the proposed conservation area is localised in the Patrimonial Cree Assinica Park, the beneficiaries are committed to not build forest roads inside the park project. The ways “H, Section ouest” and “I” will stop respectively to 7,7 and 2,8 km before the suggested limits of the park.

Residual impact: The probabilities that ways construction affects the population of forest caribou have been considered to be negligible.

Avian fauna and its habitat

The layout of way “H, Section ouest” passes to approximately 900 m of a heronry in process of becoming legal (including the protection buffer zone of 500 m) (see plan D-0934). There is also a presence of a potential heronry at 3,7 km of the way “I”. However, taking into account their distance compared to the projected ways, the activities will not threaten the integrity of the heronries, neither on construction phase nor at the time of the exploitation. However, the breeding pairs using these sites on breeding period could be disturbed by the noise generated by machinery. On the other hand, as the construction works will be of short duration and at a distance higher than the one prescribed by the legislation of the MRNF on the protected faunal habitats, it not seems very probable that the use of these sites is compromised.

During the consultations with the Cree tallymen, it has been specified to us that the latter hunt Goose in the sector. However, as the activities are not likely to generate loss of riparian or aquatic habitat, and that the disturbances which could be felt are only specific and temporary, the integrity of the populations and the use of the sites should not be compromised.

Road clearance deforestation will generate a habitat loss for forest birds and birds of prey. However, the presence of similar environments on the whole territory will permit to the present species to use less disturbed sectors. It should be noted that the Bald Eagle refuge identified in the wide study zone is localised at 25 km to the south of the axes “H, Section ouest” and “I” intersection, and at 7,5 km to the south-east where the workers camp will be placed. The ways incident on this fauna habitat is thus considered negligible. Indeed, the Bald Eagle tends to establish its nest between 1 to 2 km of human disturbances sources (Comité sur le rétablissement du pygargue à tête blanche au Québec, 2002).

Mitigation measures : Terms associated to the protection of fauna habitats aimed by the *Loi sur la conservation et la mise en valeur de la faune*, le *Règlement sur les habitats faunique*, as well as the measurements recommended in the RNI will be duly applied. Also, the mitigation

measures suggested to limit the impacts on vegetation will permit to limit the impacts on the avian fauna habitats. A special attention will be paid to the identification of the nesting sites during the surveys. In the case that nests would be observed, adequate protection measures will be apply.

Residual impact: Just like terrestrial fauna, the majority of the avian species present in the sector are not limited to specific or rare habitats on the territory, they will be able to move to less disturbed environments and no protected fauna habitat will be affected, amplitude of the impact is thus considered to be low. Duration is moderate, since the effects will especially be felt during the construction and exploitation phases. For its part, scope is local. The residual impacts are thus considered to be moderate.

Aquatic fauna and its habitat

The principal source of impact on aquatic habitat will be the installation of the bridges and culverts, because this activity implies interventions in banks and rivers bed. This activity is likely to generate contribution and the resuspension of sediments, which justifies the application of suitable mitigation measures.

No spawning ground was listed by the MRNF in the limited study area. In addition, on the basis of comment received from the concerned tallymen, no spawning ground would be touched by the culverts which will be installed on permanent rivers. On the other hand, the crossing site of Salamandre River a priori shows characteristics favorable to spawning, it will thus be the subject of surveillance.

Presence of Lake Sturgeon is confirmed in Quenonisca Lake. Minimal distance between the layout of way “I” compared to the lake is approximately 350 meters. Although this fish is generally finded it in big lakes depth, spawning sites of Lake Sturgeon are in undeeep and fast water zones, as close to falls. It is thus possible that the tributaries of Quenonisca Lake are used for spawning although no site was indexed. A more detailed evaluation of the rivers surveys would make possible to confirm the presence or the absence of spawning ground near of following rivers crossing: 10,12,13,14,15 & 16 (see plan B-0936 at section 3.3).

In a general way, the connected activities to the ways and the presence of machinery near the rivers increase the risks of sediments contribution and contamination by accidental discharge. Also, the presence of workers and the augmentation of the accessibility to the waterbodies, can contribute to increase the fishing pressure on fish populations.

Mitigation measures: During the clearance mark up, surveys will permit to confirm the crossing sites and to make modifications if necessary. The crossing site of Salamandre River Bridge will be visited in March 2010 with the tallyman of trapline W4. The application of the RNI, the *Guide sur l'aménagement des ponts et des ponceaux dans le milieu forestier* (MRN, 1997) and of the guide of *Bonnes pratiques pour la conception et l'installation de ponceaux permanents de moins de 25 mètres* (MPO, 2007) will make possible to minimize the impacts on fish and its habitat. Protection of the aquatic environment and reduction of the impacts are directly connected to the recruitment of qualified and experienced operators for the installation of watercourses infrastructures. Operation techniques adapted to the geomorphological context of the area will have to be applied. The experiment of the beneficiaries on argillaceous plains and their good knowledge of the territory their will permit to take the adequate precautions during the operations.

Also, a special attention will be given to the installations of surface water deviation and sediments control. For example, sedimentation basins and additional riprap could be realized, when necessary, in accordance with applicable regulation. A spring inspection will take place the year following the construction of the way. Corrective measures will be taken as need.

To minimize spill risks, a regular and adequate maintenance of the machinery will have to be carried out. Subcontractors will be sensitized to the accidental spill procedure (see appendix 7). Spill kit will be present in each vehicle and any machinery, as at the watercourses crossing points.

Workers will be sensitized to the respect of the *Loi sur les droits de chasse et de pêche dans les territoires de la Baie-James et du Nouveau-Québec*.

Residual impact: The installation of watercourses crossing structures and activities near of those could generate a local disturbance of water quality. A particular effort will thus be necessary to reduce this impact to the minimum. Thus, amplitude of the impact is considered to be moderate, even if no spawning ground were confirmed in the limited study area. Scope is local. Duration is moderate since the effects will especially be felt during the construction and exploitation phases. Thus, the importance of the residual impact is considered to be moderate.

Otherwise, during the consultations carried out within the framework of the general forest management plan planning, some people expressed their concern about the cumulative impact of the watercourses crossing structures (CCEBJ, 2009). It should be noted that with the application of the mitigation measures and taking into account the surface of the concerned territory, we estimate that we cannot apprehend cumulative impacts about the number of crossing structures on water quality since the impacts will be localised.

Soil quality

Taking into account the type of way, rutting risks are limited. The principal impacts apprehended on the ground quality are the local modifications of soil surface drainage. The techniques of construction employed aim to minimize the impact on organic soils in order to maintain their bearing capacity.

Soil contamination risks by accidental spill are mainly related to machinery breaking, leaks, hydrocarbon transshipment or storage conditions of hydrocarbons or other dangerous matters. Authorized equipment will have to be used for the hydrocarbons transshipment. No dangerous residual matter or dangerous matter storage will be carried out on the access paths or near of those. As mentioned in section 3.5, the subcontractors will have the responsibility to make sure that the construction operations proceed according to the standards. Those will be also responsible to manage the dangerous matters, as well as accidental spills in accordance to the procedure which will be provided by Matériaux Blanchet. Residual matters will have to be forwarded to the camp or to an authorized place.

Mitigation measures: Once again, the RNI will have to be duly applied to minimize the impacts on soil surface drainage. A spill procedure will have to be present in each vehicle and machinery. A regular maintenance of the machinery will make possible to minimize leak and breaking risks. In event of accidental spill, the contaminated soil will be managed in accordance to the *Règlement sur le stockage et les centres de transfert de sols contaminés*. All the dangerous residual matters will be managed in accordance to the *Règlement sur les matières dangereuses*. Workers will have to be sensitized to the applicable regulations and to be informed about the procedures to be followed for the equipment maintenance as for the procedures to be followed for the management of accidental spill and dangerous residual matters.

Residual impact: With the application of mitigation measures, amplitude of the construction activities on sensitive soils is considered as being low. As soils being likely to be affected are limited to those localised in the clearance of the two ways during the construction activities, the impacts will be specific and of short duration. Thus, the residual impact on soils is low.

5.3.2 Human environment

Utilization of the territory by the Cree

Road clearance deforestation will bring a permanent loss of forest cover in the traplines crossed by the two ways. Table 5.9 indicates the approximate surfaces that will be affected for each trapline.

Table 5.9 Area affected by deforestation for each trapline

Traplines	Affected area (Km ²)
W4	1,218
W4a	0
W5c	0,951
W6	0,053

The ways do not cross biological refuges or site of Cree interest (1%), except at one place, at south of Salamandre Lake in trapline W4, and this, at the tallyman request (Sorfor, 2008; Consultants forestiers DGR, 2007 révision septembre 2008). The affected vegetation surface in this site of interest is of 0,023 km². Some Cree sites of fauna interest (25%) are also crossed by the access paths. This is justified by the fact that some wood volumes were allotted in these surfaces. Road clearance deforestation of the two ways will involve a permanent loss of forest cover of 0,8 km² in these zones.

The construction activities should not have significant effect on the traditional activities of hunting, fishing and trapping. Moreover, the Crees were consulted throughout the process in order to avoid the hot areas. Besides, the impacts could be positive by facilitating the access to the zones of hunting, fishing and trapping and by increasing the visibility of the potential preys (for example in the case of partridges and mooses).

The augmentation of the temporary circulation of heavy machinery could enter in conflict with the local circulation (off-road vehicles or vans), however, some adequate security measures will facilitate the territory use by the various users.

Mitigation measures: In order to ensure a good communication with the tallymen, those will be informed on a regular basis of the works progress, especially during hunting periods. As mentioned previously, regarding safety on the way, the measurements described in the section on security standards and of emergency plan will permit to prevent accidents with the other Cree users.

Residual impact: Considering the little surfaces affected by road clearance deforestation of the proposed ways and given that traffic should not be affected significantly during the construction phase, residual impact is considered negligible.

Other users of the territory

In absence of road infrastructures, the concerned territory is little attended by the other users. Presence of other users during construction phase will be limited to the employees and the subcontractors of the beneficiaries. Some other individuals having camps in the sector could also frequent the ways in construction, mainly during hunting and fishing seasons.

Just like the Cree users, communication and adequate safety measures will have to be applied.

Mitigation measures: The measurements described in the section on security standards and emergency plan are considered to be sufficient to prevent accidents with the other users of the territory.

Residual impact: As the territory is little frequented by non-natives in the present, residual impact is considered negligible.

Archaeological potential

No confirmed archaeological zone was listed in the literature. However, the area has a strong archaeological potential (Picardy, 1998). Several zones of archaeological potential were identified. Their potential varies from low to high, but those remain to be confirmed.

The excavation activities are most suitable to affect the archaeological potential sites. As specified in section 4.4.7, the potential sites are localised near of water bodies and well drained zones. The watercourse approaches are thus the places where the risk to affect archaeological potential sites is the most probable.

Mitigation measures: The clearance excavation activities to the approaches of watercourses will be limited. During the preconstruction phase, it would be desirable that a visual inspection by an archaeologist be carried out jointly with the beneficiaries in order to validate the potential of the identified zones. Taking into account the access constraints, this inspection could be realized jointly with the beneficiaries during the layout validation, and according to the project progress.

A visual inspection of the sites could also be carried out at the time of borrow pits

preliminary surveys and clearance excavation. A special attention will be paid to the elements that could be of anthropic nature, such of rock clusters or structures (e.g. fireplaces), ashes traces in soil cuts, etc. If some clues let believe to the presence of archaeological potential elements, the site will be marked out and the excavation activities will cease inside this zone until that a study confirms the nature of what will have been discovered. All the informations will be transmitted to the *Ministère de la Culture, des Communications et de la Condition féminine*.

Residual impact: It is difficult to evaluate the impact that the activities of the project could have on the archaeological potential. Value of the archaeological component is high, but amplitude of the impact could be of low to moderate according to the precaution measures applied. Thus, the residual impact on the archaeological potential zones is evaluated to moderate.

Regional economy

The activities of deforestation, excavation, earthworks, as well as other works inherent to the construction of the road will generate jobs creation, in addition to generate the purchase of goods and services to local companies. In all, these will be 35 direct employments that will be created for a period of 12 months, more one (1) employment of duration of six (6) months for the maintenance of the winter road.

Mitigation measures: At equal competence and price, the local companies which will correspond to the tender conditions and which employ Cree or Jamesian labour will be privileged.

Residual impact: It remains difficult to precisely evaluate the repercussions that the project will have on the communities of Nord-du-Québec. That will depend of the number of contractors and workers who will answer to the selection criteria. However, in a general way, we can suppose that scope will be low to moderate for the territory of Nord-du-Québec and that the duration will be until the forest operations begin (moderate duration). For its part, amplitude will be regional. This positive residual impact is thus evaluated at moderate to strong.

5.4 Impacts during the exploitation phase

The principal elements likely to generate impacts on biophysics and social environments during the exploitation phase are the presence of infrastructures, circulation, and maintenance of the ways. This section presents the impacts of these activities on the components of the biophysics and social environments.

5.4.1 Biophysics environment

Vegetation

Once the way is in operation, there will be a negligible impact on the vegetation related to the use and the maintenance of the ways.

Terrestrial fauna and its habitat

Use of the ways could continue to affect fauna (ex: by the noise). On the other hand, considering the low volume of circulation envisaged, about 30 to 50 trailer trucks and from 15 to 30 vans per day, it is extremely probable that fauna adapts or moves towards places where it will not be affected. Collision risks with large fauna are also present, although low.

The territory could also know an increase in the number of hunters. This could contribute to increase the hunting pressure on some species. The recolonisation of ways clearances by shrubby or herbaceous species could also contribute to attract some mammal species close to the access roads. This facilitates their location and increases their vulnerability.

Mitigation measures: Respect of speed limits will make possible to minimize collision risks. Workers will be also sensitized to the respect of the *Loi sur les droits de chasse et de pêche dans les territoires de la Baie-James et du Nouveau-Québec*. An adequate follow-up by the wildlife agents will be necessary and collaboration with Crees is desirable.

Residual impact: Once the way in operation, amplitude of the impacts is considered to be low. The impacts will be prolonged during all the period of the forest roads utilization and scope will be local. Residual impact is thus evaluated to moderate.

Avian fauna and its habitat

Noise generated by circulation during the ways use could continue to affect avian fauna. On the other hand, it is extremely probable that this one adapts or moves towards other sectors.

Just like for terrestrial fauna, the recolonisation of the ways clearance by shrubby or herbaceous species could also contribute to attract some species close to the access roads (ex:Ruffed grouse). This facilitates their location and increases their vulnerability to hunting. Opening of the territory could also contribute to increase the number of hunters. However, the majority of the species will tend to migrate towards less disturbed sectors.

Mitigation measures: None

Residual impact: Once the way in operation, the impact risks on avian fauna are considered to be low. Amplitude is low, duration moderate and scope specific.

Aquatic fauna and its habitat

Maintenance of the road near of bridges and culverts is likely to generate sediments contributions in the rivers.

The sector could know an increase in the number of fishermen. This would come to increase the fishing pressure on some species and to increase the frequentation of water bodies.

Mitigation measures: In addition to the measures proposed to prevent deterioration of fish habitat in construction phase, maintenance of sedimentation basins, ditches and culverts will contribute to minimize the impacts. These maintenance activities will be ensured by the beneficiaries during the exploitation activities. The graders operators will be informed of the

operation directives to minimize sediments contribution risks in the rivers at the time of the operations of maintenance near of the rivers.

Bridge apron will be cleaned manually before snows melting and regularly in summer, in order to avoid the contribution of unconsolidated material on apron and in the rivers.

Residual impact: The maintenance of the ways by the beneficiaries could generate impacts of low amplitude and specific scope on rivers. Duration is moderate since the risks persist during all the exploitation phase of the ways. Risks are associated to the totality of the exploitation phase. The residual impacts on aquatic fauna are thus considered to be low.

Soil quality

The risks of hydrocarbon leaks are always present.

Mitigation measures: The procedure in case of spill will be applied during the forest operations.

Residual impact: Accidental spills well managed by the beneficiaries will involve impacts of low amplitude and specific scope on soil quality and this, for the duration of the forest operations. The residual impacts are thus considered to be low.

5.4.2 Human environment

Utilization of the territory by the Crees

With the presence of the road, the tallymen and their family will have a facilitated and safe access to their trapline. During the consultations, the tallymen expressed to be favorable to the creation of a permanent access path since that this will facilitate the access to their temporary and permanent camps and to their territories of hunting, fishing and trapping. The localization of the access paths was established besides in accordance with the tallymen. Even if the use of the territory by the other users does not seem to be an important concern, the increased presence of non-autochtones and other Cree users presents a source of change for the tallymen and their families on this little frequented territory.

The Cree community of Waswanipi emitted concerns about the increase of ways, and about the access control (Sorfor, 2008). However, it should be noted that the Cree communities are systematically consulted during the planning of the ways in the management plans of the forest companies.

A concern was also raised concerning poaching in category II territories. Even if the project is entirely located in category III lands, way “I” could facilitate the access to the category II territory to the east of Quenonisca Lake.

Circulation of machinery and vehicles connected to forest exploitation must be coordinated adequately to harmonize itself with local circulation.

Mitigation measures: Adequate road signs will be installed (speed limit, presence of camps, etc) in addition to any other indication considered to be necessary by the Cree community. The communities will continue to be consulted for any way project, so that their concerns and suggestions will adequately be taken into account.

Residual impact: Presence of infrastructures will have a positive impact on territory accessibility and a low to moderate negative impact on the Cree traditional activities. It is considered that the amplitude of this negative impact will be neutral to low. Scope is local, because it is mainly the tallymen and their family that will be affected and the duration is long because the road infrastructures will be permanent. Residual impact is thus considered to be moderate.

Other users of the territory

The main objective of the two ways construction is to give access to the territory for the beneficiaries of wood supply and management contract. Presence of adequate road infrastructures to their needs will thus have a positive impact on the activities of forest exploitation and forestry works.

The access will be also facilitated for the current owners of hunting camps which are only accessible by off-road vehicles, seaplanes or boats. The ways will favorise the practice of

various recreotouristic activities and could generate an increase in requests for summary shelters licence. Once again, circulation will have to be controlled by adequate methods of communication and safety.

The territory being studied includes the project of Cree Patrimonial Assinica Park. It is difficult to determine if the presence of road infrastructures will have a positive or a negative impact on the projected park. That could be evaluated once the conservation and development objectives will have been given. On the other hand, according to the discussions with Mr. Lamarre of the *Direction du patrimoine écologique et des parcs* of the MDDEP, (Lamarre, personal Com., 2010), if the recommended buffer zones are respected, the presence of infrastructures should not have a negative impact on the future conservation objectives of the park. However, the access to Broadback River by Quenonisca Lake could be facilitated and could complex the territory access mangement.

Other users such as mining companies could benefit from these new accesses. As mentioned previously, the sector already was the subject of minerals prospection and the creation of permanent access path could allow exploration companies to continue the prospection works and this, in more a structured way. The ways could thus come to reduce the costs of exploration in this zone that was already a sector of interest.

Mitigation measures: Concerning the safety on the way, the measurements described in the section on security standards and of the emergency plan should be sufficient to prevent accidents between users. In order to respect the integrity of the territory aimed by the project of Cree Patrimonial Assinica Park, ways “H, section ouest” and “I” were stopped to respectively at 7,7 and 2,8 km of the projected limit of the park. This thus maintains a buffer zone higher than the minimal zone of 1,5 km suggested by Mr. Lamarre of the MDDEP (Lamarre, personal com., 2010). In addition, the stake of the crossing of Broadback River is very sensitive in the Cree communities, in particular about the presence of woodland caribous populations at the north of this one. Way “H, section ouest” was thus curtailed in order to not facilitate the access.

