Hydro Québec

Société d'énergie de la Baie James

Eastmain-1-A and Sarcelle Powerhouses and Rupert diversion

Summary of Mitigation and Enhancement Measures

Part 6 – *Chisasibi*

May 2012

The Community of Chisasibi and the Project

The Community of Chisasibi and the Project

Map CH-1 – **Territory of the Community of Chisasibi**

INTRODUCTION

This document was prepared as part of the Cree public consultation process introduced by the Environmental and Social Impact Review Committee (COMEX) for the Eastmain-1-A and Sarcelle powerhouses and Rupert diversion project.

It will serve as a reference for the COMEX members, Cree land users and Cree community representatives to keep them abreast of the mitigation and enhancement measures implemented on each trapline and the general measures to promote economic spinoffs in the Cree community (workers, companies and tallymen) and jobsite integration of Cree workers. It also includes assessments of the effectiveness of the measures based on monitoring programs and interviews with the users concerned.

The document is in six parts, one for each of the six communities of Mistissini, Nemaska, Waskaganish, Eastmain, Wemindji and Chisasibi.

This part is a summary for the community of Chisasibi (see Map CH-1).

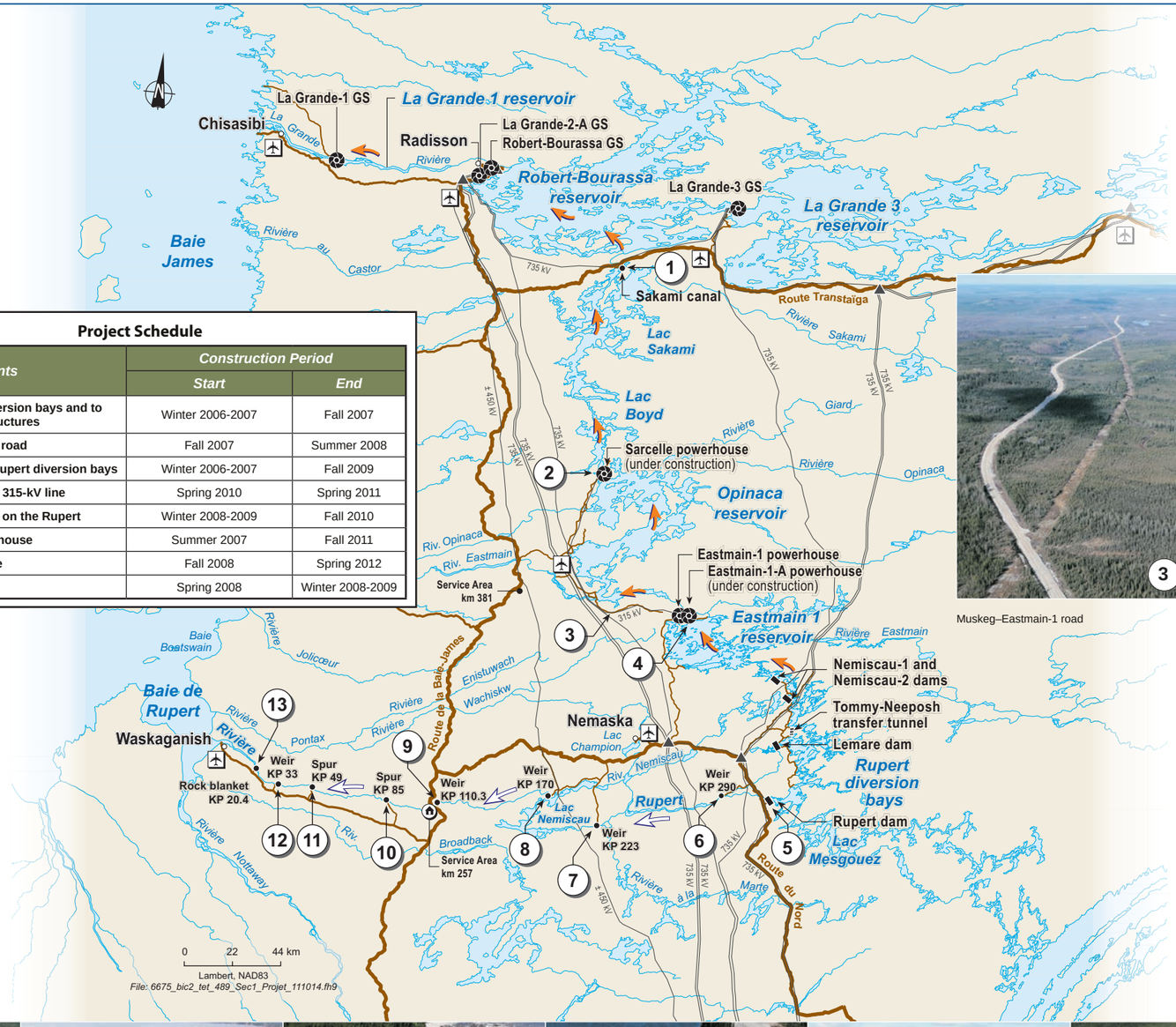
Map CH-2 – **Components of the Eastmain-1-A/ Sarcelle/Rupert Project**

Sakami canal

Sarcelle powerhouse (under construction)

Project Schedule

Project Components	*Construction Period*	
	Start	*End*
Access roads to diversion bays and to Rupert diversion structures	Winter 2006-2007	Fall 2007
Muskeg–Eastmain-1 road	Fall 2007	Summer 2008
Dams and dikes in Rupert diversion bays	Winter 2006-2007	Fall 2009
Eastmain-1–Sarcelle 315-kV line	Spring 2010	Spring 2011
Hydraulic structures on the Rupert	Winter 2008-2009	Fall 2010
Eastmain-1-A powerhouse	Summer 2007	Fall 2011
Sarcelle powerhouse	Fall 2008	Spring 2012
Sakami canal	Spring 2008	Winter 2008-2009



Muskeg–Eastmain-1 road

Eastmain-1-A powerhouse (under construction)

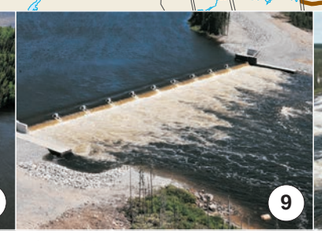
Rupert dam

Rock blanket KP 20.4

Weir KP 33

Spur KP 49

Spur KP 85



Weir KP 110.3

Weir KP 170

Weir KP 223

Weir KP 290

Summary of Mitigation and Enhancement Measures

1.0 Project and Agreements

In the *Agreement Concerning a New Relationship Between the Gouvernement du Québec and the Crees of Québec* signed on February 7, 2002, the Crees consented to construction of the Eastmain-1-A powerhouse and Rupert diversion project subject to the environmental assessment required under the *James Bay and Northern Québec Agreement*. Among other things, the Agreement stipulates that:

- Hydro-Québec will pay the cost of all remedial work that is required by the government authorizations for the project;
- Remedial work for the Crees, jobs for Crees, contracts for Crees and Cree companies and other topics related to the project are covered under the *Boumhounan Agreement*.

In the *Boumhounan Agreement*[1], Hydro-Québec made specific commitments:

- Reduce project impacts by implementing remedial and mitigation measures;
- Ensure that Crees participate in project-related studies and construction.

It was in this context that SEBJ signed letters of undertaking with every tallyman directly affected by the project regarding implementation of the mitigation and enhancement measures so that the tallymen could continue to practise their traditional activities during and after project construction.

Subsequently, in 2010, the decision by the parties to the *Boumhounan Agreement* to amend certain provisions related to Sarcelle powerhouse led to the signature of the *Convention relative à la centrale de la Sarcelle* [Agreement concerning Sarcelle powerhouse][2] and the *Convention complémentaire nº2* [Complementary agreement No. 2]. The latter agreement specifies that the flow of water diverted to Sarcelle powerhouse and the Sarcelle control structure must not exceed 2,770 m^3/s, except in emergencies.

Finally, note that the community of Chisasibi is not a signatory to the *Boumhounan Agreement*. However, we took the community into account in the environmental assessment for the project and a mitigation measure was retained to respond to an important community concern. This measure consisted of installing a granular blanket on parts of the southern bank of the river downstream of La Grande-1 subject to erosion (9.2 km according to the 2004 impact statement). Furthermore, La Grande Rivière and the Baie James (James Bay) were included in the study area of certain environmental monitoring programs associated with the Eastmain-1-A/Sarcelle/Rupert project.

1. The Cree signatories of the *Boumhounan Agreement* are the Grand Council of the Crees (Eeyou Istchee), the Cree Regional Authority (CRA), the Eastmain Band, the Cree Nation of Mistissini, the Nemaska Band and the Waskaganish Band.

2. In the *Convention relative à la centrale de la Sarcelle*, in addition to the description of the Sarcelle project and the La Sarcelle Regional Development Fund, amendments have been made to include the Cree Nation of Wemindji in the beneficiaries of the *Boumhounan Agreement*.

2.0 Main Project Components and Construction Phases

In November 2006 and February 2007, upon completion of the environmental assessment process, Hydro-Québec obtained the necessary provincial and federal authorizations to build the Eastmain-1-A and Sarcelle powerhouses and Rupert diversion project. This project, in the Baie-James region, affected the Cree communities of Mistissini, Nemaska, Waskaganish, Eastmain, Wemindji and Chisasibi.

The main project components illustrated on Map CH-2, for which construction began in February 2007, are the following:

- **Eastmain-1-A powerhouse** (768 MW with three Francis turbines) near the existing Eastmain-1 facility.
- **Sarcelle powerhouse** (150 MW with three bulb-type turbines) at the outlet of Opinaca reservoir near the Sarcelle control structure.
- The **Rupert diversion includes**:
  - Four dams, including Rupert dam at KP 314 of the river, and 73 dikes;
  - A spillway on the Rivière Rupert at the dam site that is also used as an instream flow release structure;
  - Five other instream flow release structures built into some of the retaining structures in the diversion bays (Nemiscau-1, Nemiscau-2, Ruisseau-Arques, Lemare and LR-51-52);
  - A 2.9-km-long transfer tunnel between the two diversion bays with a maximum capacity of 800 m^3/s;
  - Nine canals (four in the forebay and five in the tailbay) totalling about 7 km in length, to facilitate flow in the different parts of the diversion bays.

The Rupert diversion began operation on November 7, 2009, and since December 3, 2009, has channelled part of the Rupert's flow to Eastmain-1 powerhouse and the two new powerhouses (Eastmain-1-A and Sarcelle), then to Robert-Bourassa, La Grande-2-A and La Grande-1 generating stations. The average annual flow diverted to the Eastmain watershed is about 452 m^3/s.

The project also includes:

- **Eight hydraulic structures on the Rivière Rupert** at KP 20.4, 33, 49, 85, 110.3, 170, 223 and 290, which substantially maintain the water level in nearly half of the river downstream of the diversion point at KP 314;
- **A canal with a concrete weir** at the outlet of Lac Sakami was completed in spring 2009 and channels the additional flow from the Rupert diversion while maintaining the stipulated operating levels in the lake;
- **Two 315-kV transmission lines** to bring the power generated by the new plants onto the grid: one 101-km line links Sarcelle and Eastmain-1 powerhouses and the other 0.5-km line connects Eastmain-1 and Eastmain-1-A powerhouses.

The following were also required to complete the project:

- 131 km of temporary construction roads and permanent roads to the main structures;
- A permanent, 40-km Muskeg–Eastmain-1 road connecting Muskeg substation and the Eastmain-1–Nemiscau road;
- Five temporary workcamps to house workers, including two camps used during construction of the Eastmain-1 hydroelectric development (Nemiscau and Eastmain workcamps) and three new camps (Rupert, Sarcelle and Oujeck);
- Food and lodging services at Siibii camp in the village of Waskaganish were used by workers assigned to construction of the hydraulic structures at KP 20.4, 33 and 49 as well as at the service area at Km 257 for workers assigned to the structures at KP 85 and 110.3.

3.0 Cree Information and Consultation Process

The Eastmain-1-A/Sarcelle/Rupert project stands out not only because of its technical achievements, but also for its unique approach to relations with the host community. A process for improving our ways of doing things emerged as the various stages of the project proceeded, allowing us to establish a climate of cooperation and respect with the Crees.

Formal participation process

PRELIMINARY STUDIES 1997-2001

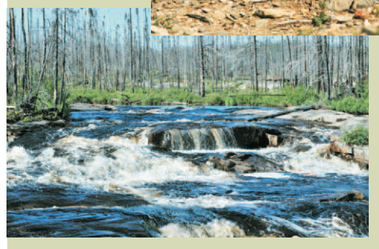
DRAFT PHASE 2002-2006

CONSTRUCTION 2007-2012

OPERATION SINCE 2010

1999 Agreement with Mistissini

The agreement authorized Hydro-Québec to proceed with the necessary technical studies within the Mistissini traplines to examine the alternatives for partial diversion of the Rupert at KP 314 or KP 490



Cree–Hydro-Québec Feasibility Study Group (Boumhounan Committee)

Forum for discussing field studies and surveys, project design, impacts and mitigation measures, as well as for consulting and disseminating information to the Crees. The committee is made up of representatives of:

- Wemindji, Eastmain, Chisasibi, Waskaganish, Nemaska and Mistissini;
- Cree Regional Authority (CRA);
- Hydro-Québec/SEBJ.