Residual impact: Amplitude of this positive impact is moderate, because the road will support the use of the current and future potential natural resources in a sector relatively difficult of access. Scope is regional because several important communities will be able to profit from it and the duration is long because the road infrastructures are permanent. Residual impact is thus judged as high.

Archaeological potential

Once the way in operation, additional impacts on the archaeological potential sites are not anticipated.

Regional economy

During the exploitation phase of the way, employment will be mainly connected to the maintenance which will require only one or two workers.

Moreover, these ways intended for forest operations (exploitation and sylviculture works) will generate direct and indirect employments. At equal competence and price, the regional companies that will fulfill the requirements of the tender invitations will be favoured. Moreover, for forestry works, all the Cree workers who will deposit their candidature will be automatically integrated in the work teams.

In the context of the current forest crisis, forest roads are crucial to guarantee provisioning of the sawing factories and to preserve employment in forest sector and in these factories. The access paths can also become structuring elements for industrial or recreotouristic projects development.

At a regional scale, it is estimated in addition that forestry development can have important economic consequences in the closely localities by the purchase of goods and services.

Residual impact: Amplitude of this positive impact is judged moderate since the access paths will support the use of the current and future potential natural resources in this sector difficult

of access and will contribute to maintain and to create jobs. Scope will be regional and duration will be long. Residual impact on regional economy is thus high.

5.5 Impact assessment results

Table 5.10 presents the impacts assessment that was carried out. In a general way, the establishment of a forest road especially generates negative impacts during the construction phase. These impacts are mainly inherent to the necessary operations to carry out works. The importance of the impacts goes from low to high. The positive impact that the construction of the ways will generate relates mainly to the economic consequences by purchase of goods and services.

Once the construction of the ways will be finished, those will have little impact on the biophysics environment. If the maintenance of the ways, in particularly at watercourses crossing, is rigorously carried out, these impacts could even be regarded as negligible. The principal positive impacts are about the possibility of development that the presence of a ways network offers. They are judged like significant impacts, because new projects have the potential to become structuring elements for the communities of Baie-James and to generate economic consequences. That will depend however on the amplitude of the projects which will be developed on the territory. For the tallymen, the presence of infrastructures does not seem to constitute a major problem. On the contrary, they generally perceive the advent of the ways like advantageous, because the access to their territory will be facilitated. However, the access paths will result into increase the frequentation of the territory by various users like forest companies. This will certainly have an incidence on the activities of the tallymen and their families, but an adequate coordination of the activities and uses will be necessary in order to minimize the negative impacts and to maximize the positive impacts on the latter.

Table 5.10 Results of the impacts evaluation

		Construction				Exploitation			
		Deforestation	Excavation and earthwork	Watercourses and drainage	Circulation	Purchase of goods and services	Presence of infrastructures	Use	Maintenance
Project activities	Vegetation	-	-	-					
	Terrestrial fauna	-	-		-			-	
	Avian fauna	-	-		-			-	
	Aquatic fauna			-					-
	Endangered species	-	-						-
	Soil quality				-			-	
	Uses of the territory by the Crees	-	-				+		
	Other uses of the territory	-	-				+		
	Archaeological potential		-	-					
	Regional economy					+	+		+

Legend

Very high 
 High 
 Moderate 
 Low 
 Negligible 
 Positive/negative +/-

Environmental components

		Deforestation	Excavation and earthwork	Watercourses and drainage	Circulation	Purchase of goods and services	Presence of infrastructures	Use	Maintenance
Biophysics environment	Vegetation	-	-	-					
	Terrestrial fauna	-	-		-			-	
	Avian fauna	-	-		-			-	
	Aquatic fauna			-					-
	Endangered species	-	-						-
	Soil quality				-			-	
Social environment	Uses of the territory by the Crees	-	-				+		
	Other uses of the territory	-	-				+		
	Archaeological potential		-	-					
	Regional economy					+	+		+

5.6 Cumulative impacts assessment

The concept of cumulative impacts refers to the possibility that the residual impacts associated with the present project are added to those of passed, current or future projects on the territory being studied or near this one. The evaluation of the cumulative impacts makes possible to treat the impacts of a project in a more global context than that of a conventional environmental assessment, since it permits to analyze the project in its general insertion context and to analyze the possible interactions between various projects in a given space-time context.

5.6.1 Spatiotemporal limits

The space limits of the cumulative impacts analysis correspond to the territory of FMU 86-65 and to the adjacent FMU to the projected ways sector (FMU 86-64 and 86-66). Those include the whole passed, current and future activities which can affect the components of the biophysics and social environments.

On a temporal level, the chosen period begins at the time of the studies on the hydro-electric project Nottaway-Broadback-Rupert, in 1971. This is justified by the fact that the majority of the reliable data available for this sector result from these studies. In regard to the future activities, the temporal limit was fixed at 2020, that is to say 10 years after the deposit of this study. The cumulative effects evaluation on the use of the territory by the Crees, other users and on the regional economy thus extends on a little bit less than 50 years.

5.6.2 Cumulative impacts analyze

Territory opening

In order to reach their trapline, the tallymen use currently various kinds of transport such as snowmobile, boat and off-road vehicles. The distances to be crossed and the access difficulty limit the number of Cree and non-autochtones users that frequent the territory. In addition to facilitate the access to the traplines, the possibility that other access paths ultimately come to join the access paths “H, section ouest” and “I” is relatively important. According to Mr. Saganash (personal com., 2010), approximately 4 000 km of ways would have been built in the area of Waswanipi.

Even if the advent of the proposed ways does not seem to worry the tallymen met, some concerns were expressed by various speakers relatively to the crossing of Broadback River and about the protection of the forests located to the north of this one. Even if the current road project could be regarded by other forest promoters as a way to reach Broadback River more easily, the beneficiaries of FMU 86-65 commit themselves not registering in its forest management plans any project aiming at a possible crossing of Broadback River. An adequate coordination of the access strategies on the territory will be thus primordial to make sure

that the concerns of the territory users, mainly those of the Crees, are adequately taken into account and that the two conservation projects currently in progress are integrated in the planning.

Territory utilization by the Crees and other users

Opening of the territory can also tend to a more difficult control of the activities such as hunting, fishing and trapping in an intensive or occasional way by Crees and non-autochtones. Multiplication of the access paths can have an impact on the availability of the resources, even if this impact seems to be low taking into account the distance of the territories concerned. It is the responsibility of the *Ministère des Ressources Naturelles et de la Faune* (MRNF) to ensure an adequate monitoring in order to avoid poaching and illegal occupation of the territory.

Once again, a good coordination of the territory access is necessary. In addition, some Cree intervenors deplored the abandonment of the program that made possible for the autochtones to take part to the monitoring of the territory and to report the illegal acts (ex: illegal occupation of the territory). The users must also be sensitized to the rules to respect according to the land categories which they attend. The kiosk of km 6 of the Baie-James road would be an interesting gate in order to carry out a basic sensitizing when individuals entering on the territory are registered. Moreover, this kiosk would permit to hold a register on the territory frequentation. Finally, the Ministry must have the essential resources to make an adequate territory monitoring and to maximize the collaborations with the Cree communities.

Advent of new development projects

The presence of access paths can facilitate the establishment of new recreotouristic and industrial development projects. Those can have economic consequences to a regional scale. In the past, the sector was already studied for the establishment of hydroelectric projects. Indeed, studies had been realized by Hydro-Quebec in the Seventies concerning the project of Nottaway-Broadback- Rupert. Also, the existence of old winter roads for minerals prospection and the presence of active mining claims on the territory could let imagine a future development of the mining industry. Finally the touristic potential is relatively high and of some non-exclusive rights outfitters are already present.

In all the cases where new projects will be proposed on the territory, the implication of the Cree authorities at the beginning of the projects planning will allow to harmonize the development of the territory with the current uses.

6. Surveillance and environmental monitoring program

6.1 Surveillance program

The environmental surveillance program aims to ensure the respect of the legal and environmental requirements, the good progress of works, the application of mitigation measures in the impact assessment, the respect of the commitments taken by the beneficiaries of FMU 86-65 and finally, the conditions fixed by the environmental decree which will be emitted in relation with the impact assessment. The application of the surveillance program is particularly important since this one makes possible to establish a link between the environmental requirements and engagements and their application on the site. By the application of the environmental surveillance program, it will be also possible to prevent and supervise any disturbance of the natural environment which could occur following works during the project, i.e. at the time of construction and exploitation phase of the ways “H, section ouest” and “I”.

The responsibility to apply the measurements prescribed by laws, payments and ministerial authorizations, just as to ensure environmental protection during the completion of the work is the responsibility of the beneficiaries of FMU 86-65, with their management team, and with the contractors. In order to inform the concerned intervenors of the environmental requirements to respect and to the mitigation measures to be applied during the works realization, an information and sensitizing meeting will take place at the beginning of the works to inform the foremen, the construction site supervisors and the concerned people in charge.

This meeting will also be the occasion to announce the directives to be followed and the environment protection measures recommended by the beneficiaries of FMU 86-65. A summary of the environmental requirements will then be also given to the intervenors responsible. The environmental surveillance program will have to include the application of the following elements:

- The respect of the mitigation measures established within the framework of the impacts assessment;
- The respect of the *Règlement sur les normes d'intervention dans les forêts du domaine de l'État* (RNI), in particular during the installation of the watercourses crossing structures;
- The respect of the re-establishment plans of species with particular status and to the regulations for the heronries protection;
- The restoration of borrow pits according to the *Règlement sur les normes d'intervention dans les forêts du domaine de l'État* (RNI);
- An adequate waste management and the respect of the *Règlement sur le stockage et les centres de transferts de sols contaminés* and of the *Règlement sur les matières dangereuses*;
- A daily maintenance of the equipment;
- The respect of the layout, while paying a special attention to not pass in sensitive environments or particular sites of interest;
- The conformity to the ministerial authorizations obtained;
- Surveillance regarding the protection against accidental spills.

Throughout the construction phase, a duly qualified supervisor will be present in any time on the construction site in order to verify that the contractors and their subcontractors respect the environmental requirements and the applicable legislation. This one will be also present to answer to the interrogations of the contractors if it is necessary, and to ensure the application of the mitigation measures envisaged. Also, the beneficiaries committed themselves to regularly inform the tallymen about the progress of the works. Moreover, in order to make sure that works remains at the convenience of the tallymen and their family, the beneficiaries propose to occasionally pay visits with those on the construction site.

Writing of an inspection report at the end of the construction works would be suggested in order to document the measures made to minimize the environmental impacts, the encountered difficulties and the elements which were taken to fix these difficulties. This one could be carried out jointly with the concerned intervenors.

6.2 Monitoring program

The environmental monitoring program is an essential component of the project since it makes possible to confirm and to specify some of the impacts identified within the framework of this impact assessment. It will be also the occasion to verify the effectiveness of the mitigation measures and to bring corrective measures as needed. The monitoring program will particularly aim at carrying out the follow-up of the elements for which uncertainties always persist after the analysis of the impacts. In addition, within the framework of this program, it will be possible to supervise in the time the evolution of some components of the environment likely to be affected by the project.

Based on data collected until now, here are the components for which monitoring seems necessary:

- The potential presence of Forest Caribou;
- The presence of spawning ground and watercourses cross-pieces;
- Effectiveness monitoring of the mitigations measures;
- Communication and monitoring of the impacts on the tallymen and their families.

6.2.1 Monitoring of the presence of Forest Caribou

Even if the presence of forest caribou was confirmed only in the north of Broadback River, some rare individuals would have been listed in years 1970. A special attention will have to be carried to the presence of individuals of this ecotype. If some observations of caribou are carried out, they will be compiled and announced to the MRNF.

6.2.2 Watercourses cross-pieces

Studies making possible to validate the presence or the absence of spawning grounds near the crossing structures of watercourses would be desirable, particularly for the crossing site of Salamander River and the tributaries of Quenonisca Lake taking into account the potential

presence of the Lake Sturgeon. Monitoring of stabilization works of bridges and culverts should be planned to ensure the respect of the R.N.I and the water quality maintains. In addition, a monitoring program of the watercourses could help to prevent the additional impacts that could result from the use of the access paths.

6.2.3 Mitigation measures monitoring

The majority of the suggested mitigation measures could be followed up at the same time as the surveillance program. However, here are measures that will have to be followed on long run:

- Monitoring of the conditions of drainage and streaming, particularly to the approaches of watercourses;
- Monitoring of the restoration of the borrow pits;
- Monitoring of the stabilization of the watercourses cross-pieces
- Effectiveness monitoring of communication and safety measurements.

6.2.4 Communication and monitoring of the impacts on the tallymen and their families

In order that the tallymen and their families are informed about the works evolution, modifications to be made to the project and about the future activities, those will be consulted within the framework of consultations for the forest management programs. It will be then possible to collect their comments, concerns and suggestions and some correction measurements could be established, as needed. The consultation mechanisms could also be re-examined according to the interests of the users.

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Appendix 1 – List of the people contacted

Name	Organization	Phone number/Address	Subject
Jean-Jacques Adjizian	Ministère de la Culture, des Communications et de la Condition féminine	(819) 763-3517 #229 Jean-Jacques.Adjizian@mcccf.gouv.qc.ca	Archaeological sites and studies
Démosthène Blasi	Bureau d'accès à l'information et de la protection des renseignements personnels - MRNF	(418) 627-6370	Request for infomations access about the proposed Caribous area (Le Gardeur)
Laval Gaudreault	MRNF - Direction des opérations intégrées du Nord-du-Québec	(819) 755-4838 #277 Laval.Gaudreault@mrnf.gouv.qc.ca	Areas of non-exclusive rights outfitter
Liette Gauthier	Centre de données sur le patrimoine naturel du Québec - Direction des Opérations intégrées, MRNF	(418) 748-2647 #228 Liette.Gauthier@mrnf.gouv.qc.ca	Informations about fauna species with a partcular status, confirmed fauna species and protected fauna habitats
Catherine Jobin	Réserve faunique Assinica - Sépaq	(418) 748-7748 jobin.catherine@sepaq.com	Informations about fauna species
Jean-François Lamarre	Direction du patrimoine écologique et des parcs, Service des Parcs - MDDEP	(418) 521-3907 #4494 jean-francois.lamarre@mddep.gouv.qc.ca	Project of Cree Patrimonial Assinica Park
Jacques Larivée	Regroupement QuébecOiseaux	(418) 722-6509 jlarive@cgocable.ca	Birds data basis EPOQ
Benoît Larouche	Centre de données sur le patrimoine naturel du Québec - MDDEP	(819) 763-3333 #245 benoit.larouche@mddep.gouv.qc.ca	Informations about floristic species with a particular status
Mathieu Morin	Centre de données sur le patrimoine naturel du Québec - MRNF	(418) 748-7701 #234 Mathieu.Morin@mrnf.gouv.qc.ca	Informations about fauna species with a particular status and protected fauna habitats
Allan Saganash	Forest authority council of Waswanipi	(819) 753-2900 #322 (819) 753-7123 Allansaganash@hotmail.com	Coordination of the consultations with the tallymen and concerns about the construction of the ways
Carmelle Tremblay	Fédération des pourvoiries du Québec	ctremblay@fpg.com	Informations about outfitters

Name	Organization	Phone number/Address	Subject
Catherine tardif	Abitibi Consolidated	Tel : (819) 737-2300 #245 Email : catherine.tardif@Abitibibowater.com	Delegate of Abitibi-Consolidated
Gilles Audet, Roch Plusquellec et Gilles Lajeunesse	Matériaux Blanchet	Tel: (819) 732-6581 Email: Gilles Audet [gaudet@mbi-amos.com] ; Roch Plusquellec [rplusquellec@mbi-amos.com]; Gilles Lajeunesse [glajeunesse@mbi-amos.com]	Delegates for the impact assessment
Dominic Lévesque	Norbord	Tel : (819) 825-1373 Email : dominic.levesque@valdor.norbord.com	Delegate of Norbord
Maryse Bélanger et Anabelle Simard	Scierie Landrienne	Tel : (819) 732-2876 Email : Anabelle.simard@cableamos.com Maryse.belanger@cableamos.com	Delegates of Scierie Landrienne
Judy Trapper	Forest Authority Department of Waswanipi	Tel: (819) 753-2900 #322 Fax: (819) 753-2904 judy.trapper@waswanipi.com	Consultations with the Crees
Éric Labelle	MRNF- Direction des affaires régionales du Nord-du-Québec	Tel: (819) 755-4838 #272 Fax: (819) 755-3541 eric.labelle@mrnf.gouv.qc.ca	Consultations with the Crees, projected ways on the territory

Appendix 2 – Summary grid of the forest roads classification

		CLASSES							
		HN ¹	01	02	03	04	NC	HI ²	
CARACTÉRISTIQUES									
Vitesse maximale		70 km/h	70 km/h	60 km/h	50 km/h	40 km/h	< 40 km/h	----	
Cote	A	10	10	8	6	4	0	0	
Largeur de la couche de roulement sans accotement		9,1 m	8,5 m	8,0 m	7,5 m	5,5 m	< 5,5 m	----	
Cote	B	10	8	6	4	2	0	0	
MATÉRIAUX UTILISÉS									
Fondation		Gravier naturel	Gravier naturel	Gravier naturel	Sol minéral	Sol minéral, sol organique (couche mince) et débris végétaux	Sol minéral, sol organique (couche mince) et débris végétaux	Sol minéral, sol organique, débris végétaux et neige	
Cote	C	10	10	10	8	6	6	4	
Couche de roulement		Concassé	Concassé ou gravier tamisé	Gravier naturel	Gravier naturel	Sol minéral	Sol minéral	Neige	
Cote	D	10	10	8	8	6	6	4	

Note : La classe d'un chemin est déterminée par la sommation des cotes (A+B+C+D) attribuées aux caractéristiques et aux matériaux utilisés; le résultat correspond à la cote P. L'intervalle à l'intérieur duquel se situe la cote P détermine la classe du chemin.