Boumhounan Committee members:

- **Examined** terms of reference and study results;
- **Were consulted** on technical aspects of the project;
- **Participated** in siting hydraulic structures on the Rupert and in fine-tuning the instream flow regime;
- **Collaborated** in the review of the Environmental Impact Statement.

33 meetings

Monitoring Committee

The Monitoring Committee combines members of the *Technical and Environmental Committee* for the Eastmain-1 project and the *Boumhounan Committee* for the Eastmain-1-A/Sarcelle/Rupert project and is a discussion forum on technical, social and environmental aspects of the project. The committee is made up of representatives of:

- Wemindji, Eastmain, Chisasibi, Waskaganish, Nemaska and Mistissini;
- Niskamoon Corporation;
- Hydro-Québec/SEBJ.

66 meetings as of December 13, 2011

Monitoring Committee members:

- **Agree** with terms of reference;
- **Discuss** study results;
- **Confirm** the selection of consultants;
- **Participate** in the evaluation of consulting firms;
- **Agree** on certain modifications to technical aspects of the project, such as:
  - Strategies for accessing hydraulic structures,
  - Location of infrastructures for worker accommodations;
- **Support** users in developing and implementing mitigation measures;
- **Create** subcommittees to discuss key issues in greater depth such as fish, the human environment and navigation.

Other joint committees

- Cree tourism – Working group made up of COTA, CNACA, Niskamoon Corporation and Hydro-Québec
- Cree tourism – Working group made up of COTA, CNACA, Niskamoon Corporation and Hydro-Québec
- Cree health – Committee made up of the Cree Board of Health and Social Services and Hydro-Québec
- Instream flow management – *Rupert River Water Management Board*

Communication tools:

- Information offices in the communities run by a representative and a coordinator;
- *Boumhounan Newsletter* 6 and *Boumhounan NewsFlash* 14 ;
- Advertising, notices and special advertising sections in *The Nation*;
- CD-ROM on the project (in Cree).

Communication tools:

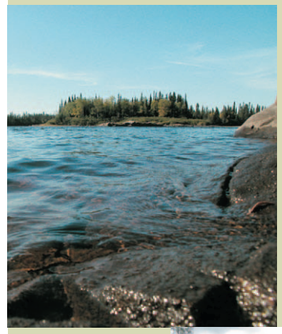
- *Boumhounan Newsletter* 14 (quarterly);
- Advertising and notices in *The Nation* and *Destination*;
- *Hydlo and Friends*, semi-monthly radio show on JBCCS;
- Visits to Cree schools to present the *Blue water = Green energy* workshop;
- Jobsite tours on request.

84 shows as of December 21, 2011

Communication tools:

- *Tipaachimuwin* newsletter 2 ;
- Notices and monthly advertising sections in *The Nation*;
- *Hydlo and Friends*, semi-monthly radio show on JBCCS;
- Web microsite.

Information and consultation activities

	PRELIMINARY STUDIES	DRAFT PHASE	CONSTRUCTION	OPERATION
Activities with tallymen and other users	**Participation in geotechnical field campaigns** • Clearing • Hydrometric surveys • Laboratory analysis of soil samples Over 2,000 person-days  	**Participation in technical and environmental studies** • Meeting with tallymen to present field study logistics • Tallymen or their representatives accompany field crews and participate in field surveys 23,156 days worked **Activities to collect and incorporate traditional knowledge** (woodland caribou, spawning ground locations, fish species in the Rupert, land use) **Workshops on impacts and mitigation measures** with tallymen and their guests (2003-2004) 24 meetings/ over 500 participants **Public information and discussion sessions** in the four communities most affected, namely Waskaganish, Nemaska, Mistissini and Eastmain (2003-2004), and **presentations on specific topics at the Crees' request** (Waskaganish Youth Council, Nadoshtin Corporation, Waskaganish Band Council and Grand Council of the Crees) 9 meetings/ over 364 participants	**Participation in technical studies and environmental follow-ups** • Meeting with tallymen to discuss and plan logistics for field studies • Tallymen or their representatives accompany field crews and participate in field surveys • Training and orientation of Cree personnel by consulting firms (study objectives, health and safety, traditional knowledge, expectations, etc.) 20,747 days worked as of December 13, 2011  **Annual individual meetings with the 33 tallymen** to review environmental commitments, hear their concerns and elicit their comments 426 meetings from 2007 to 2011 	**Annual meetings** with tallymen in each community  **Thematic presentations** on request (examples: lake cisco, eelgrass, Weh-Sees Indohoun Corporation)
Activities with communities	**Public meetings** in the communities of Chisasibi, Wemindji, Waskaganish, Nemaska, Mistissini and Eastmain to ensure that the project took the Crees' concerns into account 20 meetings in the summer of 1998 Visits by Hydro-Québec President and CEO and the President of Hydro-Québec Production to the Cree communities of Chisasibi, Wemindji, Waskaganish, Mistissini and Eastmain, and with the Grand Council of the Crees to propose development of a 1,280-MW project involving partial diversion of the Rivière Rupert at KP 314	**Information-sharing meetings with the tallymen** affected by the development of the La Grande complex, the Eastmain-1 project and the Eastmain-1-A/Sarcelle/Rupert project (2003) **Regional trappers conference** to discuss their perceptions of the project (September 2006) **Cree–Hydro-Québec–SEBJ conference** on lessons to be drawn from the Eastmain-1 project to ensure that the Eastmain-1-A/Sarcelle/Rupert project proceeds smoothly (November 2006)	**Frequent, regular discussions** with team members responsible for relations with Crees at the jobsite (Records of Cree requests and complaints)  **Semi-annual information tours** to the Cree communities concerned • In winter, presentation of studies and upcoming work • In summer, presentation of the previous year's follow-up results 10 tours from 2007 to 2011 **Participation in annual general meetings** in the communities Information booth or presentation	

Examples of concrete results of the consultation process

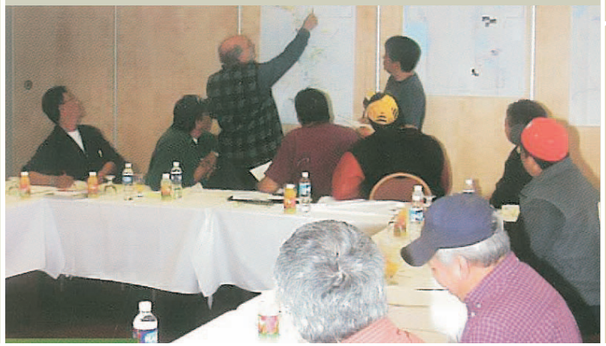
PRELIMINARY STUDIES

Paix des Braves **agreement signed in February 2002, under which the Crees agreed to construction of the Eastmain-1 project as defined in the JBNQA, and to the Eastmain-1-A powerhouse and Rupert diversion project subject to the environmental assessment carried out by the relevant authorities**

Choice of alternative involving partial diversion of the Rupert at KP 314 and signature of the *Boumhounan Agreement* in February 2002

DRAFT PHASE

Joint identification of mitigation measures based on past experience with the La Grande complex project to mitigate anticipated impacts and facilitate land use



CONSTRUCTION

Specification of mitigation measures and implementation by tallymen

Camp relocation

The tallyman:

- Determined the location of his new camp;
- Chose the camp layout;
- Assessed costs;
- Built his camp.

Navigation

The tallyman:

- Identified corridors to be cleared for navigation and land use;
- Participated in flyovers of corridors;
- Participated in marking areas to be cleared;
- Did the clearing himself or subcontracted it to the contractor of his choice;
- Participated in river flyovers and navigated the river to test cleared corridors;
- Determined locations of signs along the shoreline;
- Installed signs;
- Commented on navigation charts.

288 signs

Access roads

The tallyman:

- Identified preliminary route, walked it and marked it;
- Optimized route (culverts, curves, slopes, wetlands);
- Executed contract to clear the right-of-way.

OPERATION

Follow-up on effectiveness of mitigation measures

Instream flow management

***Rupert River Water Management Board*:**

- Monitors follow-up results;
- Suggests modifications to the instream flow regime when needed.

Navigation

The tallyman:

- Monitors navigation corridors annually (wood debris, condition of signs, etc.).

Fish

***Smokey Hill Liaison Committee*:**

- Identifies measures required for continuation of the traditional cisco fishery.

Cree participation in every phase of implementation of mitigation measures

Information on the location of the gauging stations

Seeding of exposed banks along the Rupert River

Training on safety when close to open water

Bathymetric surveys

Job site visit by Cree elders

Signage in the navigation corridors on the Rupert diversion bays

Development of brook trout spawning grounds

Signage in the navigation corridors on the Rupert diversion bays

Anadromous cisco fishing at the Smokey Hill site

Construction of fishing pools at the Smokey Hill site

Consultations with tallymen on mitigation measures

6675_cm_1324_fiche_120511a.fh9

4.0 The Project and the Community of Chisasibi

The Cree village of Chisasibi, with approximately 4,500 inhabitants, is located at the mouth of La Grande Rivière, on the south shore. By road, the village is:

- 32 km from La Grande-1 generating station;
- 84 km from the junction of the Route de la Baie-James;
- 138 km from the junction of Route Transtaïga;
- 197 km from the outlet of Lac Sakami (Sakami bridge) via Route Transtaïga.

The Cree Nation of Chisasibi hunting grounds cover more than 81,733 km^2. The land is divided into 40 traplines, each operated by a tallyman who, with his family, harvests the wildlife resources. In agreement with the tallymen concerned, other community members may build camps on the traplines and use the resources.

Traplines affected

For the purposes of the Environmental Impact Statement, the six traplines on either side of La Grande Rivière, from the Baie James (James Bay) coast to Robert-Bourassa reservoir, were considered to be within the project's study area. However, given that the minimum and maximum operating flows of Robert-Bourassa and La Grande-1 generating stations, as well as the minimum and maximum operating levels of their reservoirs, did not change, only traplines CH35 and CH33, affected by the implementation of granular blankets on the south shore of La Grande Rivière downstream of the La Grande-1 generating station, were included in the impact analysis based on which various mitigation measures were identified (see Map CH-3). Special letters of undertaking were drawn up for the two traplines regarding the mitigation or enhancement measures.

According to the Environmental Impact Statement, the granular blankets were meant to be implemented over 9.2 km but for safety reasons, only 6.4 km was completed.

The draft-design and follow-up studies showed heavy usage of these two traplines by the members of the Chisasibi community:

> *« The Chisasibi road crosses traplines CH35 and CH33. They are used frequently for small- and large-game hunting, goose-hunting and fishing by several members of the community of Chisasibi. Some members even have camps on the traplines. In addition, community members hunt along La Grande Rivière, downstream of La Grande-1 generating station. They hunt goose, partridge and hare in the spring and fall. »*

Table CH-1 shows the project components of the granular blankets installed on traplines CH33 and CH35.

The charts in Figure CH-1 illustrate the flows through the generating stations at Robert-Bourassa and La Grande 1 reservoirs as well as variations in the water levels at the two reservoirs and at the village of Chisasibi on La Grande Rivière for the 2006-2011 period.

Construction of granular blanket

Riprap being laid down on the slope

Spur built into the granular blanket for fishing activities

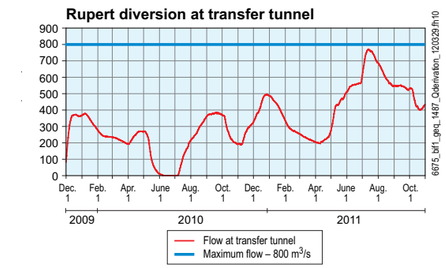
Map CH-3 – **Project Components Located on the Territory of Chisasibi**

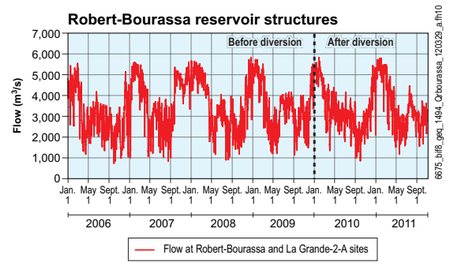
Table CH-1 – **Project Components on the Traplines**