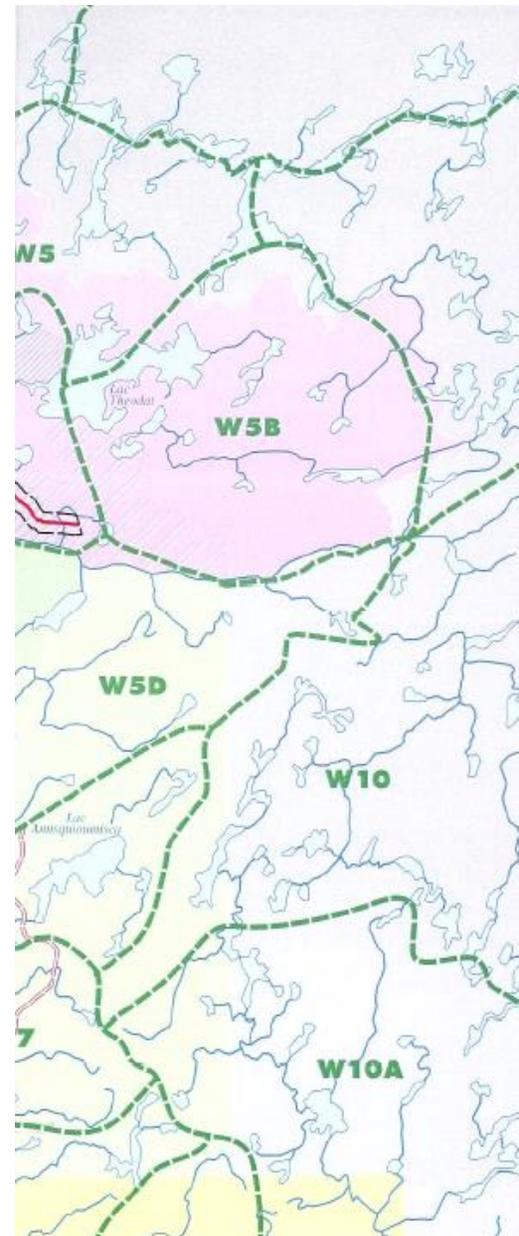
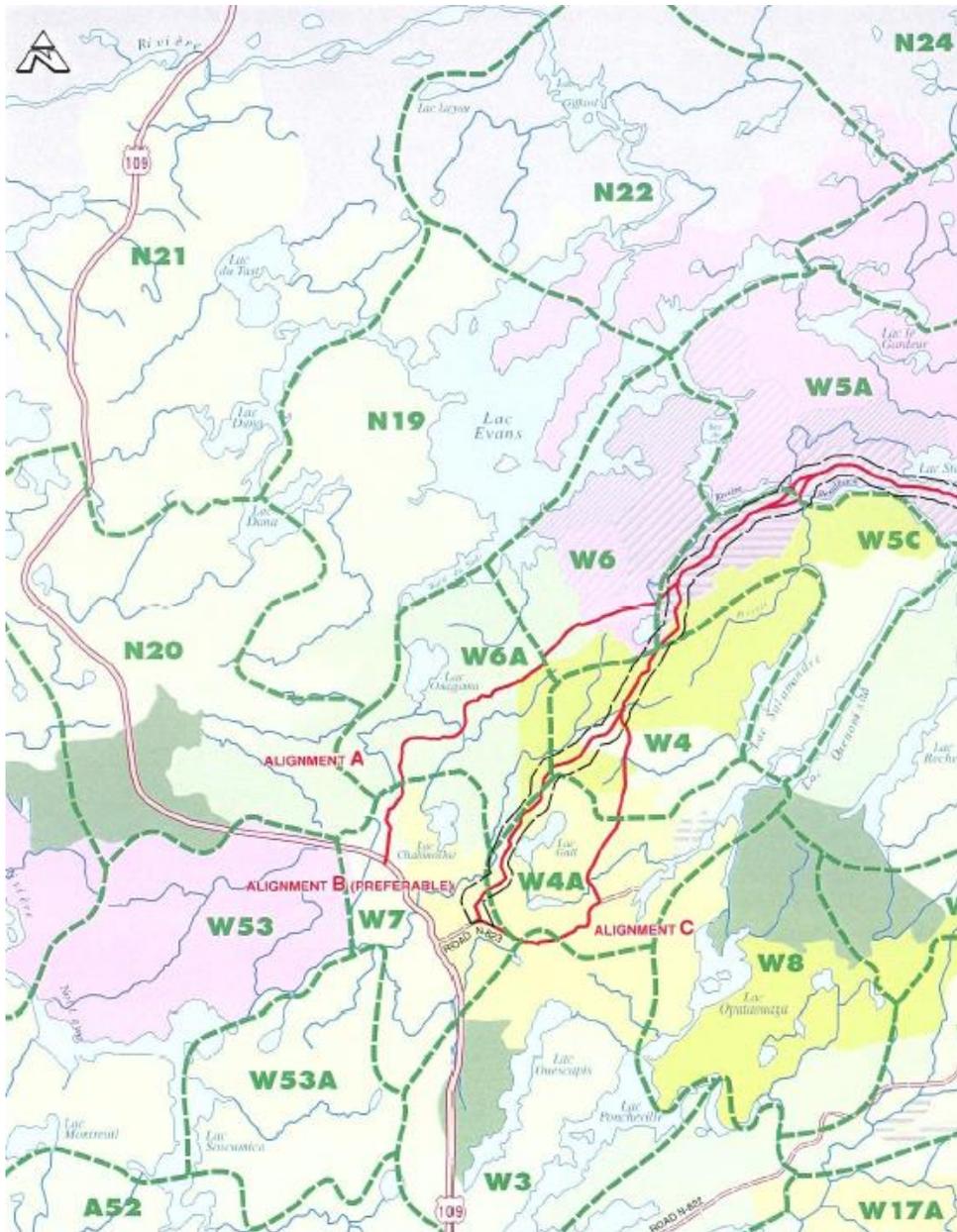
Cote (P) = A+B+C+D

Intervalle	Classe
39 ≤ P ≤ 40	HN (hors norme)
35 ≤ P ≤ 38	01
29 ≤ P ≤ 34	02
22 ≤ P ≤ 28	03
14 ≤ P ≤ 21	04
9 ≤ P ≤ 13	NC (non classé)
0 ≤ P ≤ 8	HI (hiver)

¹ Caractéristique d'un chemin où un transporteur hors norme (HN) circule d'une façon sécuritaire.

² Chemin d'hiver : chemin dont la composition de la surface de roulement limite son utilisation normale uniquement à la période durant laquelle le sol est gelé à une profondeur d'au moins 35 centimètres (définition tirée du RNI).

Appendix 3 – Road alternatives suggested in the study of Soprin ADS (1998)



DONOHUE

PROJECT TO BUILD AN ACCESS ROAD TO THE BROADBACK SECTOR
Map 2
LOCATION OF THE ALIGNMENT AND BREAKDOWN OF THE LOGGING OPERATIONS PLANNED OVER 25 YEARS

TRAPLINES ⁽¹⁾
 - Limit (dashed green line)
 - W5B identification (solid green line)

COMMON AREAS
 - 86-03 (dark green)
 - 86-10 (medium green)
 - 86-20 (light green)
 - 86-21 (Donohue) (pink)
 - 86-22 (yellow-green)
 - 86-24 (yellow)
 - 87-20 (light yellow)

LOGGING AREAS ⁽²⁾
 - 0 - 5 years (white)
 - 5 - 10 years (light green)
 - 10 - 15 years (medium green)
 - 15 - 20 years (dark green)
 - 20 - 25 years (hatched green)

PROJECT TO BUILD THE ACCESS ROAD ⁽¹⁾
 - Study area limit (dashed red line)
 - Variants (solid red line)

SOURCES
 (1) Donohue
 (2) CAAP holders

0 5 10 15 20 25 km

November 1998

soprini ADS

Appendix 4 – Flow calculation

PONCEAUX 7.6

Développé par
Le Groupe Système Forêt Inc.

Description du projet : Ponceau 1		Donnée	Unité		
Localisation géographique : X = 276068.562684425 -- Y = 5601695.35851155					
CALCUL DU DÉBIT DES COURS D'EAU			Notes		
Feuillet 1:20 000 (Ex: 32A02SO)		32K10SO			
SUPERFICIE TOTALE DU BASSIN VERSANT (Ab)		645,669	ha		
PENTE MOYENNE DU BASSIN VERSANT (Sb)			3,79 %		
Nombre de fois que les lignes horizontales coupent une courbe de niveau		119	#		
Nombre de fois que les lignes verticales coupent une courbe de niveau		127	#		
Longueur des lignes horizontales		32555,21553	m		
Longueur des lignes verticales		32316,19422	m		
Équidistance des courbes de niveau		10	m		
IDENTIFICATION DES DÉPÔTS DE SURFACE					
		Boisé	Pâturage	Culture	
1BF, 1BP, 2A, 2AE, 2AK, 2B, 2BD, 2BE, 4GS, 5S, 6, 8E, 8F, 9	AB	48,471	0,000	0,000	ha
1A, 1AR, 1B, 1BD, 1BC, 3, 8C, 8A, 8AR	B	36,236	0,000	0,000	ha
4, 8G	BC	0,000	0,000	0,000	ha
1AA, 4GA, 5A, R (roc sédimentaire)	C	441,529	0,000	0,000	ha
R (roc cristallin)	CD	0,000	0,000	0,000	ha
Lacs et terrains dénudés/semi-dénudés humides		119,433	0,000	0,000	ha
Superficie totale				645,669	ha
LONGUEUR DU COURS D'EAU (Lc)			3861	m	
Élévation à 15% en aval de la limite extrême du bassin versant			314	m	
Élévation à 10% en amont du point de traversée			280	m	
PENTE 85-10 du cours d'eau (Sc)			1,17	%	
COEFFICIENT DE RUISSELLEMENT PONDÉRÉ (Cp)			0,2614		
TEMPS DE CONCENTRATION DU BASSIN VERSANT (Tc)			161	minutes	
INTENSITÉ DE PRÉCIPITATION (I)			27,85	mm/h	
COEFFICIENT DE CORRECTION DE L'INTENSITÉ DE PRÉCIPITATION (Fi)			0,5043		
Distribution des lacs et dénudés/semi-dénudés humides (A, B ou C)			B		
A=concentrés près du ponceau B=uniformément répartis C=concentrés à la tête					
COEFFICIENT DE RÉDUCTION DU DÉBIT DE POINTE (FI)			0,5971		
Débit maximum instantané d'une récurrence de 10 ans (Q ₁₀)			3,93	m ³ /s	
Débit de pointe journalier d'une récurrence de 20 ans (Q _{1,20})			N/A	m ³ /s	

DIAMÈTRE DES TUYAUX

Nombre de tuyaux	1	2	
Type d'entrée (S) saillie, (B) biseautée ou droite	S		mm
Diamètre requis	2000	1500	mm
Enfouissement	200	150	mm
Surface d'évacuation après enfouissement	2,98		m ²
			Saillie
			<u>Voir note # 7</u>

NOTES

<p>4. Il faut s'assurer que le ponceau est toujours installé en suivant la pente naturelle du lit du cours d'eau et que la paroi intérieure de sa base se trouve sous le lit du cours d'eau à une profondeur équivalente à 10% de sa hauteur.</p> <p>5. La pente du lit du cours d'eau doit être inférieure à 1% si la longueur du tuyau ne dépasse pas 25 mètres, et à 0,5% si cette longueur dépasse 25 mètres. Sinon, des mesures de mitigations telles l'installation d'un tuyau d'un diamètre plus élevé que celui calculé à l'aide des annexes 3,4 et 5 du RNI, la construction d'un pont, l'installation d'une structure à arche ou la pose de déflecteurs dans le tuyau doivent être retenues, afin d'assurer le libre passage des poissons.</p> <p>7. Consulter les feuilles Tuyaux arqués et Structures à arche pour connaître d'autres types de structures.</p>

Complété par :	Dominique Lévesque	Date :	22 décembre 2009
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Étude de débit Ponceau 1

M

Ponceau 1

 **Norbord**

Legende	
	Traverse de cours d'eau permanent
	Basin versant
	Topographe long
Ruisseau	
	Ruisseau permanent
	Ruisseau temporaire
	Courbe de niveau
	Etude Impact chvre. 2005
	Audaires_densite_OR
	Audaires
	Claude humide (swamp)
	Claude sec
	Graviers
Reserve_Accintioa IDENTIFIAN	
	Parc Accintioa (protection intégrale)
	Parc Accintioa réserve faunique
Hydrographie	
	TER_CO
	EAU
	IND

1:20 000



PONCEAUX 7.6

Développé par
Le Groupe Système Forêt Inc.

Description du projet : Ponceau 3		Donnée	Unité	Notes
Localisation géographique : X = 280625.01957728 -- Y = 5606879.119397				
CALCUL DU DÉBIT DES COURS D'EAU				
Feuillet 1:20 000 (Ex: 32A02SO)		32K10SO		
SUPERFICIE TOTALE DU BASSIN VERSANT (Ab)		13 419,722	ha	Voir note #1
PENTE MOYENNE DU BASSIN VERSANT (Sb)		2,60	%	
Nombre de fois que les lignes horizontales coupent une courbe de niveau		1736	#	
Nombre de fois que les lignes verticales coupent une courbe de niveau		1754	#	
Longueur des lignes horizontales		672026,1903	m	
Longueur des lignes verticales		671312,3938	m	
Équidistance des courbes de niveau		10	m	
IDENTIFICATION DES DÉPÔTS DE SURFACE		Boisé	Pâturage	Culture
1BF, 1BP, 2A, 2AE, 2AK, 2B, 2BD, 2BE, 4GS, 5S, 6, 8E, 8F, 9	AB	56,702	0,000	0,000
1A, 1AR, 1B, 1BD, 1BC, 3, 8C, 8A, 8AR	B	1 292,140	0,000	0,000
4, 8G	BC	0,000	0,000	0,000
1AA, 4GA, 5A, R (roc sédimentaire)	C	6 814,528	0,000	0,000
R (roc cristallin)	CD	0,000	0,000	0,000
Lacs et terrains dénudés/semi-dénudés humides		5 256,352	0,000	0,000
Superficie totale				13419,722 ha
LONGUEUR DU COURS D'EAU (Lc)		31634	m	
Élévation à 15% en aval de la limite extrême du bassin versant		208	m	
Élévation à 10% en amont du point de traversée		0	m	
PENTE 85-10 du cours d'eau (Sc)		0,88	%	
COEFFICIENT DE RUISSELLEMENT PONDÉRÉ (Cp)				
TEMPS DE CONCENTRATION DU BASSIN VERSANT (Tc)			minutes	
INTENSITÉ DE PRÉCIPITATION (I)			mm/h	
COEFFICIENT DE CORRECTION DE L'INTENSITÉ DE PRÉCIPITATION (Fi)				
Distribution des lacs et dénudés/semi-dénudés humides (A, B ou C)				B
A=concentrés près du ponceau B=uniformément répartis C=concentrés à la tête				
COEFFICIENT DE RÉDUCTION DU DÉBIT DE POINTE (FI)				
Débit maximum instantané d'une récurrence de 10 ans (Q ₁₀)				N/A m ³ /s
Débit de pointe journalier d'une récurrence de 20 ans (Q _{1,20})				29,92 m ³ /s

DIAMÈTRE DES TUYAUX

Nombre de tuyaux	1	2		
Type d'entrée (S) saillie, (B) biseautée ou droite	S		mm	Saillie
Diamètre requis	4300	3300	mm	
Enfouissement	430	330	mm	Voir note #3
Surface d'évacuation après enfouissement	13,77		m ²	Voir note #7

NOTES

- Pour les bassins versants dont la superficie se situe entre 2 500 et 15 000 ha, le concepteur doit relever certains indices sur le terrain ou utiliser d'autres méthodes que celles prescrites pour valider ses calculs.
- Il faut noter qu'au-delà d'un diamètre de 3600mm, il s'agit d'un tuyau multiplaques.
- Il faut s'assurer que le ponceau est toujours installé en suivant la pente naturelle du lit du cours d'eau et que la paroi intérieure de sa base se trouve sous le lit du cours d'eau à une profondeur équivalente à **10% de sa hauteur**.
- La pente du lit du cours d'eau doit être inférieure à 1% si la longueur du tuyau ne dépasse pas 25 mètres, et à 0,5% si cette longueur dépasse 25 mètres. Sinon, des mesures de mitigations telles l'installation d'un tuyau d'un diamètre plus élevé que celui calculé à l'aide des annexes 3,4 et 5 du RNI, la construction d'un pont, l'installation d'une structure à arche ou la pose de déflecteurs dans le tuyau doivent être retenues, afin d'assurer le libre passage des poissons.
- Consulter les feuilles **Tuyaux arqués** et **Structures à arche** pour connaître d'autres types de structures.

Complété par : **Dominique Lévesque** Date : **4 janvier 2010**

Étude de débit Ponceau 3

M

Ponceau 3

 **Norbord**

Legende

- Traverse de cours d'eau ponceau
- Bassin versant
- Trajectoire long
- Ruisseau
 - Ruisseau permanent
 - Ruisseau temporaire
- Courbe de niveau
- Etude impact chem. 065
- Auteurs, données, OR
 - Auteurs
 - Débit humide (swamp)
 - Débit sec
 - Groslex
- Reserve_Assinica IDENTIFIÉ
 - Par Assinica (protection intégrale)
 - Par Assinica réserve faunique
- Hydrographie
 - TER_CO
 - EAU
 - NO

1:30 000



PONCEAUX 7.6

Développé par
Le Groupe Système Forêt Inc.

Description du projet :	Ponceau 4	Donnée	Unité	Notes
Localisation géographique :	X = 493747.01034451 -- Y = 5611694.90369042			
CALCUL DU DÉBIT DES COURS D'EAU				
Feuillet 1:20 000	(Ex: 32A02SO)	32K10NO		
SUPERFICIE TOTALE DU BASSIN VERSANT (Ab)		1 424,993	ha	
PENTE MOYENNE DU BASSIN VERSANT (Sb)			2,02 %	
Nombre de fois que les lignes horizontales coupent une courbe de niveau			146 #	
Nombre de fois que les lignes verticales coupent une courbe de niveau			142 #	
Longueur des lignes horizontales			71400,1049 m	
Longueur des lignes verticales			71093,16808 m	
Équidistance des courbes de niveau			10 m	
IDENTIFICATION DES DÉPÔTS DE SURFACE		Boisé	Pâturage	Culture
1BF, 1BP, 2A, 2AE, 2AK, 2B, 2BD, 2BE, 4GS, 5S, 6, 8E, 8F, 9	AB	0,000	0,000	0,000
1A, 1AR, 1B, 1BD, 1BC, 3, 8C, 8A, 8AR	B	40,306	0,000	0,000
4, 8G	BC	0,000	0,000	0,000
1AA, 4GA, 5A, R (roc sédimentaire)	C	737,776	0,000	0,000
R (roc cristallin)	CD	0,000	0,000	0,000
Lacs et terrains dénudés/semi-dénudés humides		646,910	0,000	0,000
Superficie totale				1424,992 ha
LONGUEUR DU COURS D'EAU (Lc)			7830 m	
Élévation à 15% en aval de la limite extrême du bassin versant			309 m	
Élévation à 10% en amont du point de traversée			147 m	
PENTE 85-10 du cours d'eau (Sc)			2,76 %	
COEFFICIENT DE RUISSELLEMENT PONDÉRÉ (Cp)			0,1771	
TEMPS DE CONCENTRATION DU BASSIN VERSANT (Tc)			190 minutes	
INTENSITÉ DE PRÉCIPITATION (I)			26,56 mm/h	
COEFFICIENT DE CORRECTION DE L'INTENSITÉ DE PRÉCIPITATION (Fi)			0,4491	
Distribution des lacs et dénudés/semi-dénudés humides (A, B ou C)			B	
A=concentrés près du ponceau B=uniformément répartis C=concentrés à la tête				
COEFFICIENT DE RÉDUCTION DU DÉBIT DE POINTE (Fj)			0,5742	
Débit maximum instantané d'une récurrence de 10 ans (Q ₁₀)			4,80 m ³ /s	
Débit de pointe journalier d'une récurrence de 20 ans (Q _{1,20})			N/A m ³ /s	

DIAMÈTRE DES TUYAUX

Nombre de tuyaux	1	2		
Type d'entrée (S) saillie, (B) biseautée ou droite	S		mm	Saillie
Diamètre requis	2200	1600	mm	
Enfouissement	220	160	mm	
Surface d'évacuation après enfouissement	3,6		m ²	Voir note # 7