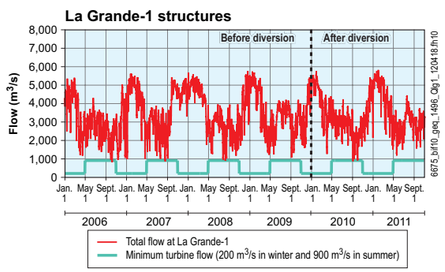
Trapline (Area – km²)	**Tallyman**	**Granular Blanket**	**Other Activities**	**Body of Water with Increased Flow**
CH35 (606 km²)	**Josie Sam**	No sections	• Borrow pits	• La Grande 1 reservoir: maximum and minimum levels unchanged
CH33 (802 km²)	**John E. Sam**	• 920 m of granular blanket from KP 9.7 to KP 10.6 • 5,500 m of granular blanket divided between KP 12 and KP 17 and between KP 20 and KP 22.5	• Borrow pits • Construction roads	• La Grande 1 reservoir: maximum and minimum levels unchanged • Downstream segment of La Grande Rivière: maximum and minimum levels unchanged

Figure CH-1 – **Main Hydraulic Characteristics (normal hydrological conditions)**

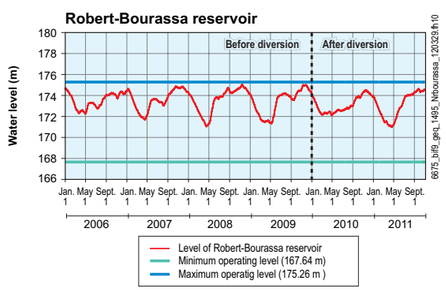
Daily Flows

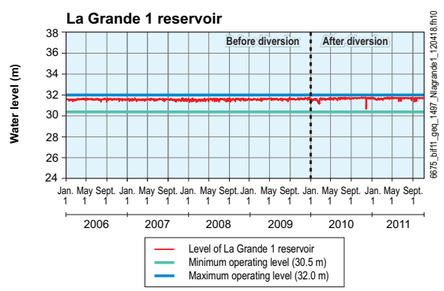


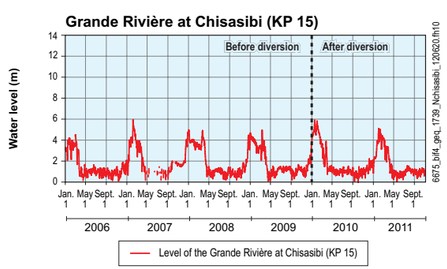




Water Levels







Robert-Bourassa reservoir

- Maximum (175.26 m) and minimum (167.64 m) operating levels remain unchanged.
- After diversion, average water levels in the reservoir were slightly lower (by 0.44 m) than before diversion.
  - 2006-2009 – minimum 171.03 m – maximum 174.98 m – **average 173.50 m** – maximum difference of 3.95 m
  - 2010-2011 – minimum 170.98 m – maximum 174.60 m – **average 173.06 m** – maximum difference of 3.62 m
- After diversion, the average winter drawdown in the reservoir was about 0.5 m lower than before diversion.

La Grande 1 reservoir

- Maximum (32.0 m) and minimum (30.5 m) operating levels remain unchanged.
- After diversion, average water levels in the reservoir were slightly higher (by 0.08 m) than before diversion, as was the water-level fluctuation range (increase of 0.64 m).
  - 2006–2009 – minimum 31.43 m – maximum 31.92 m – **average 31.70 m** – maximum difference of 0.49 m
  - 2010–2011 – minimum 30.79 m – maximum 31.92 m – **average 31.78 m** – maximum difference of 1.13 m

Grande Rivière at Chisasibi

- After diversion, average water levels in the Grande Rivière at Chisasibi were slightly lower (by 0.07 m) than before diversion.
  - 2006–2009 – minimum 0.13 m – maximum 5.96 m – **average 1.83 m** – maximum difference of 5.83 m
  - 2010–2011 – minimum 0.02 m – maximum 5.92 m – **average 1.76 m** – maximum difference of 5.90 m

5.0 Issues and Concerns

For the community of Chisasibi, the main issues identified in the Environmental Impact Statement (2004) were:

- Continuation of Cree hunting, fishing and trapping activities;
- Economic spinoffs (jobs and contracts).

Concerns expressed in the draft design phase

The main concerns expressed by the Chisasibi participants at the public hearings in 2005 are presented below. It should be noted, however, that the concerns indicated in italics are also associated with the neighboring communities affected by the project (Mistissini, Nemaska, Waskaganish, Eastmain and Wemindji).

General concerns

The changes associated with the hydroelectric projects

- *Positive: improved health conditions in general and the availability of paid employment;*
- *Negative: physical, mental and emotional problems.*

Specific concerns

The safety of the dams and related structures

- *Fears regarding the safety of the structures located upstream of Chisasibi on La Grande Rivière, given the additional flow associated with the Rupert diversion and the resulting higher stress levels for the Cree Nation.*

Shoreline erosion and landslides

- Increased erosion and landslides, in summer and winter, due to sustained high flow.

Impacts on wildlife

- The possible drop in animal populations (cumulative impacts) and the project's effect on the harvesting levels guaranteed under the JBNQA;
- The additional impact on the ecosystem and marine life, eelgrass, migrating geese and fish in the bay.

Ice conditions and travelling on La Grande Rivière

- Worsening problems for spring, fall and winter travel on the river, which is already difficult and somewhat unsafe, particularly by snowmobile;
- The frequency and scope of ice jams and flooding.

Mercury in fish

- The fear of a further increase in fish mercury levels, which would lead to another restriction on fish consumption from La Grande Rivière and La Grande 1 reservoir.

Jobs and training

- The underrepresentation of Cree workers in the construction and operation of previous Hydro-Québec facilities;
- Training of young people so that they can have access to specialized jobs;
- The French language requirement for obtaining a job at Hydro-Québec.

The Aboriginal craft potential

- The availability of raw materials (moosehide, birch bark) used to make crafts.

Concerns expressed during the construction and operation phases

Economic spinoffs

- Participation by the tallymen in the project as contractors for clearing work areas and for mitigation and enhancement measures on their traplines.

6.0 Mitigation and Enhancement Measures on the Traplines

The Rupert diversion project has no project components on the Chisasibi territory and the related additional flow passes through from east to west via Robert-Bourassa reservoir, La Grande 1 reservoir and La Grande Rivière. Hydro-Québec did not modify the minimum and maximum operating levels of the reservoirs or the maximum usable flow of the generating stations, including La Grande-1 (5,950 m^3/s). As a result, the draft-design study included no environmental impacts. However, given that the already active erosion on the banks of La Grande Rivière downstream of La Grande-1 was a major concern for the residents of Chisasibi, Hydro-Québec agreed to implement granular blankets on the south shore of La Grande Rivière in order to reduce the active bank erosion and the sediment load in the river near the Chisasibi water intake.

Given that the implementation of the granular blankets had an impact on traplines CH33 and CH35, mitigation and enhancement measures were defined with the tallymen affected. The measures are presented in tables CH-2 and CH-3 and shown on Maps CH-4 and CH-5. Letters of undertaking were drawn up with each of the tallymen (see the box below).

Context for the Letters of Undertaking with the Tallymen

As part of the Environmental Impact Statement, and in response to questions 290, 291 and 292, which requested additional information concerning the measures to ensure the continued pursuit of traditional activities during the various project phases, the tallymen and their guests were asked, in 2005, 2006 and 2007, to tell Hydro-Québec about the measures they hoped would be implemented so that they could continue to practise their traditional activities during and after project construction.

At the end of this process, Hydro-Québec/SEBJ signed a letter of undertaking with each of the 34 tallymen directly affected by the project, including two in the Chisasibi community. Each letter included:

- The list of measures requested by the tallyman and accepted by Hydro-Québec/SEBJ;
- A map showing the approximate location of these measures.

Every year, a meeting is held with each tallyman to review implementation of the undertakings and make any necessary adjustments.

6.1 Measures to Maintain and Improve Land Access

Measures to maintain and improve land access involve two types of access and travel in the traplines, namely navigation on La Grande 1 reservoir and land access (see Table CH-2 and Map CH-4).

Navigation

A spot for beaching boats

A spot for beaching boats was built into the section of the granular blanket at KP 22.3 of La Grande Rivière.

Boat ramp at La Grande 1 reservoir

At the request of the tallyman of trapline CH33, a boat ramp, initially to be built near the mouth of Rivière Achazi, was instead developed at km 41 of La Grande 1 reservoir, in a section sheltered from prevailing winds. A large parking area and a spot for beaching boats are also located at the boat ramp.

Land access

Construction roads kept in place

In order to improve access to certain portions of their hunting territory or to new sites developed for goose-hunting, the tallymen opted to keep six construction roads totalling 5.4 km in place.

Road signs (Cree camps and snowmobile trails)

More than 20 road signs were erected for the safety of trapline users approaching Cree camps or snowmobile trail crossings.

A spot for beaching boats at KP 20.3 of La Grande Rivière

Boat ramp and spot for beaching boats developed on trapline CH33

Construction road kept in place on trapline CH35

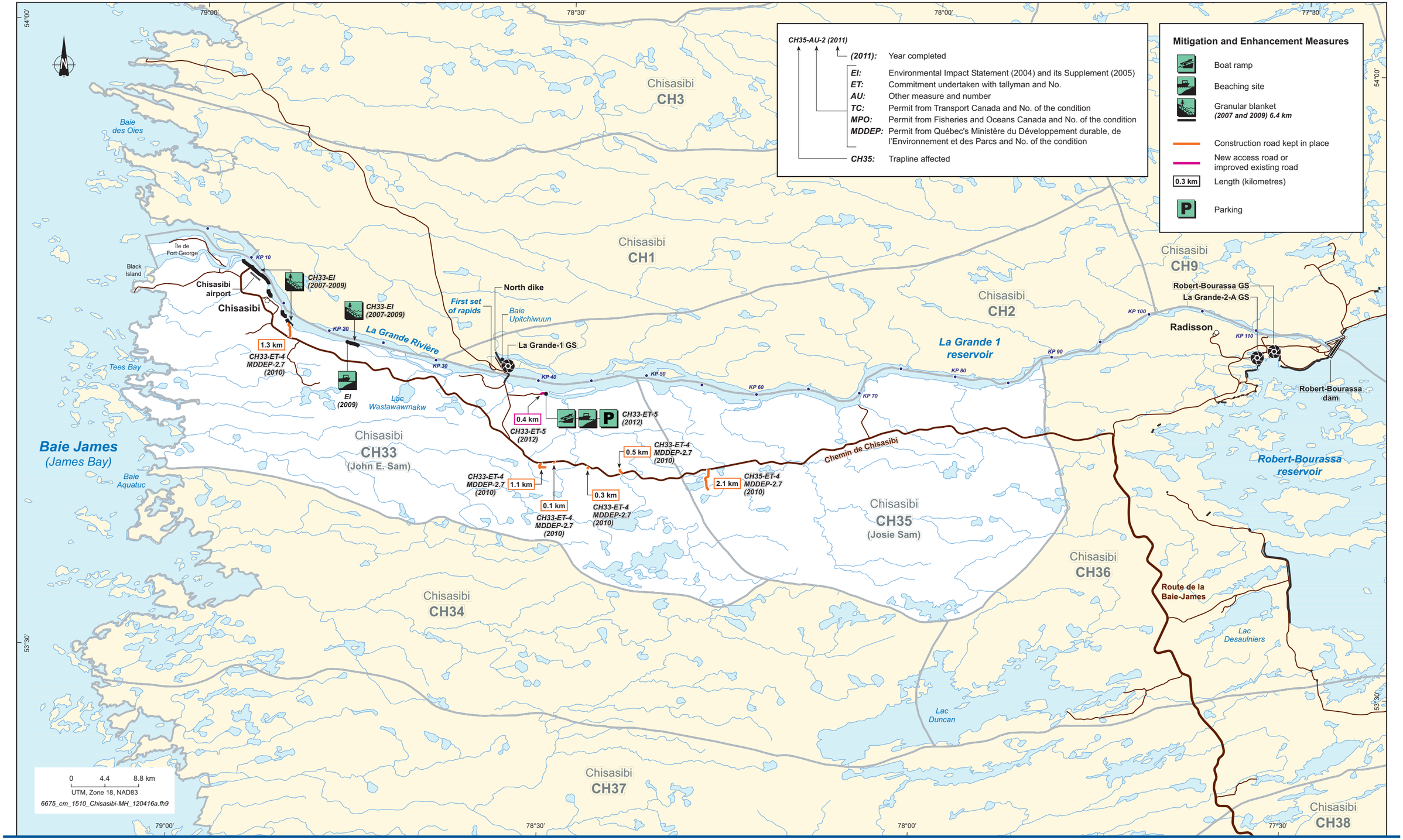
Road sign (Cree camp)

Road sign (snowmobile crossing)

Table CH-2 – **Summary – Measures to Maintain and Improve Land Access**

Trapline		CH33	CH35	TOTAL
Measure	**Unit**	**Scope**		
Navigation				
Development of spots for beaching boats	No.	2	–	**2**
Building of boat ramp and parking	No.	1	–	**1**
Land Access				
Construction roads kept in place	No. (km)	5 (3.3 km)	1 (2.1 km)	**6 (5.4 km)**
Access road construction	No. (km)	1 (0.4 km)	–	**1 (0.4 km)**
Installation of road signs (Cree camps)	No.	9	15	**24**
Installation of road signs (ATV/snowmobile crossings)	No.	2	–	**2**

Map CH-4 – **Summary – Measures to Maintain and Improve Land Access**



6.2 Measures to Maintain and Improve Hunting and Fishing Potential

Improving goose-hunting potential was considered important by the tallymen during the consultations regarding the restoration of the affected sites (see Table CH-3 and Map CH-5).