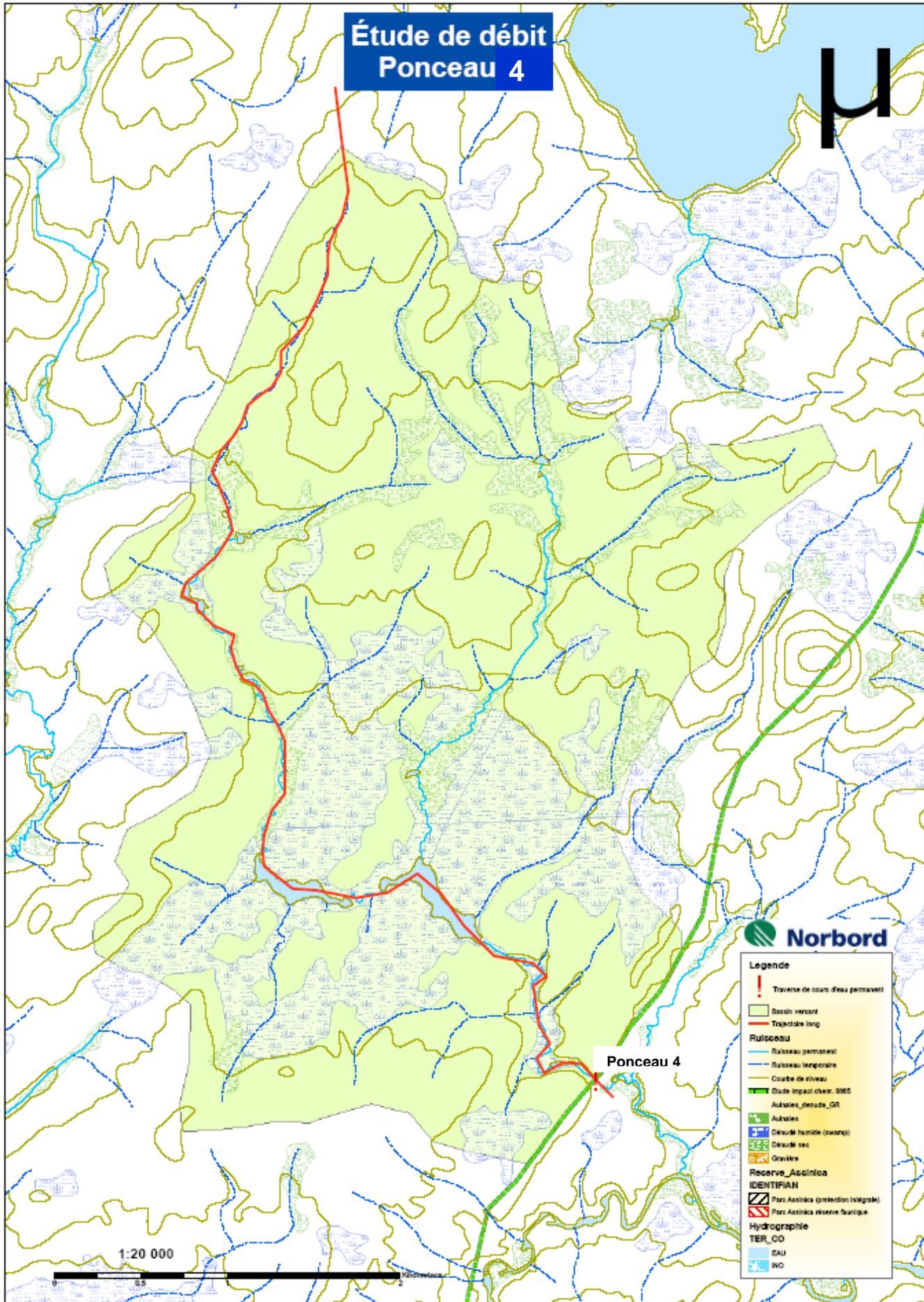
NOTES

- Il faut s'assurer que le ponceau est toujours installé en suivant la pente naturelle du lit du cours d'eau et que la paroi intérieure de sa base se trouve sous le lit du cours d'eau à une profondeur équivalente à **10% de sa hauteur**.
- La pente du lit du cours d'eau doit être inférieure à 1% si la longueur du tuyau ne dépasse pas 25 mètres, et à 0,5% si cette longueur dépasse 25 mètres. Sinon, des mesures de mitigations telles l'installation d'un tuyau d'un diamètre plus élevé que celui calculé à l'aide des annexes 3,4 et 5 du RNI, la construction d'un pont, l'installation d'une structure à arche ou la pose de déflecteurs dans le tuyau doivent être retenues, afin d'assurer le libre passage des poissons.
- Consulter les feuilles **Tuyaux arqués** et **Structures à arche** pour connaître d'autres types de structures.

Complété par : **Dominique Lévesque** Date : **4 janvier 2010**

Étude de débit Ponceau 4

μ



Legende

- Traverse de cours d'eau ponceau
- Bassin versant
- Trajectoire long
- Ruisseau
 - Ruisseau permanent
 - Ruisseau temporaire
- Courbe de niveau
- Étude Impact char. 985
- Ambales_densite_OR
- Ambales
- Déversil humide (swamp)
- Déversil sec
- Graviers
- Reserve_Accinica IDENTIFIAN
 - Parc Accinica (protection intégrale)
 - Parc Accinica réserve faunique
- Hydrographie
 - TER_CO
 - EAU
 - IND

1:20 000



PONCEAUX 7.6

Développé par
Le Groupe Système Forêt Inc.

Description du projet : Ponceau 5		Donnée	Unité
Localisation géographique : X = 498169.836835263 -- Y = 5619332.64750142			
CALCUL DU DÉBIT DES COURS D'EAU			Notes
Feuillet 1:20 000 (Ex: 32A02SO)		32K10NO	
SUPERFICIE TOTALE DU BASSIN VERSANT (Ab)		580,475	ha
PENTE MOYENNE DU BASSIN VERSANT (Sb)		2,74	%
Nombre de fois que les lignes horizontales coupent une courbe de niveau		88	#
Nombre de fois que les lignes verticales coupent une courbe de niveau		71	#
Longueur des lignes horizontales		28882,15162	m
Longueur des lignes verticales		29239,23013	m
Équidistance des courbes de niveau		10	m
IDENTIFICATION DES DÉPÔTS DE SURFACE			
	Boisé	Pâturage	Culture
1BF, 1BP, 2A, 2AE, 2AK, 2B, 2BD, 2BE, 4GS, 5S, 6, 8E, 8F, 9	AB	0,000	0,000
1A, 1AR, 1B, 1BD, 1BC, 3, 8C, 8A, 8AR	B	84,574	0,000
4, 8G	BC	0,000	0,000
1AA, 4GA, 5A, R (roc sédimentaire)	C	320,194	0,000
R (roc cristallin)	CD	0,000	0,000
Lacs et terrains dénudés/semi-dénudés humides		175,707	0,000
Superficie totale			580,475 ha
LONGUEUR DU COURS D'EAU (Lc)		4827	m
Élévation à 15% en aval de la limite extrême du bassin versant		313	m
Élévation à 10% en amont du point de traversée		150	m
PENTE 85-10 du cours d'eau (Sc)		4,50	%
COEFFICIENT DE RUISSELLEMENT PONDÉRÉ (Cp)		0,1970	
TEMPS DE CONCENTRATION DU BASSIN VERSANT (Tc)		124	minutes
INTENSITÉ DE PRÉCIPITATION (I)		26,56	mm/h
COEFFICIENT DE CORRECTION DE L'INTENSITÉ DE PRÉCIPITATION (Fi)		0,6030	
Distribution des lacs et dénudés/semi-dénudés humides (A, B ou C)			B
A=concentrés près du ponceau B=uniformément répartis C=concentrés à la tête			
COEFFICIENT DE RÉDUCTION DU DÉBIT DE POINTE (FI)		0,5742	
Débit maximum instantané d'une récurrence de 10 ans (Q ₁₀)		2,92	m ³ /s
Débit de pointe journalier d'une récurrence de 20 ans (Q _{1,20})		N/A	m ³ /s

DIAMÈTRE DES TUYAUX

Nombre de tuyaux	1	2	
Type d'entrée (S) saillie, (B) biseautée ou droite	S		mm
Diamètre requis	1800	1400	mm
Enfouissement	180	140	mm
Surface d'évacuation après enfouissement	2,41		m ²
			Saillie
			Voir note # 7

NOTES

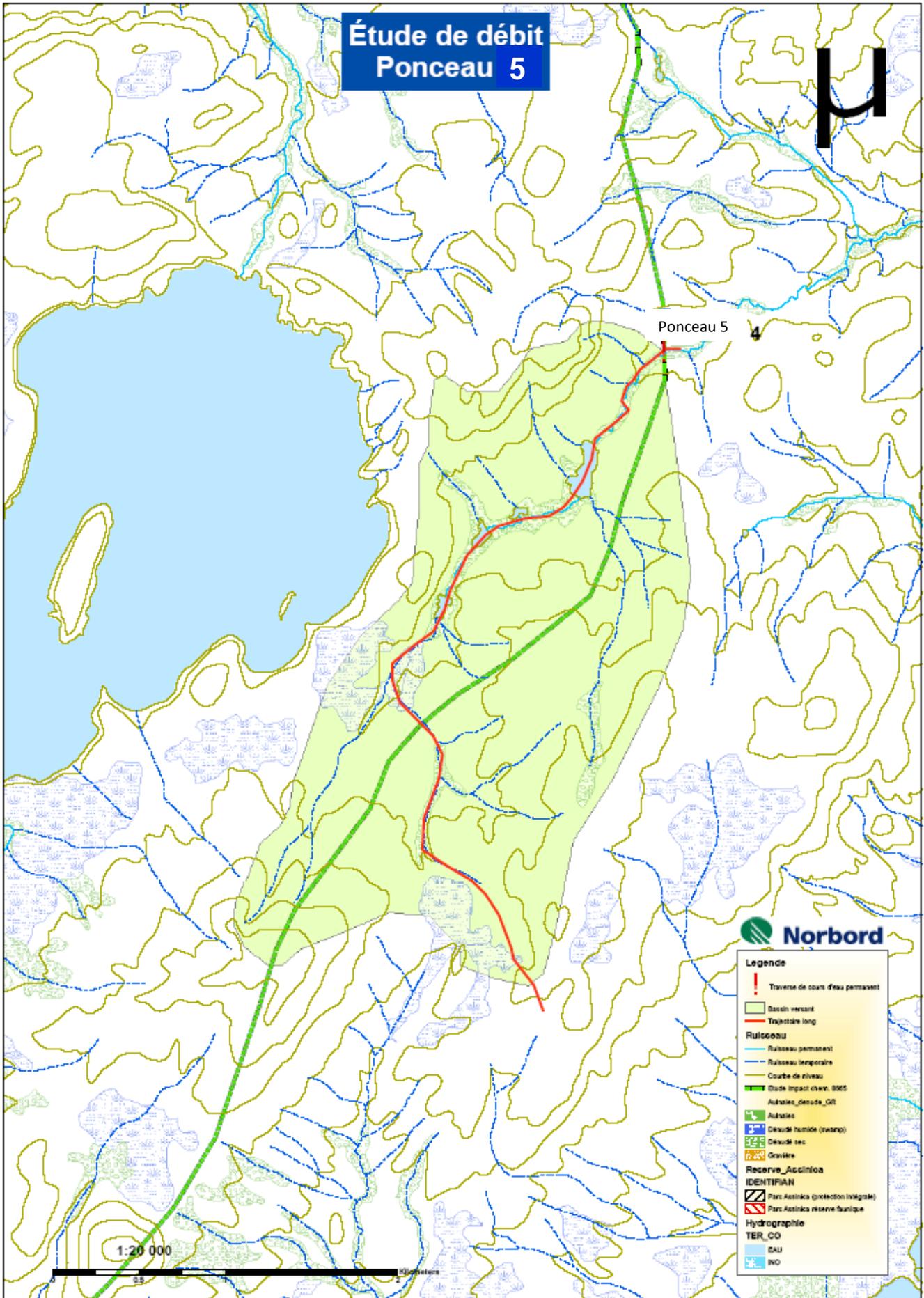
<p>4. Il faut s'assurer que le ponceau est toujours installé en suivant la pente naturelle du lit du cours d'eau et que la paroi intérieure de sa base se trouve sous le lit du cours d'eau à une profondeur équivalente à 10% de sa hauteur.</p> <p>5. La pente du lit du cours d'eau doit être inférieure à 1% si la longueur du tuyau ne dépasse pas 25 mètres, et à 0,5% si cette longueur dépasse 25 mètres. Sinon, des mesures de mitigations telles l'installation d'un tuyau d'un diamètre plus élevé que celui calculé à l'aide des annexes 3,4 et 5 du RNI, la construction d'un pont, l'installation d'une structure à arche ou la pose de déflecteurs dans le tuyau doivent être retenues, afin d'assurer le libre passage des poissons.</p> <p>7. Consulter les feuilles Tuyaux arqués et Structures à arche pour connaître d'autres types de structures.</p>

Complété par : Dominique Lévesque	Date : 4 janvier 2010
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Étude de débit Ponceau 5

M

Ponceau 5



 **Norbord**

Legende	
	Traverse de cours d'eau permanent
	Basin versant
	Traverse long
Ruisseau	
	Ruisseau permanent
	Ruisseau temporaire
	Courbe de niveau
	Etat impact chert. 995
	Audaires, densite_G1
	Audaires
	Devisé humide (swamp)
	Devisé sec
	Graviers
Reserve_Accroissement IDENTIFIÉ	
	Parc Accroissement (protection intégrale)
	Parc Accroissement réserve faunique
Hydrographie	
	TER_CO
	CAU
	WO

1:20 000



PONCEAUX 7.6

Développé par
Le Groupe Système Forêt Inc.

Description du projet :	Ponceau 7		Donnée	Unité
Localisation géographique :	X = 492704.386252198 -- Y = 5605276.74944757			
CALCUL DU DÉBIT DES COURS D'EAU				Notes
Feuillet 1:20 000	(Ex: 32A02SO)	32K10SO		
SUPERFICIE TOTALE DU BASSIN VERSANT (Ab)		488,497	ha	
PENTE MOYENNE DU BASSIN VERSANT (Sb)		3,05 %		
Nombre de fois que les lignes horizontales coupent une courbe de niveau		62	#	
Nombre de fois que les lignes verticales coupent une courbe de niveau		86	#	
Longueur des lignes horizontales		24123,70601	m	
Longueur des lignes verticales		24398,31363	m	
Équidistance des courbes de niveau		10	m	
IDENTIFICATION DES DÉPÔTS DE SURFACE				
		Boisé	Pâturage	Culture
1BF, 1BP, 2A, 2AE, 2AK, 2B, 2BD, 2BE, 4GS, 5S, 6, 8E, 8F, 9	AB	6,160	0,000	0,000
1A, 1AR, 1B, 1BD, 1BC, 3, 8C, 8A, 8AR	B	11,891	0,000	0,000
4, 8G	BC	0,000	0,000	0,000
1AA, 4GA, 5A, R (roc sédimentaire)	C	246,886	0,000	0,000
R (roc cristallin)	CD	0,000	0,000	0,000
Lacs et terrains dénudés/semi-dénudés humides		223,560	0,000	0,000
Superficie totale		488,497		ha
LONGUEUR DU COURS D'EAU (Lc)		3174		m
Élévation à 15% en aval de la limite extrême du bassin versant		308		m
Élévation à 10% en amont du point de traversée		290		m
PENTE 85-10 du cours d'eau (Sc)		0,76		%
COEFFICIENT DE RUISSELLEMENT PONDÉRÉ (Cp)		0,2009		
TEMPS DE CONCENTRATION DU BASSIN VERSANT (Tc)		181		minutes
INTENSITÉ DE PRÉCIPITATION (I)		27,85		mm/h
COEFFICIENT DE CORRECTION DE L'INTENSITÉ DE PRÉCIPITATION (Fi)		0,4651		
Distribution des lacs et dénudés/semi-dénudés humides (A, B ou C)		B		
A=concentrés près du ponceau B=uniformément répartis C=concentrés à la tête				
COEFFICIENT DE RÉDUCTION DU DÉBIT DE POINTE (F1)		0,5742		
Débit maximum instantané d'une récurrence de 10 ans (Q ₁₀)		2,03		m ³ /s
Débit de pointe journalier d'une récurrence de 20 ans (Q _{1,20})		N/A		m ³ /s

DIAMÈTRE DES TUYAUX

Nombre de tuyaux	1	2		
Type d'entrée (S) saillie, (B) biseautée ou droite	S		mm	Saillie
Diamètre requis	1500	1200	mm	
Enfouissement	150	120	mm	
Surface d'évacuation après enfouissement	1,68		m ²	

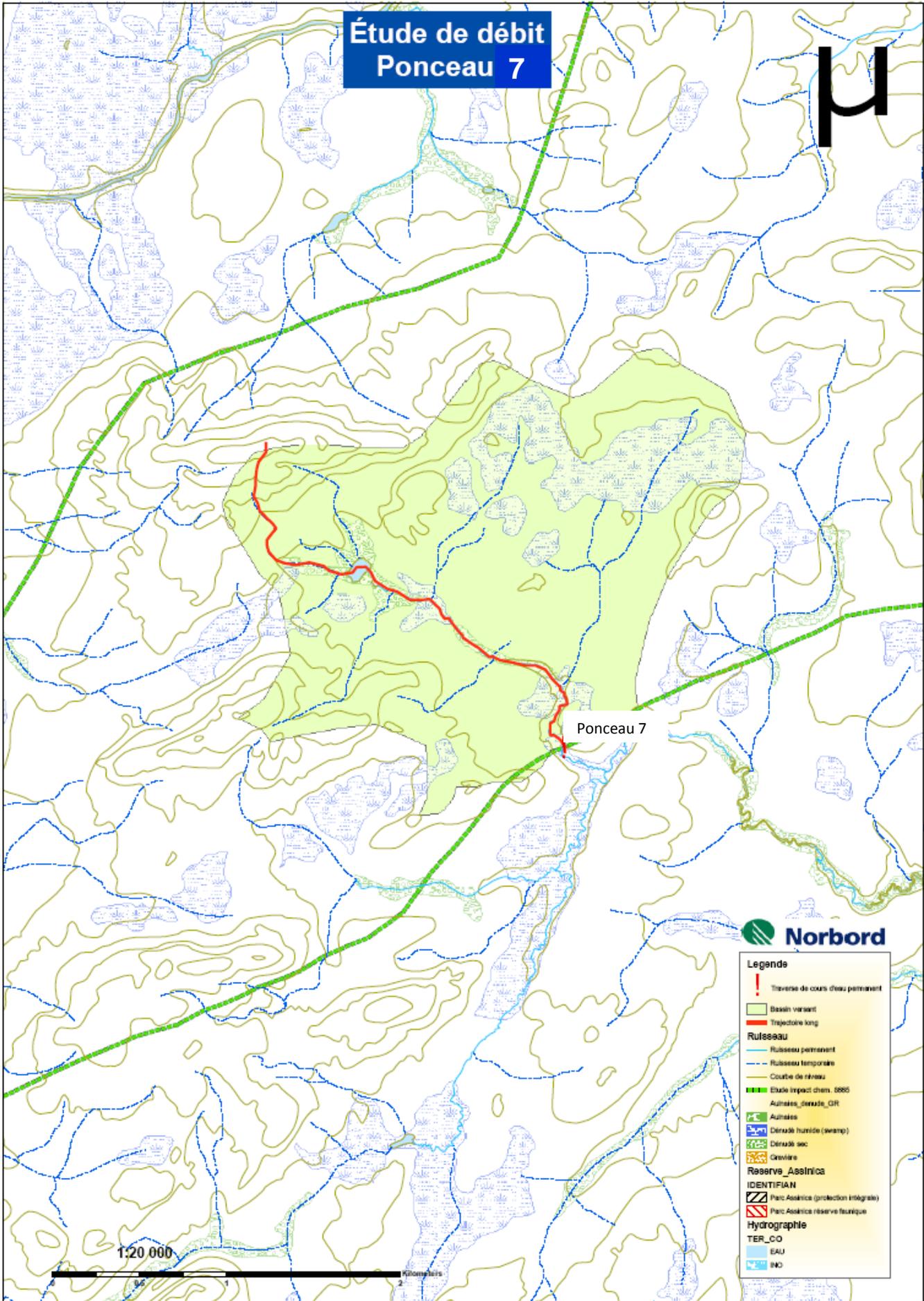
NOTES

<p>4. Il faut s'assurer que le ponceau est toujours installé en suivant la pente naturelle du lit du cours d'eau et que la paroi intérieure de sa base se trouve sous le lit du cours d'eau à une profondeur équivalente à 10% de sa hauteur.</p> <p>5. La pente du lit du cours d'eau doit être inférieure à 1% si la longueur du tuyau ne dépasse pas 25 mètres, et à 0,5% si cette longueur dépasse 25 mètres. Sinon, des mesures de mitigations telles l'installation d'un tuyau d'un diamètre plus élevé que celui calculé à l'aide des annexes 3,4 et 5 du RNI, la construction d'un pont, l'installation d'une structure à arche ou la pose de déflecteurs dans le tuyau doivent être retenues, afin d'assurer le libre passage des poissons.</p> <p>7. Consulter les feuilles Tuyaux arqués et Structures à arche pour connaître d'autres types de structures.</p>

Complété par :	Dominique Lévesque	Date :	4 janvier 2010
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Étude de débit Ponceau 7

μ



Legende	
	Traverse de cours d'eau permanent
	Basin variant
	Trajectoire long
Ruisseau	
	Ruisseau permanent
	Ruisseau temporaire
	Courbe de niveau
	Étude impact chem. 0600
	Auresses_dégradé_OR
	Auresses
	Clésail humide (swamp)
	Clésail sec
	Graviers
Réserve_Aaslinica	
IDENTIFIANT	
	Parc Aaslinica (protection intégrale)
	Parc Aaslinica réserve faunique
Hydrographie	
	TER_CIO
	EAU
	IND

PONCEAUX 7.6

Développé par
Le Groupe Système Forêt Inc.