Therefore, three borrow pits whose location and substrate were favorable were transformed into a goose-hunting area. Created in collaboration with the tallymen, the development included:

- Excavation of the pond site;
- Remodelling the perimeter of the borrow pit to direct most of the flow to the pond;
- Seeding with herbaceous plants around the pond.

Four spurs were also built into certain sections of the granular blankets to facilitate fishing

Spur built into the granular blanket at KP 9

Spur built into the granular blanket at KP 16

Goose-hunting pond developed on trapline CH33

6.3 Worksite Rehabilitation

Worksite rehabilitation is an integral part of the planned mitigation measures. These sites include quarries and borrow pits, access road rights-of-way, service areas used by contractors, and material storage areas (see Table CH-4 and Map CH-5).

With the exception of the construction roads kept in place at the tallymen's request, all affected sites were rehabilitated (levelling, slope grading, restoration of natural drainage, scarification of compacted soil, spreading of previously stripped topsoil) and replanted or seeded or both, depending on the situation.

Therefore, close to 55,000 trees and shrubs seedlings (jack pine and poplar) were planted on affected sites and seeding (mix of grasses and leguminous plants) was carried out over close to 8 ha.

Equipment used for hydroseeding around the goose-hunting ponds

Poplar seedling

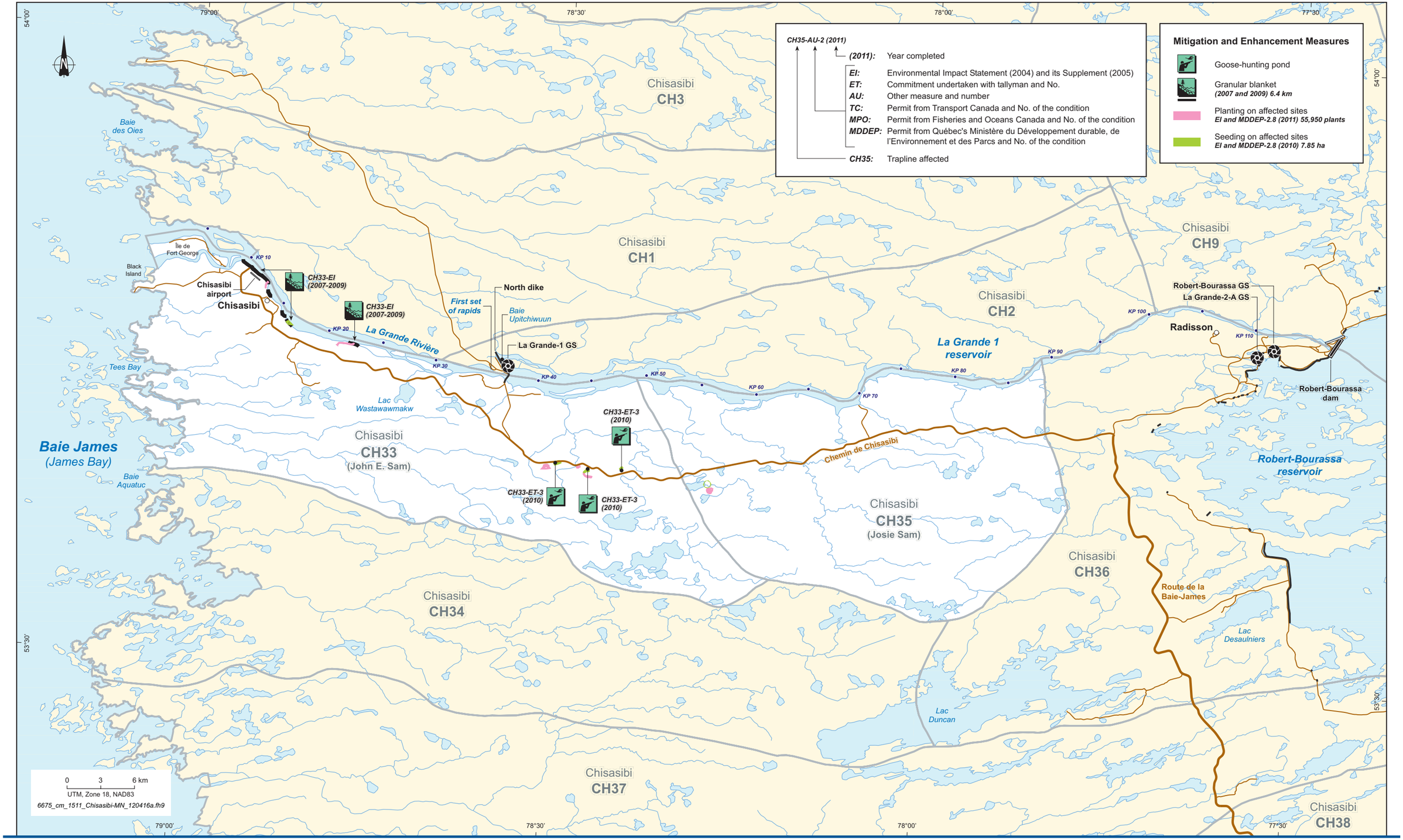
Table CH-3 – **Summary – Measures to Improve Wildlife Potential and Maintain Hunting and Fishing Activities**

Trapline		CH33	CH35	TOTAL
Measure	**Unit**	**Scope**		
Fish / Fishing				
Development of spurs	No.	4	–	**4**
Waterfowl / Hunting				
Development of goose-hunting ponds (borrow pits)	No.	3	–	**3**
Water Quality				
Placement of granular blankets	km	6.4	–	**6.4**

Table CH-4 – **Summary – Redevelopment and Enhancement Measures**

Trapline		CH33	CH35	TOTAL
Measure	**Unit**	**Scope**		
Planting of affected areas	No. of plants	44,250	11,700	**55,950**
Seeding of affected areas	ha	7.75	0.1	**7.85**

Map CH-5 – **Summary – Measures to Maintain or Improve Wildlife Potential and Maintain Hunting and Fishing Activities**



6.4 Effectiveness of Mitigation and Enhancement Measures

The effectiveness of the mitigation and enhancement measures carried out as of December 31, 2011 was evaluated based on the assessment by the tallymen interviewed during the land use follow-up.