Description du projet : Ponceau 8		Donnée	Unité	Notes
Localisation géographique : X = 498945.580353653 -- Y = 5604858.86641852				
CALCUL DU DÉBIT DES COURS D'EAU				
Feuillet 1:20 000 (Ex: 32A02SO)		32K10SO		
SUPERFICIE TOTALE DU BASSIN VERSANT (Ab)		5 481,787	ha	Voir note #1
PENTE MOYENNE DU BASSIN VERSANT (Sb)		2,92	%	
Nombre de fois que les lignes horizontales coupent une courbe de niveau		797	#	
Nombre de fois que les lignes verticales coupent une courbe de niveau		802	#	
Longueur des lignes horizontales		273715,4826	m	
Longueur des lignes verticales		273901,6949	m	
Équidistance des courbes de niveau		10	m	
IDENTIFICATION DES DÉPÔTS DE SURFACE		Boisé	Pâturage	Culture
1BF, 1BP, 2A, 2AE, 2AK, 2B, 2BD, 2BE, 4GS, 5S, 6, 8E, 8F, 9	AB	321,972	0,000	0,000
1A, 1AR, 1B, 1BD, 1BC, 3, 8C, 8A, 8AR	B	183,559	0,000	0,000
4, 8G	BC	0,000	0,000	0,000
1AA, 4GA, 5A, R (roc sédimentaire)	C	3 219,204	0,000	0,000
R (roc cristallin)	CD	0,000	0,000	0,000
Lacs et terrains dénudés/semi-dénudés humides		1 757,052	0,000	0,000
Superficie totale				5481,787
LONGUEUR DU COURS D'EAU (Lc)		17096	m	
Élévation à 15% en aval de la limite extrême du bassin versant		190	m	
Élévation à 10% en amont du point de traversée		0	m	
PENTE 85-10 du cours d'eau (Sc)		1,48	%	
COEFFICIENT DE RUISSELLEMENT PONDÉRÉ (Cp)		0,1966		
TEMPS DE CONCENTRATION DU BASSIN VERSANT (Tc)		338	minutes	
INTENSITÉ DE PRÉCIPITATION (I)		27,85	mm/h	
COEFFICIENT DE CORRECTION DE L'INTENSITÉ DE PRÉCIPITATION (Fi)		0,3017		
Distribution des lacs et dénudés/semi-dénudés humides (A, B ou C)				B
A=concentrés près du ponceau B=uniformément répartis C=concentrés à la tête				
COEFFICIENT DE RÉDUCTION DU DÉBIT DE POINTE (FI)		0,5742		
Débit maximum instantané d'une récurrence de 10 ans (Q ₁₀)		14,44	m ³ /s	
Débit de pointe journalier d'une récurrence de 20 ans (Q _{1,20})		N/A	m ³ /s	

DIAMÈTRE DES TUYAUX

Nombre de tuyaux	1	2		
Type d'entrée (S) saillie, (B) biseautée ou droite	S		mm	Saillie
Diamètre requis	3300	2400	mm	
Enfouissement	330	240	mm	
Surface d'évacuation après enfouissement	8,11		m ²	Voir note # 7

NOTES

- Pour les bassins versants dont la superficie se situe entre 2 500 et 15 000 ha, le concepteur doit relever certains indices sur le terrain ou utiliser d'autres méthodes que celles prescrites pour valider ses calculs.
- Il faut s'assurer que le ponceau est toujours installé en suivant la pente naturelle du lit du cours d'eau et que la paroi intérieure de sa base se trouve sous le lit du cours d'eau à une profondeur équivalente à **10% de sa hauteur**.
- La pente du lit du cours d'eau doit être inférieure à 1% si la longueur du tuyau ne dépasse pas 25 mètres, et à 0,5% si cette longueur dépasse 25 mètres. Sinon, des mesures de mitigations telles l'installation d'un tuyau d'un diamètre plus élevé que celui calculé à l'aide des annexes 3,4 et 5 du RNI, la construction d'un pont, l'installation d'une structure à arche ou la pose de déflecteurs dans le tuyau doivent être retenues, afin d'assurer le libre passage des poissons.
- Consulter les feuilles **Tuyaux arqués** et **Structures à arche** pour connaître d'autres types de structures.

Complété par :	Dominique Lévesque	Date :	4 janvier 2010
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Étude de débit
Ponceau 8



Ponceau 8

Norbord

Legende

- Traverse de sondage ponçonné
- Traverse long
- Régulation**
- Turbines ponçonnées
- Barrages ponçonnés
- Crête de têtes
- Crête de têtes 1000
- Crête de têtes 1500
- Crête de têtes 2000
- Crête de têtes 2500
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- Crête de têtes 81000
- Crête de têtes 81500
- Crête de têtes 82000
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- Crête de têtes 98000
- Crête de têtes 98500
- Crête de têtes 99000
- Crête de têtes 99500
- Crête de têtes 100000

1:20 000



PONCEAUX 7.6

Développé par
Le Groupe Système Forêt Inc.

Description du projet : Ponceau 13		Donnée	Unité
Localisation géographique : X = 514964.899996682 -- Y = 5615341.00784577			
CALCUL DU DÉBIT DES COURS D'EAU			Notes
Feuillet 1:20 000 (Ex: 32A02SO)		32K10NE	
SUPERFICIE TOTALE DU BASSIN VERSANT (Ab)		2 283,074	ha
PENTE MOYENNE DU BASSIN VERSANT (Sb)		2,18	%
Nombre de fois que les lignes horizontales coupent une courbe de niveau		277	#
Nombre de fois que les lignes verticales coupent une courbe de niveau		219	#
Longueur des lignes horizontales		114118,3994	m
Longueur des lignes verticales		113825,659	m
Équidistance des courbes de niveau		10	m
IDENTIFICATION DES DÉPÔTS DE SURFACE		Boisé	Pâturage
1BF, 1BP, 2A, 2AE, 2AK, 2B, 2BD, 2BE, 4GS, 5S, 6, 8E, 8F, 9		AB	0,000
1A, 1AR, 1B, 1BD, 1BC, 3, 8C, 8A, 8AR		B	536,233
4, 8G		BC	0,000
1AA, 4GA, 5A, R (roc sédimentaire)		C	1 013,626
R (roc cristallin)		CD	0,000
Lacs et terrains dénudés/semi-dénudés humides			733,216
Superficie totale			2283,075 ha
LONGUEUR DU COURS D'EAU (Lc)			11288 m
Élévation à 15% en aval de la limite extrême du bassin versant			292 m
Élévation à 10% en amont du point de traversée			106 m
PENTE 85-10 du cours d'eau (Sc)			2,20 %
COEFFICIENT DE RUISSELLEMENT PONDÉRÉ (Cp)			0,1800
TEMPS DE CONCENTRATION DU BASSIN VERSANT (Tc)			246 minutes
INTENSITÉ DE PRÉCIPITATION (I)			26,60 mm/h
COEFFICIENT DE CORRECTION DE L'INTENSITÉ DE PRÉCIPITATION (Fi)			0,3764
Distribution des lacs et dénudés/semi-dénudés humides (A, B ou C)			B
A=concentrés près du ponceau B=uniformément répartis C=concentrés à la tête			
COEFFICIENT DE RÉDUCTION DU DÉBIT DE POINTE (FI)			0,5742
Débit maximum instantané d'une récurrence de 10 ans (Q _{1,0})			6,56 m ³ /s
Débit de pointe journalier d'une récurrence de 20 ans (Q _{1,20})			N/A m ³ /s

DIAMÈTRE DES TUYAUX

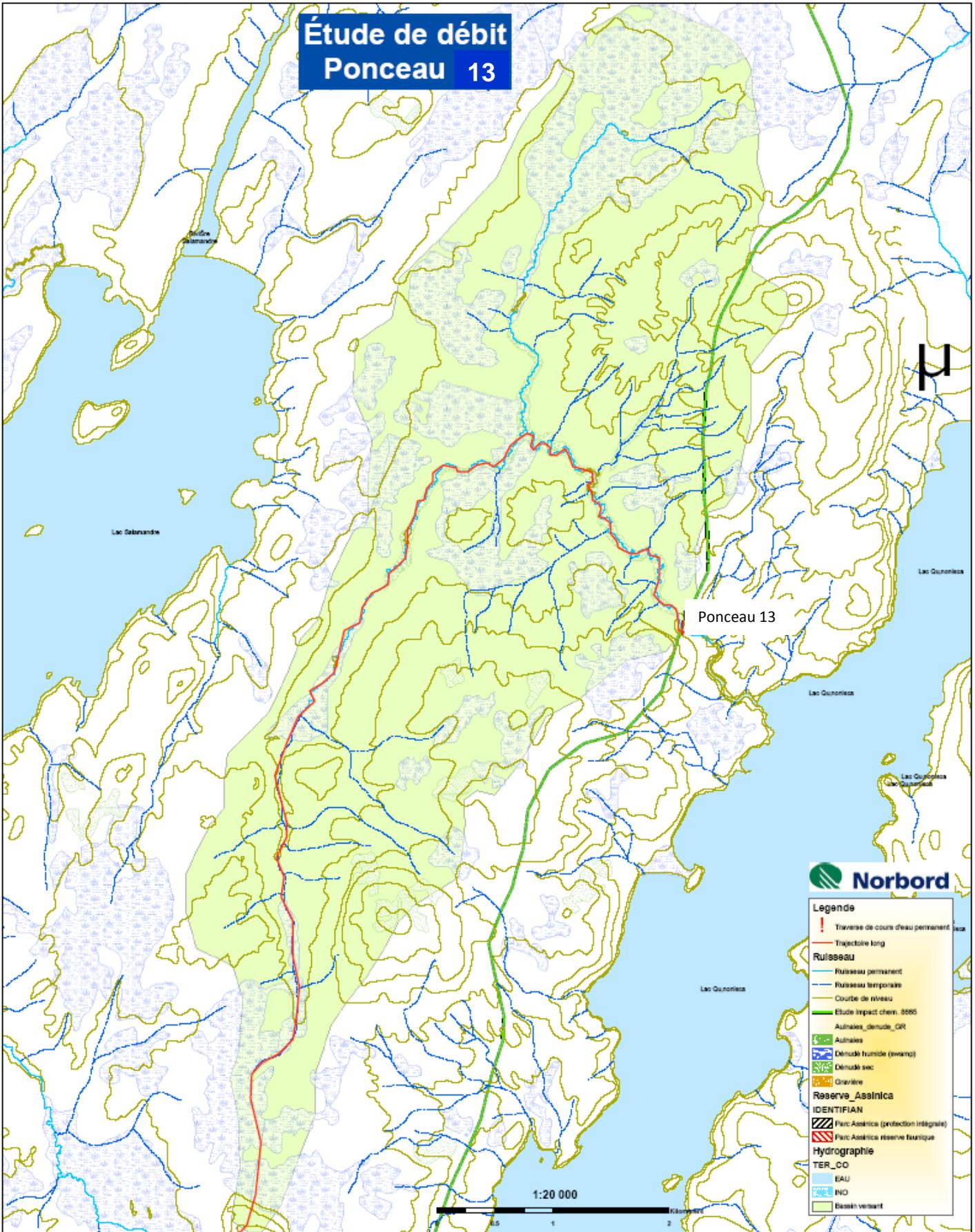
Nombre de tuyaux	1	2	
Type d'entrée (S) saillie, (B) biseautée ou droite	S		mm
Diamètre requis	2400	1800	mm
Enfouissement	240	180	mm
Surface d'évacuation après enfouissement	4,29		m ²

NOTES

<p>4. Il faut s'assurer que le ponceau est toujours installé en suivant la pente naturelle du lit du cours d'eau et que la paroi intérieure de sa base se trouve sous le lit du cours d'eau à une profondeur équivalente à 10% de sa hauteur.</p> <p>5. La pente du lit du cours d'eau doit être inférieure à 1% si la longueur du tuyau ne dépasse pas 25 mètres, et à 0,5% si cette longueur dépasse 25 mètres. Sinon, des mesures de mitigations telles l'installation d'un tuyau d'un diamètre plus élevé que celui calculé à l'aide des annexes 3,4 et 5 du RNI, la construction d'un pont, l'installation d'une structure à arche ou la pose de déflecteurs dans le tuyau doivent être retenues, afin d'assurer le libre passage des poissons.</p> <p>7. Consulter les feuilles Tuyaux arqués et Structures à arche pour connaître d'autres types de structures.</p>

Complété par :	Dominique Lévesque	Date :	4 janvier 2010
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Étude de débit Ponceau 13



Legende	
	Traverse de cours d'eau permanent
	Trajectoire long
Ruisseau	
	Ruisseau permanent
	Ruisseau temporaire
	Courbe de niveau
	Etude Impact chem. 0580
	Audaires, denude_QR
	Audaires
	Dénudé humide (swamp)
	Dénudé sec
	Graviers
Reserve Assinica	
IDENTIFIANT	
	Parc Assinica (protection intégrée)
	Parc Assinica réserve faunique
Hydrographie	
	EAU
	INO
	Basin versant

1:20 000

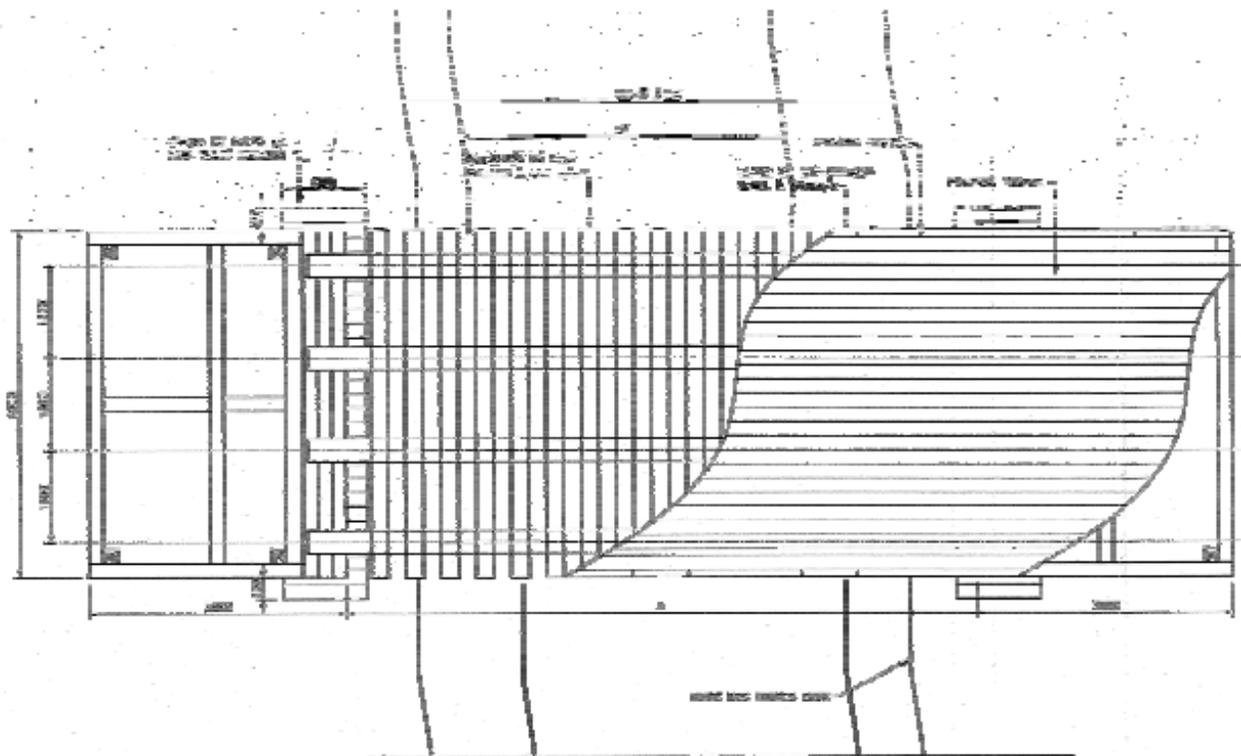


Appendix 5 – Crossing point of Salamandre River

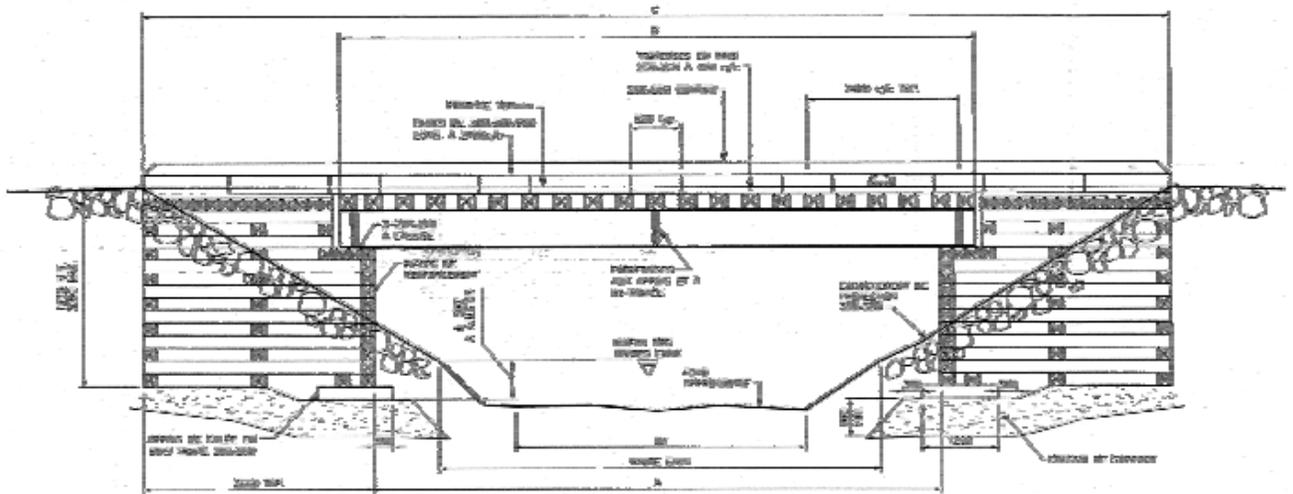
INSERTION PLAN A-0948

SITE DE TRAVERSE RIVIÈRE SALAMANDRE

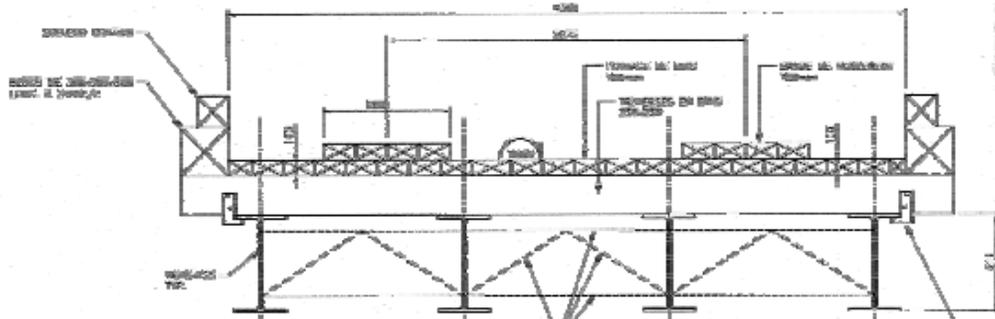
Appendix 6 – Standard plan of the lightweight bridge



VUE EN PLAN



COUPE LONGITUDINALE



Appendix 7 – Procedure in case of accidental spill and emergency plan



Matériaux Blanchet Inc.
Division Atmos

Gestion des déversements de matières dangereuses

Approuvé par : _____
Rosaire Dubé, président

Date : 6 mars 2001

1 - BUT

Savoir réagir adéquatement en cas de fuites ou de déversements de matières dangereuses, afin de réduire les impacts sur l'environnement.

2 - CHAMPS D'APPLICATION

Toutes les opérations de Matériaux Blanchet inc. comportant des risques de fuites ou déversements de matières dangereuses.

3 - DÉFINITIONS

Déversement accidentel :

Événement fortuit et involontaire résultant en l'émission, le dégagement ou la libération d'un contaminant dans l'environnement.

Contaminant :

Matière solide, liquide ou gazeuse, micro-organisme, son, vibration, rayonnement, chaleur, odeur, radiation ou toute combinaison de l'un ou l'autre susceptible d'altérer de quelque manière la qualité de l'environnement (Loi sur la qualité de l'environnement, article 1, 5^e alinéa).

Matière dangereuse :

Toute matière qui, en raison de ses propriétés, présente un danger pour la santé ou l'environnement et qui est explosive, gazeuse, inflammable, toxique, radioactive, corrosive, comburante ou lixiviable, ainsi que toute matière ou objet assimilé à une matière dangereuse (Loi sur la qualité de l'environnement, article 1, 21^e alinéa).



Gestion des déversements de matières dangereuses

Plan de mesures d'urgence (PMU) :

Plan de mesures d'urgence pour les opérations de Matériaux Blanchet inc. en cas d'incendie, d'accident avec blessé ou de déversements de matières dangereuses, lorsqu'il s'agit d'incidents majeures.

Déversement accidentel mineur :

Déversement accidentel qui est limité par son étendue, sa quantité, sa localisation et qui est facilement récupérable. La personne responsable du déversement ou le témoin est en contrôle de la situation et elle peut récupérer les contaminants.

Déversement accidentel majeure :

Déversement accidentel ayant un impact significatif sur l'environnement et pour lequel le plan des mesures d'urgence, section déversements de matières dangereuses, est déclenché. La personne responsable du déversement ou le témoin n'est pas en contrôle de la situation et elle a besoin de ressources externes.

Exemple : Déversement d'huile qui s'étend dans l'eau.

4 - RESPONSABILITÉS

Directeur de la foresterie

Assumer la responsabilité de la mise en œuvre de la présente procédure.

Responsables / Contremaîtres forestiers / Entrepreneurs forestiers / Opérateurs de machinerie

Mettre en application la présente procédure.

Entrepreneurs forestiers

Avoir dans chaque machine une trousse de déversement incluant du matériel absorbant, une pâte de colmatage, des gants et des sacs de plastique pour la récupération du matériel contaminé.

Déclarer chaque déversement accidentel de matières dangereuses à Matériaux Blanchet inc.



Gestion des déversements de matières dangereuses

5 - MÉTHODOLOGIE

5.1 Gestion des déversements de matières dangereuses

Personne responsable du déversement / Témoin :

- Se poser la question suivante : **Suis-je en contrôle de la situation?**
Si oui : Poursuivre la présente procédure.
Si non : Enclencher le procédé d'alerte et le plan de mesures d'urgence de Matériaux Blanchet inc. ou de l'entrepreneur, selon les cas.
- Prendre les mesures appropriées pour contenir le déversement :
 1. S'assurer de ne pas mettre sa vie en danger.
 2. Arrêter et maîtriser la source en colmatant la fuite et/ou en utilisant du matériel absorbant.
 3. Réparer le problème.
 4. Ramasser le matériel et le sol contaminés.
 5. Disposer au camp ou dans un autre endroit prévu à cette fin.
 6. Aviser le contremaître forestier – Matériaux Blanchet inc. / contremaître forestier – Entrepreneur forestier / pour qu'il remplisse le formulaire ABI-F-447.02-F.01 : «Rapport de déversement accidentel de matières dangereuses».

Commis de camp / Contremaître forestier – Matériaux Blanchet inc. / Contremaître forestier – Entrepreneur forestier:

- Dans tous les cas de déversement de matières dangereuses qui ne sont pas sous contrôle, évaluer la situation et enclencher les mesures nécessaires (PMU).
- Dans tous les cas d'un déversement de matières dangereuses :
 - Remplir le formulaire ABI-F-447.02-F.01 : «Rapport de déversement accidentel de matières dangereuses» et le transmettre au responsable de Matériaux Blanchet inc. le plus rapidement possible.

Responsable (Matériaux Blanchet inc.):

- Prendre connaissance du rapport de déversement et le signer.
- Si nécessaire, déclarer le déversement aux autorités gouvernementales concernées et à la direction de Matériaux Blanchet inc.
- Conserver les rapports de déversement conformément à la procédure ABI-F-453.01 : «Maîtrise des enregistrements du SGE».



Gestion des déversements de matières dangereuses

6 - DOCUMENTS

Les documents requis pour l'application de la présente procédure sont :

- Annexe A : Formulaire MBI-MD-01: «Rapport de déversement accidentel de matières dangereuses».
- Annexe B : Schéma d'actions.
- Annexe C : Plan des mesures d'urgence.



Matériaux Blanchet Inc.
Division Atmos

Gestion des déversements de matières dangereuses

Annexe A

Formulaire MBI-MD-O1:

RAPPORT DE DÉVERSEMENT ACCIDENTEL DE MATIÈRES DANGEREUSES



Gestion des déversements de matières dangereuses

Situation sous contrôle? Oui Mineur No _____
Non Majeur : Enclencher le procédé d'alerte et le PMU

Date de l'événement : _____ Heure : _____

Entrepreneur / Personne concerné(e) : _____

Coordonnées : _____

Personne qui a rendu compte de l'événement : _____

Témoin(s) : _____

Endroit précis : _____

Matière(s) dangereuse(s) en cause : Essence Antigél
Diesel Huile à chauffage
Huile hydraulique Huile usée
Huile à moteur Autre _____

Quantité déversée : _____ Type de contamination : Sol
Eau (cours d'eau)
Eau (voie navigable)
Autre

Raison du déversement : Matériel/Équipement mal entretenu/usé
Bris de machinerie
Négligence de la part de l'opérateur
Mauvaise méthode de travail
Incendie / Explosion
Autre _____

Blessures corporelles : Oui _____
Non

Perte de vie : Oui _____
Non

Description de l'événement : _____



Gestion des déversements de matières dangereuses

Actions prises pour limiter et récupérer le déversement : _____

Quantité récupérée : Matériel absorbant : _____
Sol/Eau contaminé : _____

Endroit de disposition du matériel récupéré : _____
Date : _____

Estimation des dommages causés par le déversement : _____

Correctifs à apporter pour éviter qu'un tel événement se reproduise : _____

Ressources externes nécessaires : (s'il y a lieu) _____

Remarques : _____

SIGNATURES :

Préparé par : _____ Date : _____ Heure : _____
Supérieur immédiat / Contremaître
forestier / Responsable

Conservé par : _____ Date : _____ Heure : _____
Responsable Matériaux Blanchet inc.

N.B. Remettre le plus rapidement possible au responsable de Matériaux Blanchet inc.



Gestion des déversements de matières dangereuses

À remplir par le responsable de Matériaux Blanchet inc., lorsque requis.

Déclaration du déversement à :

	Nom	Date	Heure
Direction de Matériaux Blanchet inc.	_____	_____	_____
Ministère de l'Environnement du Québec	_____	_____	_____
Ministère des Ressources naturelles du Québec	_____	_____	_____
Ministère des Transports du Québec	_____	_____	_____
Transports Canada	_____	_____	_____

Notes complémentaires : _____

Signature : _____



Gestion des déversements de matières dangereuses

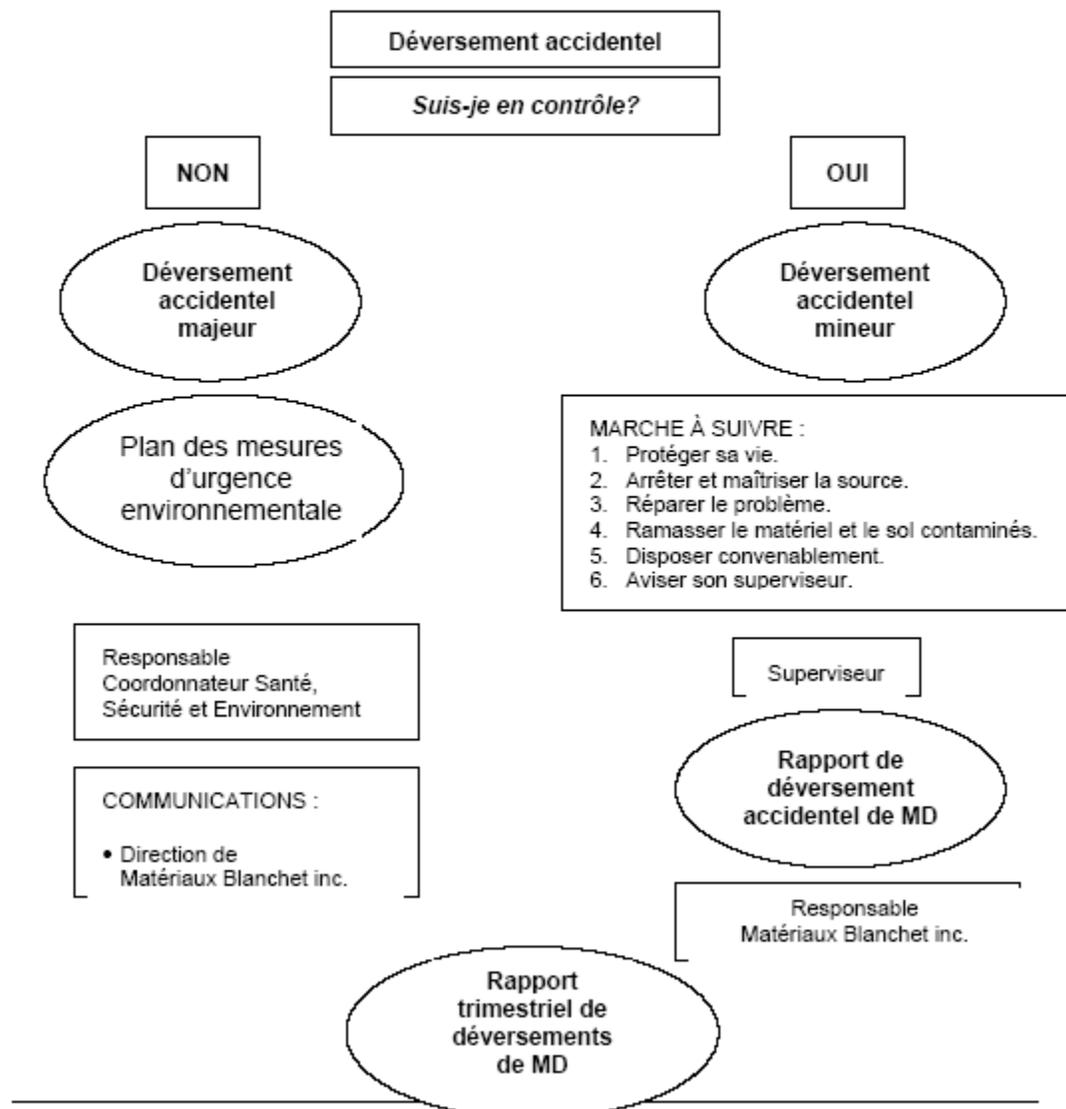
Annexe B

Schéma d'actions



Gestion des déversements de matières dangereuses

SCHÉMA D' ACTIONS





Matériaux Blanchet inc.

Amos, le 16 août 1999

Annexe C

Plan des mesures d'urgence

En cas de déversement de produits pétroliers et produits chimiques, vous devez aviser :

1- URGENCE ENVIRONNEMENT :

(819) 763-3333
faire le 0
de 8 h 30 à midi
13 h à 16 h30

Après les heures d'affaires : (514) 873-3454.

2- MATÉRIAUX BLANCHET INC. : (819) 732-6581

Personnel à rejoindre 7 jours sur 7 ; sur radio mobile ou par téléphone après les heures d'affaires.

Gilles Audet	(819) 732-2507
Roch Plusquellec	(819) 727-1468
Pierre Bouchard	(819) 732-3462
Gérald Mattard	(819) 732-2773

Date de mise à jour : 2010-01-11

Appendix 8 – Procedure in case of forest fire



Matériaux Blanchet inc.
Division Amos
Téléphone: 819-732-6581 Télécopieur: 819-727-2928

EN CAS D'UN FEU DE FORÊT - ANNÉE 2009

Personnel à rejoindre 7 jours sur 7
Sur radio mobile 50 ou par téléphone

1. Responsables à rejoindre par ordre de priorité :

	Résidence	Bureau	Cellulaire
Audet, Gilles	819-732-2507	819-732-6581, poste 230	819-727-6137
Plusquellec, Roch	819-727-1468	819-732-6581, poste 231	819-442-2337
Bouchard, Pierre	819-732-3462	-----	819-442-3107
Mattard, Gérald	819-732-2773	-----	-----
Dubé, David	819-727-3279	819-732-6581, poste 232	819-444-9884
Dubé, Rosaire	819-732-2361	819-732-6581, poste 233	418-953-3823

2. Contremaîtres :

	Résidence	Bureau	Cellulaire
Gravel, Richard	819-732-5164	819-732-6581, poste 234	-----
Grenier, Daniel	819-732-0079	-----	-----
Lacombe Sylvain	819-727-2460	-----	-----
Lajeunesse, Gilles	819-727-4724	819-732-6581, poste 250	819-444-8515
Landry, Robert	819-732-9744	-----	-----
Naud, Patrick	819-732-3214	-----	819-444-8129
Paquin, André	819-732-6136	-----	819-444-7732
Savard, Gaétan	819-732-3812	-----	-----

SOPFEU	1-800-463-3389
	1-800-824-4100 (Val-d'Or)
	1-819-739-3101 (Matagami)

3. Opérateurs :

	Résidence	Bureau	Cellulaire
Audet, François	819-732-8425	-----	-----
Bolduc, Gabriel	819-732-7850	-----	-----
Domingue, Alain	819-732-3135	819-732-6581, poste 241	-----
Godbout, Raymond	819-732-3129	-----	-----
Levasseur, Yvon	819-732-3649	-----	819-444-6849
Millaire Steve	819-732-9148	-----	819-727-6425
Rheault, Christian	819-732-2883	-----	-----
Samson, Henri	819-727-2233	819-732-6581, poste 241	-----
Thibeault, Fernand	819-732-3904	-----	-----

c.c. SOPFEU, département de la bouilloire A et B, Gilles Audet, Isabelle Brouillette, David Dubé, Rosaire Dubé, Richard Gravel, Hélène Grenier, Suzie Lanoix, Gilles Lajeunesse, Rémi Létourneau, Roch Plusquellec, Sylvie Trépanier

Appendix 9 – List of plants with traditional use

List of traditional use plants

Tree species	Shrub species
Paper Birch (<i>Betula papyrifera</i>)	Lowbush Blueberry (<i>Vaccinium angustifolium</i>)
White Spruce (<i>Picea glauca</i>)	Bog Blueberry (<i>Vaccinium uliginosum</i>)
Black Spruce (<i>Picea mariana</i>)	Bog Rosemary (<i>Andromeda glaucophylla</i>)
American Larch (<i>Larix laricina</i>)	Green Alder (<i>Alnus crispa</i>)
Balsam Poplar (<i>Populus balsamifera</i>)	Leatherleaf (<i>Chamaedaphne calyculata</i>)
Quaking Aspen (<i>Populus tremuloides</i>)	Pin Cherry (<i>Prunus pensylvanica</i>)
Jack Pine (<i>Pinus banksiana</i>)	Chokecherry (<i>Prunus virginiana</i>)
White Cedar (<i>Thuja occidentalis</i>)	Creeping Snowberry (<i>Gaultheria hispidula</i>)
Herbaceous species	Yellow Twig Dogwood (<i>Cornus stolonifera</i>)
Chives (<i>Allium schoenoprasum</i>)	Skunk Currant (<i>Ribes glandulosum</i>)
Wild Sarsaparilla (<i>Aralia nudicaulis</i>)	Prickly Currant (<i>Ribes lacustris</i>)
Purple Avens (<i>Geum rivale</i>)	Hairystem Gooseberry (<i>Ribes hirtellum</i>)
Cow Parsnip (<i>Heracleum lanatum</i>)	Bog Laurel (<i>Kalmia polifolia</i>)
Bunchberry (<i>Cornus canadensis</i>)	Sheep Laurel (<i>Kalmia angustifolia</i>)
Virginia Strawberry (<i>Fragaria virginiana</i>)	Bog Labrador Tea (<i>Ledum groenlandicum</i>)
Stiff Clubmoss (<i>Lycopodium annotinum</i>)	Cranberry (<i>Oxycoccus microcarpus</i>)
Field mint (<i>Mentha arvensis</i>)	Bebb's Willow (<i>Salix bebbiana</i>)
Buckbean (<i>Menyanthes trifoliata</i>)	Shining Willow (<i>Salix lucida</i>)
Tall Meadow Rue (<i>Thalictrum pubescens</i>)	Balsam Willow (<i>Salix pyrifolia</i>)
Red Raspberry (<i>Rubus idaeus</i>)	Prairie Willow (<i>Salix humilis</i>)
Dwarf Raspberry (<i>Rubus pubescens</i>)	Bog Willow (<i>Salix pedicellaris</i>)
Purple Pitcher Plant (<i>Sarracenia purpurea</i>)	
Broadleaf Cattail (<i>Typha latifolia</i>)	

Source : Foramec, 2004.

Appendix 10 –Zones with an archaeological potential – Picard (1998)

TABLEAU 1. Caractérisation des zones archéologiques potentielles identifiées à l'intérieur du corridor du tracé du chemin forestier projeté du km 116 de la route de la Baie James à l'aire commune 86-21

ZAP *	Localisation TR EP corridor	Bassin hydrographique	Type de dépôts	Altitude (mètres)	Cartes et photos Aér. De référence (juin, juillet et août)	Potentiel archéologique et commentaires A (fort), B (moyen), C (faible)
ZAP 1 (EP + TR)	km 5,5 - 7,5	Prim. Riv. Nottoway	Moraine bordière Till et sable graveleux, sable	285-290	32 W8 N.E. 1 : 20000 Q95202 195-196	B Zone reliée à ligne de falte de bassins primaires
ZAP 2 (TR + EP)	km 8,0 - 10,0	Prim. Riv. Nottoway	Till et sable	280-285	Q95202 180-181	B Idem ZAP 1 - vestiges de dépôts fluvio-glaciaires
ZAP 3 (TR + EP)	km 12 - 13	Prim. Riv. Nottoway	Sable	280-285	Q95202 71-72	B + C Pour partie ouest (B) de la zone (confluent) plus favorable que partie (C)
ZAP 4 (EP)	km 14,5 - 16	Sec. Lac Ouénanisce et riv. Salamandre	Sable Gravier	285-290	Q95202 52-53	A + B De part et d'autre de ligne de falte. À proximité de sources d'eau. Partie sud à 600 m du rivage actuel (et plus près de l'ancien rivage) du lac Gull (A). Partie nord à 1000 m (B)
ZAP 5 (EP)	km 18,0 - 19,0	Sec. Riv. Salamandre	Till et esker	290-295	32 K / 10 S.O. Q95205 242-243	B Fluvio-glaciaire à proximité de source d'eau En bordure de courbe de 300 m et à 1300 m de ligne de partage de bassins secondaires
ZAP 6 (EP)	km 20,8 - 21,7	Sec. Lac Ouénomisca	Till	290-3	310 Q95201 86-87	B Situation semblable à celle de zone précédente à une altitude supérieure, à la tête d'un autre bassin hydrographique
ZAP 7 (EP)	km 24,5 - 27	Sec. Riv. Salamandre	Till mince Sable et gravier	285-290	Q95201 48-49	B Bassin semblable à ZAP7 mais situation moins faible de l'autre côté de cours d'eau
ZAP 8 (TR + EP)	km 27 - 28	Sec. Riv. Salamandre (affluent)	Sable et gravier	285-290	Q95201 47-48	B (2 niveaux) à 200 et 400 m du lit actuel asséché d'un cours d'eau (fin juin 1999)
ZAP 9	km 31,5 - 32,2	Sec. Riv. Salamandre (affluent)	Sable et gravier	285-290	Q95207 56-57	A Traversée de rivière à proximité d'une chute et de rapides. Grande surface d'accueil sur rive sud. Rive nord abrupte, mais site d'observation au sommet
ZAP 10 (TR)	km 33,7 - 34,6	Sec. Riv. Salamandre	Sable	275-280	Q95207 56-57	A Surface d'accueil limitée sur rive sud. Emplacement stratégique sur rive nord, à 150 m d'un confluent
ZAP 11 (TR)	km 35,8 - 36,3	Sec. Riv. Salamandre (affluent)	Sable	280-290	Q95207 149-150	A En bordure d'une baie du lac Ancêtre Evans et à proximité d'un ruisseau
ZAP 12 (EP)	km 39,8 - 41,5	Affluents de rivière Broadback dont un constaté relié à lac de tête	Fluvio-glac de contact Till mince sableux	300-315	32 W10 N.O. 1 : 200000 Q95208 207-209	A Situation paléogr. Semblable à celle de ZAP13. Aussi à proximité de tête d'un affluent de rivière Broadback constituant zone d'exploitation de castor
ZAP 13 (EP + TR)	km 42,8 - 45,8	Affluents de rivière Broadback	Till mince sableux Sable et gravier	255-260	Q95208 187-188	A Zone située à proximité de rivière Broadback incluant un ruisseau qui remonte vers une aire de chasse à l'orignal
ZAP 14 (EP + TR)	km 59,5 - 61,5	Affluents de rivière Broadback (au sud)	Till mince sur roc	255-260	32 W15 S.E. 1 : 20000 Q96825 77-78	A Rive sud de rivière Broadback comprenant un affluent. Zone de trappage du castor
ZAP 15 (TR)	km 62,2 - rive sud	Affluent et rive sud Broadback	Till mince sur roc	255-260	Q96825 36-37 et Q96833 7-8	A Possibilité d'occupation pour campement de pêche
ZAP 16 (TR)		ILE	Till délavé sur roc	255-260	Q9683 7-8	A Zone de portage et de pêche à l'esturgeon
ZAP 17 (EP)	km 68 - 69,5	Rive nord Broadback	Till + till délavé sur roc	260-280	Q96822 116-117	B Zone de confluent sur un cours d'eau utilisé comme limite de tenure de parcelle
ZAP 18 (EP + TR)	km 71,5 - 73	Affluent Broadback	Till granulaire + sable	260-275	Q96822 118-119 32k / 16 S.O. 1 : 20000	C Lit asséché de cours d'eau dans un dépôt d'argile Aussi à proximité de ZAP 20
ZAP 19 (TR)	km 73,7 - 74,7	Affluent Broadback	Till (moraine) + argile	280-275	Q96822 119-120	A À proximité de cours d'eau ancien ou actuel au lit asséché et de baie actuelle et ancienne (plus grande) du lac Storm
ZAP 20 (TR)	km 82 - 82,5	Lac Storm	Till sur roc	280-300	Q96833 18-19	

Tracé
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Appendix 11 – Reports of consultations

Report of consultation

Date :	15 janvier 2010/January 15, 2010
Lieu/Place :	Youth Center, Waswanipi
Heure/Time	13h45 - 15h00
Projet/Project :	Étude d'impact sur les chemins d'accès «H» et «I» / Environmental impact assessment on access roads «H» and «I»
Étaient présents/Were present :	<ul style="list-style-type: none"> - Karine Gauthier-Héту, EnviroCree - Sylvie Baillargeon, EnviroCree - Roch Plusquellec, Matériaux Blanchet - Gilles Audet, Matériaux Blanchet - Annabelle Simard, Scierie Landrienne - Éric Labelle, GTC MRNF <p>70 participant de la communauté de Waswanipi / participants of the Waswanipi community</p>

Présentation sous forme *Powerpoint*. Une copie papier a été remise à toutes les personnes présentes.
Powerpoint presentation. A copy was given to all.

<p>Objectifs :</p> <ul style="list-style-type: none"> - Présenter le projet au Grand Conseil des Cries (Eeyou Istchee) et à la communauté de Waswanipi; - Connaître leurs préoccupations et obtenir leurs suggestions sur les mesures d'atténuation face à celles-ci. 	<p>Objectives :</p> <ul style="list-style-type: none"> - To present the project to the Grand Council of the Crees (Eeyou Istchee) and to the Waswanipi community; - To know their preoccupations and get their suggestions on the mitigation measures regarding those preoccupation.
<p>1. Karine Gauthier-Héту (KGH) présente :</p> <ul style="list-style-type: none"> - Objectifs de la rencontre - Processus d'évaluation des impacts - Description et localisation du projet - Impacts appréhendés - Mesures atténuation possible - Étapes à venir 	<p>1. Karine Gauthier-Héту (KGH) presents :</p> <ul style="list-style-type: none"> - Meeting objectives - EIA process - Project description and localisation - Foreseen impacts - Potential mitigation measures - Upcoming steps
<p>2. KGH invite les personnes présentes à s'exprimer :</p>	<p>2. KGH invites the public to express their opinions :</p>
<p>M. Paul Dickson exprime les préoccupations suivantes :</p> <ul style="list-style-type: none"> - Se demande pourquoi le tracé du chemin «I» passe dans un 1%, qui se trouve à être un sentier de portage. <i>KGH explique que dans ce cas précis, le tracé coupe un site d'intérêt cri à la demande du maître de trappe et que tous les autres 1% ont été respectés.</i> <p><u>M. Dickson propose que les demandes particulières par rapport aux sites d'intérêts cris soient amenées à la communauté pour que les décisions soient prises par tous et non pas juste le maître de trappe.</u></p>	<p>Mr. Paul Dickson expresses the following concerns :</p> <ul style="list-style-type: none"> -Wonders why the layout of road "I" passes in one 1%, which is a portage trail. <i>KGH explains why in this situation, the layout cuts through a site of interest to the Crees as requested by the tallyman and other 1% were respected</i> <p><u>Mr. Dickson proposes that the particular requests regarding the sites of interest to the Cree be presented to the community so that the decisions are made by all and not just the tallyman.</u></p>

<p>- Se préoccupe du statut du caribou forestier et mentionne que le chemin et les activités forestières seront dans la zone ciblée par la demande de moratoire qui a été déposée. <i>KGH explique que l'étude prend en compte le statut du caribou forestier et du moratoire. Elle explique que les informations recueillies auprès du ministère et lors des consultations antérieures avec les maîtres de trappe semblent démontrer que le caribou forestier se situe majoritairement au nord de la rivière Broadback et que les occurrences au sud de cette rivière sont très peu nombreuses. Elle indique que les bénéficiaire se sont engagés à ne pas faire entrer les chemins dans le projet de parc Assinica ni d'y faire des activités forestières afin de respecter les efforts de conservation.</i></p>	<p>- Expresses concerns regarding the woodland caribou's status and mentions that the road and forest activities will be in the targeted area for which the moratorium demand has been submitted. <i>KGH explains that the study takes into account the woodland caribou's status as well as the moratorium. She explains that the information received from the ministry and during the former consultations with the tallymen seems to show that the woodland caribou is located mainly north of the Broadback river and that there are very few occurrences south of this river. She also indicates that the recipients have committed to not let the roads pass through the Assinica Park project nor to take part in any forest activity in order to respect the conservation efforts.</i></p>
<p>M. Ottereyes exprime les préoccupations suivantes :</p> <ul style="list-style-type: none"> - Tous les membres de familles devraient être consultés, pas uniquement le maître de trappe. <i>KGH propose avec les bénéficiaires que les prochaines rencontres soient planifiées pour qu'elles soient également ouvertes aux membres des familles des maîtres de trappe concernés. Cette planification se fera avec M. Allan Saganash, du « Forest Authority Council » de Waswanipi.</i> - Se demande pourquoi ce projet de chemin est encore en vigueur alors que dans une consultation antérieure, son père a mentionné qu'il n'y a pas de gravier pour construire mais que maintenant, les compagnies disent qu'il y en a. Le fait que le discours ait changé ne l'incite pas à faire confiance aux compagnies. <i>KGH vérifiera cette information avec les bénéficiaires et apportera toutes les informations existantes concernant les bancs d'emprunt lors des consultations avec les maîtres de trappe et leur famille. (L'intervenant est de la famille Ottereyes de l'aire de trappe W6). (Il est possible que le tracé soit confondu avec un autre tracé plus à l'ouest qui avait été proposé par Domtar et qui était localisé dans l'aire de trappe W6.)</i> - Il trouve difficile de suivre l'historique de toutes les consultations des activités prévues sur le territoire, des activités qui ont été abandonnées et celles qui ont été réalisées. <i>KGH suggère qu'une carte illustrant les projets en cours, abandonnés et projetés soit préparée pour les rencontres individuelles.</i> 	<p>Mr. Ottereyes expresses the following concerns:</p> <ul style="list-style-type: none"> - All members of families should be consulted, not only the tallyman. <i>KGH proposes, with the recipients, that the next meetings should be scheduled in order to allow the concerned tallymen's family members to attend. This planning will be done with Mr. Allan Saganash, from the Forest Authority Council of Waswanipi.</i> - Wonders why this road project is still in force whereas in a former consultation, his father mentioned that there is no gravel to build but that now, the companies say otherwise. The fact that the speech changed does not encourage him to trust the companies. <i>KGH will verify this information with the recipients and will bring all existing information concerning the borrow pits during the consultations with the tallymen and their families. (The speaker is of the Ottereyes family of the trapping area W6). (It is possible that the layout is confused with another layout more in the west which had been proposed by Domtar and which was located in trapping area W6.)</i> - Finds difficult to follow-up on all the consultations for the planned activities on the territory, the activities which were dismissed and those which were carried out. <i>KGH suggests that a chart illustrating the projects in progress, those dismissed and those projected be prepared for the individual meetings.</i>

<p>Intervenant 3 exprime les préoccupations suivantes :</p> <ul style="list-style-type: none"> - Indique qu'au km 43 (à partir du km 60 de la route 109), le pont est trop bas et qu'il est difficile de passer. Il a fait plusieurs fois des demandes auprès de Matériaux Blanchet mais qu'il n'a jamais eu de réponse. <i>Gilles Lajeunesse de Matériaux Blanchet répond qu'ils ne sont plus les bénéficiaires de ce territoire depuis 2008 et que les demandes devraient être dirigées vers Domtar.</i> 	<p>Speaker 3 expresses the following concerns: Indicates that at km 43 (starting from km 60 of road 109), the bridge is too low and that it is difficult to pass. He has made several requests to Matériaux Blanchet about this but has received no answer. Gilles Lajeunesse of Matériaux Blanchet replies that they have not been the recipients for this territory since 2008 and that the requests should be directed towards Domtar</p>
<p>M. Dereck Neeposh (du Grand conseil) exprime les préoccupations suivantes :</p> <ul style="list-style-type: none"> - Concerne l'accès au territoire de catégorie 2. Il est inquiet que cela augmente le braconnage, autant de la part des autochtones que des non-autochtones. <u>L'intervenant propose une surveillance sur une base régulière, entre autres par les agents de la faune, et de présenter ce dossier au Conseil de bande de Waswanipi. Il indique qu'auparavant, un programme existait pour employer des cris durant les hautes périodes de chasse et de pêche afin d'aider à identifier les braconniers. Ce programme aurait été aboli par le ministère.</u> - Réitère ce que M. Ottereyes a dit sur les bancs d'emprunts. Lui aussi se rappelle que dans les consultations antérieures, il avait été dit qu'il n'y avait pas de gravier et que c'est pour cela que les chemins n'ont jamais été construits. - Indique que les intervenants du ministère et les agents de la faune doivent être consultés afin de documenter correctement les impacts sur les sites sensibles identifiés par les maîtres de trappe. 	<p>Mr. Dereck Neeposh (of the Grand Council) expresses the following concerns:</p> <ul style="list-style-type: none"> - The access to category 2 territory. He is worried that easier access will increase poaching from natives and non-natives. <u>The speaker proposes a monitoring on a regular basis, particularly from wildlife officers and to present the case to the Band Council of Waswanipi. He indicates that before, a program existed to employ Crees during high hunting and fishing periods in order to help identify poachers. This program would have been abolished by the ministry.</u> - Reiterates what M. Ottereyes said on borrow pits. He also remembers that in former consultations, it had been said that there was no gravel and therefore the roads were never built. - Indicates that the representatives for the ministry and wildlife officers must be consulted in order to correctly document the impacts on the more sensitive areas identified by the tallymen
<p>M. Johnny A. Grant exprime les préoccupations suivantes :</p> <ul style="list-style-type: none"> - S'inquiète sur l'entretien de la route. Explique qu'il a été inspecteur lors de la construction de la route de la Baie-James. <u>Il aimerait que les maîtres de trappe soient informés lorsque les castors bloquent les infrastructures.</u> Il veut prévenir la destruction de son habitat par les opérateurs de l'entretien. - Espère que le territoire ne sera pas trop affecté/détruit pour trouver du gravier. Il mentionne que le principal désavantage de la route est la destruction du territoire. 	<p>Mr. Johnny A. Grant expresses the following concerns: -</p> <ul style="list-style-type: none"> - Worries about road maintenance. Explains that he was inspector during the construction of the James-Bay road. <u>He would like that the tallymen be informed when the beavers block the infrastructures</u> in order to prevent the destruction of their habitat by the maintenance operators. - Hopes that the territory will not be too affected or destroyed to find gravel. He mentions that the main disadvantage of the road is the destruction of the territory

Report of consultation

Date :	20 janvier/january 2010
Lieu/Place :	Bureau municipal de Chapais, Chapais city hall
Heure/Time	15h45 - 17h00
Projet/Project :	Étude d'impact sur les chemins d'accès «H» et «I» / Environmental impact assessment on acces road «H» and «I»
Étaient présents/Were present :	<ul style="list-style-type: none"> - Karine Gauthier-Héту, EnviroCree - Sylvie Baillargeon, EnviroCree - Larry McLeod, EnviroCree - De la Municipalité de la Baie-James/From de James-Bay municipality : - Stéphane Simard - Jean Brassard - Louis Gagnon - Steve Gamache - Mathieu Séguin - Gérald Lemoyne - Denis Dufour - Manon Cyr - Cécile Philippon - Colombe Fortin - René Dubé

Présentation sous forme *Powerpoint*. Une copie électronique a été remise à M. Simard.
Powerpoint presentation. An electronic version was given to Mr. Simard.

<p>Objectifs :</p> <ul style="list-style-type: none"> - Présenter le projet au - Obtenir leurs préoccupations ainsi que leurs suggestions sur les mesures d'atténuation face à celles-ci. 	<p>Objectives :</p> <ul style="list-style-type: none"> - To present the project to; - To obtain their preoccupation and their suggestions on the mitigation measures on those preoccupation.
<p>1. Karine Gauthier-Héту (KGH) présente :</p> <ul style="list-style-type: none"> - Objectifs de la rencontre - Processus d'évaluation des impacts - Description et localisation du projet - Impacts appréhendés - Mesures atténuation possible - Étapes à venir 	<p>1. Karine Gauthier-Héту (KGH) presents :</p> <ul style="list-style-type: none"> - Meeting objectives - EIA process - Project description and localisation - Foreseen impacts - Potential mitigation measures - Upcoming steps
<p>2. KGH invite les personnes présentes à s'exprimer :</p> <p>Une préoccupation générale est soulevée concernant la provenance de la main-d'œuvre pour l'exécution des travaux. Considérant que le projet se fait entièrement dans la région de la Baie-James, les représentants trouvent primordial qu'une priorité soit accordée aux entrepreneurs et aux travailleurs de la Baie-James (autochtones et non-autochtones). <u>Ils estiment que la principale retombée positive de ce genre de projet passe par l'embauche de main-d'œuvre de la Baie-James.</u></p>	<p>2. KGH invites the public to express their opinions :</p> <p>A general concern is raised regarding the source of labour for work completion. Considering that the project is done entirely in the James Bay area, the representatives find of the utmost importance that a priority be granted to the contractors and to the workers of James Bay (natives and non natives). <u>They estimate that the principal positive repercussion of this kind of project passes by labour recruiting in James Bay.</u></p>

<p>M. Lemoyne mentionne qu’il serait important de vérifier si l’ouverture du territoire n’engendrera pas d’impacts négatifs sur le montant des prestations accordées par le Programme de sécurité du revenu pour les chasseurs et piégeurs cris.</p>	<p>Mr. Lemoyne mentions that it would be important to check if the opening of the territory will not generate any negative impacts on the awarded benefits from the Income Security Program for hunters and Cree trappers.</p>
<p>M. Lemoyne mentionne que le chemin forestier en tant que tel n’a pas vraiment d’impact négatif important, mais que les activités de la coupe forestière qui en découlent oui. C’est pourquoi il estime que ce type de projet devrait être considéré d’une manière plus globale.</p> <p>Les représentants présents notent principalement l’impact de la circulation de machinerie lourde sur la <u>dégradation de la route de la Baie-James</u> sur ses 106 premiers kilomètres. Ils mentionnent que l’entretien de cette route engendre des coûts pour la municipalité de la Baie-James car elle n’est pas sous la responsabilité du ministère des Transports. De plus, plusieurs <u>plaintes ont été reçues de la part de touristes</u> visitant la région avec une roulotte-remorque. Le mauvais état de la route ne la rend <u>pas sécuritaire</u>.</p>	<p>Mr. Lemoyne mentions that the forest road as such does not have really important negative impacts, however, the activities of the deforestation resulting from this could. This is why he estimates that this type of project should be considered in a more global way.</p> <p>The representatives present at the meeting mainly note the impact of heavy equipment circulation on the <u>surface deterioration of the James Bay</u> road on its first 106 kilometers. They mention that the maintenance of this road generates costs for the municipality of James Bay since it’s not under the responsibility of the Ministry of Transportation. Moreover, several <u>complaints were received from of tourists</u> visiting the area with a camping-trailer. The bad condition of the road <u>does not make it secure</u>.</p>
<p>M. Lemoyne mentionne que s’il n’y a aucune retombée, aucun avantage pour la région de la Baie-James, il n’a aucune raison de supporter le projet. Il <u>propose comme mesures d’atténuation une priorisation des entrepreneurs et main-d’œuvre de la Baie-James dans l’octroi des contrats</u>. Il mentionne qu’à sa connaissance, les entrepreneurs locaux offrent des services à des prix similaires et qu’il est disposé à informer les bénéficiaires sur les entrepreneurs de la Baie-James si ceux-ci en font la demande.</p> <p>Il mentionne aussi qu’idéalement, le bois devrait être envoyé à des industries et compagnies sur le territoire de la Baie-James afin de profiter des redevances sur la coupe. Il mentionne que ce sont des compagnies d’ailleurs qui viennent exploiter les ressources sur le territoire de la Baie-James et c’est pourquoi la région devrait être celle qui bénéficie des retombées de l’exploitation forestière.</p>	<p>Mr. Lemoyne mentions that if there is no positive repercussion, no advantage for the area of James Bay, he has no reason to support the project. <u>He proposes, as a mitigation measure, that a prioritization be established for the James Bay contractors and labour in the granting of the contracts</u>. He mentions that, to his knowledge, the local contractors offer the services at similar prices and that he is willing to inform the recipients about the James Bay contractors if requested.</p> <p>He says that, ideally, cut wood should be sent to industries and companies on the James Bay territory in order to benefit from the royalties on the cut. He also mentions that in fact outside companies come to exploit the resources on the James Bay territory and this is why the area should benefit from the repercussions of forestry development.</p>
<p>De manière générale, les représentants voient que les impacts reliés de l’ouverture du territoire peuvent être positifs en autant qu’il y ait des retombées pour la région de la Baie-James.</p>	<p>In general, the representatives see that the impacts connected to the opening of the territory can be positive as long as there are positive repercussions for the James Bay area.</p>

M. Lemoyne est conscient que parmi les points qui ont été soulevés, il y en a pour lesquels les bénéficiaires ne peuvent pas y faire grand chose, mais qu'il tenait à profiter de la tribune qui lui était donnée par le processus de consultation pour exprimer ses préoccupations sur des enjeux plus globaux que juste la construction d'un chemin forestier. Il mentionne en outre que des changements devraient être apportés par le ministère pour s'assurer que l'exploitation forestière ait des retombées positives pour la région du Nord-du-Québec.

Mr. Lemoyne is aware that among the points raised, there are some for which the recipients cannot do much, however he wanted to benefit from the platform given through the consultation process to express his concerns on more global stakes than just the construction of a forest road. He also mentions among other things that changes should be brought by the ministry to ensure that forestry development has positive repercussions for Northern Quebec.

REPORT OF CONSULTATION

Date :	3 février 2010/February 3, 2010
Lieu/Place :	Édifice Diom Blacksmith Building, Waswanipi
Heure/Time	9h30 - 12h00
Projet/Project :	Étude d'impact sur les chemins d'accès «H» et «I» / Environmental impact assessment on access roads «H» and «I»
Étaient présents/Were present :	<ul style="list-style-type: none"> - Jim MacLeod, EnviroCree - Dany Bouchard, EnviroCree - Karine Gauthier-Hétu, EnviroCree - Mhaly Bois Charlebois, EnviroCree - Roch Plusquellec, Matériaux Blanchet - Gilles Audet, Matériaux Blanchet - Annabelle Simard, Scierie Landrienne - Éric Labelle, GTC MRNF - Judy Trapper, GTC MRNF <p>Maîtres de trappe :</p> <ul style="list-style-type: none"> - Allan Gull (W4a) - Louis Ottereyes (W4) - Wally Saganash (W5c) - Gilman Ottereyes (W6)

<p>Objectifs :</p> <ul style="list-style-type: none"> - Présenter le projet aux maîtres de trappe - Obtenir des informations sur leurs connaissances du territoire - Connaître leurs préoccupations et obtenir leurs suggestions sur les mesures d'atténuation face à celles-ci. 	<p>Objectives :</p> <ul style="list-style-type: none"> - To present project to trappers - To get information on their knowledge of the territory - To know about their preoccupations and their suggestions regarding mitigation measures.
<p>1. 9h30-9h51 Consultation avec Allan Gull (W4a) :</p> <p>Karine Gauthier-Hétu (KGH) explique les grandes lignes du projet et présente une carte représentant l'aire de trappe W4a. KGH demande à Allan Gull de situer où se trouvent les camps de ce dernier. Allan Gull situe deux camps aux abords du lac Quénonisca, il indique qu'il y en a un plus permanent, tandis que l'autre est plus sommaire.</p> <p>KGH demande quelles sont les espèces pêchées dans le lac Quénonisca. Allan Gull indique qu'il y pêche l'esturgeon, le doré jaune, le cisco de lac, et la truite. Il affirme qu'il y a beaucoup de castors dans son aire de trappe.</p> <p>KGH s'informe à savoir s'il y a des sources d'eau potable sur son aire de trappe, et qui utilise son aire de</p>	<p>1. 9:30 -9:51 am Consultation with Allan Gull (W4a)</p> <p>Karine Gauthier-Hétu (KGH) explains the main outlines of the project and presents a chart representing the W4a trapping area. KGH asks Allan Gull the location of his camps. Allan Gull locates two camps accessing Lake Quénonisca, he indicates that one is more permanent, while the other is more basic.</p> <p>KGH inquires about the fish species found in Lake Quénonisca. Allan Gull indicates that there is fishing of sturgeon, yellow walleye, whitefish, and trout. He says that there are many beavers within his trapping area.</p> <p>KGH inquires about sources of drinking water on his trapping area, and who uses his trapping area. Allan Gull shows an area on the chart (the river</p>

<p>trappe. Allan Gull indique un lieu sur la carte (le cours d'eau entre le lac Quénonisca et le lac Opataouaga) où l'eau est potable. Il dit qu'à part lui, ses cinq enfants et ses petits-enfants, ainsi que leur époux utilisent l'aire. Allan Gull affirme se trouver à ses camps la fin de semaine, et de façon saisonnière, c'est-à-dire le printemps (mai) et l'automne (fin septembre-octobre).</p> <p>KGH demande à Allan Gull quels sont les avantages et désavantages que ce dernier peut énumérer quant à la construction de la route. Il explique qu'il ne voit pas de désavantages à la construction de la route, et que cela ne lui semble pas problématique. L'ouverture du territoire n'est pas un problème pour lui, il prétend qu'il y a déjà plusieurs utilisateurs du territoire qui se déplacent en motoneige et que cela ne l'affecte pas. Il indique que son camp est ouvert aux utilisateurs en cas de besoin.</p> <p>KGH questionne Allan Gull sur ses revendications et sur sa participation au projet. Ce dernier répond qu'il aimerait être tenu au courant de l'avancement des travaux.</p>	<p>between the Lake Quénonisca and the Lake Opataouaga) where water is drinkable. He says that apart from himself, his five children and his grandchildren, as well as their spouses use the area. Allan Gull says he will be over at his camps on weekends and especially in Spring (May) and in Fall (at the end of September-October).</p> <p>KGH asks Allan Gull to enumerate the advantages and disadvantages regarding the construction of the road. He explains that he doesn't see any disadvantages with the construction of the road, and that he doesn't see any problems with it. The opening of the territory is not a problem for him, he claims that there are already several users on the territory who travel by snowmobile and it doesn't affect him. He indicates that his camp is open to users whenever necessary.</p> <p>KGH questions Allan Gull on his claims and his participation to the project. He responds that he would like to be informed of work progress.</p>
<p>2. Intervention de Steven Blacksmith de l'entreprise crie Mamu Sibi</p> <p>Steven Blacksmith se présente et décrit son entreprise, qu'il dit appartenir à la communauté. Il s'agit d'une entreprise crie spécialisée dans la coupe, le transport du bois, et la mise en place de chemin. L'entreprise compte également 11 employés qui ont été formés en sylviculture. Steven Blacksmith indique que ces employés n'ont pas de travail. Il demande à Matériaux Blanchet s'il serait possible que Mamu Sibi participe au projet de route. Roch Plusquellec lui indique qu'en ce qui a trait aux travaux de construction, les contractants sont choisis par soumission et qu'il les invite à soumissionner lorsque ce sera le temps. Il lui indique aussi de lui faire parvenir sa liste d'employés en sylviculture, et qu'il fera en sorte qu'ils soient obligatoirement employés par la compagnie qui sera en charge de ces travaux.</p>	<p>2. Intervention of Steven Blacksmith of Cree company Mamu Sibi</p> <p>Steven Blacksmith presents and describes his company, which he says belongs to the community. It is about a Cree company specialized in wood cutting, transportation and road work. The company also has 11 employees who were trained in silviculture. Steven Blacksmith indicates that these employees do not have work. He asks Matériaux Blanchet if it would be possible that Mamu Sibi take part in the road project. Roch Plusquellec indicates that construction work is given out to contractors through tendering and invites them to tender when it is time. He also asks him to forward a list of employees in silviculture, and he will arrange it so that they are employed by the company who will be in charge of this work.</p>

3. 10h22-10h54 Consultation avec Louis Ottereyes (W4)

KGH explique les grandes lignes du projet et présente une carte représentant l'aire de trappe W4. KGH demande à Louis Ottereyes de situer où se trouvent les camps de ce dernier. Louis Ottereyes indique où se trouve son camp, et confirme l'existence des camps non-autochtones qui sont déjà identifiés sur la carte. Il mentionne que les utilisateurs de ces camps viennent en automne, et utilisent des petits avions ou des hélicoptères pour se rendre sur place. Il indique que sa sœur et deux ou trois familles autochtones utilisent le territoire.

Louis Ottereyes fait mention qu'il désire des aires de stationnement pour sa camionnette le long de la route d'accès. Il souhaite que la route soit assez large pour pouvoir stationner son véhicule, il trouve que l'accès déjà présent n'est pas assez large. Roch Plusquellec et Gilles Lajeunesse répondent qu'il devrait y avoir des aires de virée à environ chaque 2 km.

Il situe sur la carte trois sentiers de portage et deux sentiers de motoneige. Il indique également un lieu près du lac Salamandre où il souhaite établir son camp permanent. Il désire donc qu'on lui indique lorsque la route d'accès sera rendue à cet endroit, car il désire un accès pour se rendre au lac.

KGH demande à Louis Ottereyes s'il connaît des lieux de frayères, et/ou de rapides. Il indique une zone de frayère potentielle à l'est du futur emplacement du pont Salamandre sans mentionner de quelle espèce il s'agit, et quelques rapides sur la rivière Salamandre. KGH lui demande ce qui devrait être fait pour protéger ces secteurs. Louis Ottereyes indique que selon lui, si la législation en ce qui a trait aux cours d'eau est respectée, il ne voit aucun problème. Il précise que la rivière Salamandre est un bon habitat pour la loutre, étant donné la grande variété de poissons s'y trouvant. Il identifie plus particulièrement l'omble de fontaine, le grand brochet, le doré jaune et le cisco de lac. Il affirme aussi que la densité d'orignaux est très forte dans ce secteur. Roch Plusquellec et Gilles Lajeunesse indiquent qu'ils désirent aller sur le site futur du pont afin de prendre des photos et de mieux cibler les contraintes physiques et environnementales. Louis Ottereyes

3. 10:22-10:54 am Consultation with Louis Ottereyes (W4)

KGH explains the project's main outlines and presents a chart showing trapping area W4. KGH asks Louis Ottereyes to show the location of his camps. Louis Ottereyes indicates where his camp is, and confirms the existence of camps of non-natives already identified on the chart. He mentions that the users of these camps come in Fall, and use small planes or helicopters to get to the site. He also says that his sister and two or three native families use the territory.

Louis Ottereyes also mentions that he wishes to have parking areas for his vehicle along the access road. He would like the road to be broader for him to be able to park his vehicle since he finds that the access already made is not broad enough. Roch Plusquellec and Gilles Lajeunesse reply that there should be turning point areas at approximately every 2 km.

He locates, on the chart, three portage trails and two snowmobile paths. He also indicates a place close to Lake Salamander where he wishes to establish his permanent camp. He thus wishes to be informed when the access road will be in that area because he wishes to have an access to get to the lake.

KGH asks Louis Ottereyes if he knows any spawning grounds, and/or rapids. He indicates a potential spawning ground area east of the future site of the Salamander bridge without mentioning any specific species, and some rapids on the Salamander river. KGH asks him what should be done to protect these areas. Louis Ottereyes says that according to him, if the legislation regarding rivers is respected, he doesn't see any problem. He specifies that the Salamander river is a good habitat for the otter, because of the large variety of fish found there. He more particularly identifies the brook trout, the large pike, the walleye and whitefish. He also says that the density of moose is very strong in this area. Roch Plusquellec and Gilles Lajeunesse indicate that they wish to go to the future site of the bridge in order to take photographs and to better target the physical and environmental stresses. Louis Ottereyes answers that he agrees to accompany them

<p>répond qu'il accepte de les accompagner et qu'il sera présent à son camp les deux premières semaines de mars.</p> <p>Louis Ottereyes prétend que la régénération suivant la coupe crée des habitats propices à la faune. KGH lui demande s'il voit des désavantages à la construction de la route. Il indique qu'il ne voit aucun désavantage.</p> <p>KGH lui demande s'il trouverait utile de savoir comment avancent les travaux. Louis Ottereyes lui répond que oui.</p> <p>4. 10h55-11h09 Consultation avec Wally Saganash (W5c)</p> <p>KGH explique les grandes lignes du projet et présente une carte représentant l'aire de trappe W5c. KGH demande à Wally Saganash de situer où se trouvent les camps de ce dernier. Il indique trois camps aux abords du lac Quénonisca et explique qu'ils sont à son usage et à celui de sa famille. Wally Saganash explique qu'il est favorable au projet, puisqu'il souhaite avoir un meilleur accès à son aire de trappe, et que l'ouverture du territoire n'est pas quelque chose qui le perturbe. Il soutient également qu'il n'a pas d'objection face à la coupe forestière puisque le feu éliminerait certains arbres de toute façon.</p> <p>KGH demande à Wally Saganash s'il a des demandes particulières à faire. Ce dernier indique un endroit où il souhaiterait avoir un accès à partir de la route jusqu'au lac Quénonisca. Roch Plusquellec explique qu'ils le tiendront au courant du déroulement des travaux, et qu'ils ne devraient pas arriver à ce point avant 2011 ou 2012. KGH demande à Wally Saganash si le passage dans la zone de 1% lui convient toujours. Roch Plusquellec demande s'il serait possible de déplacer cette zone, Éric Labelle répond que c'est très compliqué et que cela doit être approuvé par le CTA. KGH demande à Wally Saganash qu'elles sont les espèces de poissons qu'il pêche. Ce dernier énumère l'esturgeon jaune, le doré jaune, le cisco de lac et le meunier noir.</p>	<p>and that he will be at his camp the first two weeks of March</p> <p>Louis Ottereyes claims that regeneration following the cut creates favourable wildlife habitats. KGH asks him whether he sees disadvantages with the construction of the road. He indicates that he does not see any disadvantage.</p> <p>KGH asks him whether it would be useful to know about work progress. Louis Ottereyes answers yes.</p> <p>4. 10:55-11:09 am Consultation avec Wally Saganash (W5c)</p> <p>KGH explains the project's main outlines and presents a chart representing trapping area W5c. KGH asks Wally Saganash to locate his camps. He indicates three camps accessing Lake Quenonisca and explains that they are for his and his family's personal use. Wally Saganash explains that he is favourable to the project, since he is looking to have better access to his trapping area, and that the opening of the territory is not something that worries him. He has no objections regarding forest cut since fire would eliminate some trees anyway.</p> <p>KGH asks Wally Saganash if he has any particular requests to make. He indicates a place where he wishes to have an access from the road to Lake Quenonisca. Roch Plusquellec explains that they will keep him informed on work progress however they should not arrive at this point before 2011 or 2012. KGH asks Wally Saganash if the passage in the 1% zone is still appropriate for him. Roch Plusquellec asks whether it would be possible to move this zone, Eric Labelle answers that it is very complicated to do so and that it must be approved by the CTA. KGH asks Wally Saganash about the type of fish species that he fishes. He fishes the yellow sturgeon, the walleye, the whitefish and the white sucker.</p>
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<p>4. 11h33-11h53 Consultation avec Gilman Ottereyes (W6)</p> <p>KGH explique les grandes lignes du projet et présente une carte représentant l'aire de trappe W6. Gilman Ottereyes explique qu'il est le frère de Randy Ottereyes, et que son nom doit apparaître sur l'aire de trappe. Il s'informe à savoir quand la route sera tracée. Roch Plusquellec lui explique qu'elle sera construite l'année prochaine. Gilman Ottereyes mentionne qu'il a discuté du projet avec sa famille. Ils ne souhaitent pas qu'il y ait un accès au lac Evans puisqu'il s'agit d'une zone où il n'y a jamais eu de dérangement. KGH lui explique qu'il n'y aura pas d'accès au lac Evans.</p> <p>Il exprime son désir d'obtenir un accès de la route jusqu'au lac sans nom (que lui et sa famille appellent Rabbit lake), et qu'il construira un camp à ce moment. Il n'en possède pas actuellement. Pour ce faire, Matériaux Blanchet va communiquer avec lui et son frère pour situer les blocs de coupe, et les bancs d'emprunt. Gilman Ottereyes explique que si la route respecte les conditions qu'il a mentionnées et que les études environnementales sont faites selon les normes, il ne s'oppose pas au projet.</p>	<p>4. 11:33-11:53 am Consultation avec Gilman Ottereyes (W6)</p> <p>KGH explains the main outlines of the project and presents a chart representing trapping area W6. Gilman Ottereyes explains why he is Randy Ottereyes' brother, and that his name must appear on the trapping area. He inquires about when the road will be traced. Roch Plusquellec explains that it will be built the next year. Gilman Ottereyes mentions that he discussed the project with his family. They do not wish for an access to Evans Lake since it is an area where there hasn't been any disturbance. KGH explains there will be no access to the Evans Lake.</p> <p>He expresses his wish for an access road to the lake without a name (his family and himself call it Lake Rabbit), and that he will build a camp when it's done. He doesn't have one at the moment. Matériaux Blanchet will communicate with him and his brother to locate the cutting, and the gravel pits. Gilman Ottereyes explains that if the road respects the conditions which he mentioned and that the environmental studies are made according to standards, he will not oppose the project.</p>
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