The assessment addressed the following:

- Mitigation measures, which are specifically designed to mitigate any impact on wildlife or land use as set out in the project's Environmental Impact Statement or the environmental follow-up studies;
- Enhancement measures, which are designed to help land users benefit from certain project components (construction roads, borrow pits) or that meet the needs expressed by the tallymen to continue using and facilitating the use of the territory during and after the project.

The opinions expressed by each tallyman regarding the measures implemented on their respective trapline are included in the fourth table of the review of each of the two traplines presented in Section 2. Certain measures were not commented on by the tallymen, either because they have only recently been implemented and it is too early for them to evaluate their relevance or effectiveness, or because they haven't seen them yet.

The following considerations must also be kept in mind:

- The opinions of the tallymen were gathered during summer 2011 and may have changed since.
- In several cases, the tallymen expressed their opinions in Cree. An interpreter then translated them into English (in their entirety or a summary) and then the interviewer wrote them down.
- Certain terms used during the assessment of the measures do not have a direct equivalent in Cree (e.g. the term *satisfaction*).

6.4.1 Effectiveness of Mitigation Measures

Land access

Road signs

The tallymen did not comment on the road signs informing users of the presence of Cree camps or those warning of the occasional presence of moose or caribou.

Granular blankets on the banks of La Grande Rivière

The tallyman on trapline CH33 feels that the granular blankets are a good measure but that the protection area should have been extended higher on the slopes.

Rehabilitation of affected sites

Only one tallyman commented on the restoration of the affected sites and his comments referred only to the planting of aspen in the borrow pits containing a goose-hunting pond. He is concerned about the survival of the poplars because their roots were cut.

6.4.2 Effectiveness of Enhancement Measures

Land access

Six construction roads were kept in place at the request of the tallymen, including five on trapline CH33 and one on trapline CH35. Four of the roads provide access to the areas developed for goose-hunting, one leads to a camp and the last one leads to a granular blanket section. With the exception of the last one, these roads are used either by the tallyman or by other users for the spring goose hunt.

Waterfowl/Hunting

Only the tallyman on trapline CH33 commented on the measure given that three goose-hunting ponds developed in former borrow pits are on his trapline. The tallyman does not use the goose-hunting ponds because he prefers to hunt geese in the bay. His brother uses them on occasion. He noted that the ponds were developed specifically for users living in the surrounding area. They occasionally capture some geese there although 2011 doesn't seem to have been a good year.

7.0 General Measures to Promote Economic Spinoffs for the Crees (Workers, Companies, Tallymen)

7.1 Measures to Benefit Cree Workers

The measures for Cree workers include:

- Presence of a resource person with the Commission de la construction du Québec (CCQ) [Québec construction board] to help Crees obtain certification:
  - By removing labor pool restrictions in the JBNQA territory and giving Crees priority;
  - By making the English versions of documents available to Crees so they can prepare for the various CCQ examinations.
- Presence of Cree employment counselors on the jobsite to:
  - Facilitate and supervise the hiring of Cree workers;
  - Educate employers and SEBJ personnel about hiring Cree workers;
  - Participate in various management activities, such as health and safety committees.

7.2 Measures to Benefit Cree Companies

The main measures for Cree companies[3] were :

- Establishment of a minimum of $240 million in contracts under the *Boumhounan Agreement* and another $50 million under the *Convention relative à la centrale de la Sarcelle* [Agreement concerning Sarcelle powerhouse] to be negotiated with Cree companies during construction, mainly in the following categories:
  - Clearing;
  - Workcamp construction and operation;
  - Road construction and maintenance;
  - Air transport;
  - Fuel supply.
- Establishment of service contracts with the Cree Regional Authority (CRA) and the Cree communities of Mistissini, Nemaska, Waskaganish, Eastmain, Wemindji and Chisasibi;
- Direct negotiation of the terms of contracts between the designated Cree companies and SEBJ.

3. Cree companies are designated by the Contracts Review Committee set up by the Grand Council of the Crees of Québec (Eeyou Istchee) and by the Cree Regional Authority (CRA).

7.3 Measures to Benefit Tallymen

The measures for tallymen were mainly in the planning and contracting phases. Some measures were also introduced to support tallymen during contracting, performance and management. The measures are listed below.

Developing and awarding contracts for mitigation and enhancement measures:

- Breakdown of contracts by trapline;
- Prioritization of tallymen with regard to contracts offered;
- Simplification of plans and specifications and of tender documents;
- Replacement of financial guarantees with holdbacks on invoice payments;
- Reduction of the term of invoice payments from 60 to 30 days;
- Support for tallymen during the bidding process.

Executing contracts for mitigation and enhancement measures:

- Support and supervision upon request (planning of performance phases, information about equipment and management, support for invoicing, logistics, support for implementation of safety measures, etc.).

7.4 Economic Spinoffs in the Community of Chisasibi

From 2007 to 2011, Cree workers accounted for an average of 10% of all workers on the project. Of the Cree workers, 5% (an average of 10 people each month) were from Chisasibi. In addition, three contracts were awarded to a Cree company in Chisasibi and one tallyman obtained two contracts worth $0.03 million. The value of the contracts awarded was $6.36 million.

Table CH-5 **–Cree Workers and Companies from Chisasibi**

Number of Workers (Monthly average)	*2007*	*2008*	*2009*	*2010*	*2011*	*Average (2007-2011)*
Total workers	1,308	2,543	2,682	1,759	1,048	1,868
Total Cree workers	212	282	215	145	60	183
Proportion of Cree workers	**16%**	**11%**	**8%**	**8%**	**6%**	**10%**
Number of Cree Workers (Monthly average)	*2007*	*2008*	*2009*	*2010*	*2011*	*Average (2007-2011)*
Total Cree workers	212	282	215	145	60	183
Cree workers from Chisasibi	12	18	12	5	4	10
Proportion of Cree workers from Chisasibi	**6%**	**6%**	**6%**	**3%**	**7%**	**5%**

Companies from Chisasibi	*2007-2011 (No. of contracts)*	*2007-2011 ($M)*
Mookabi Construction	3	6.33
TOTAL	**3**	**6.33**
Tallymen	2	0.03
TOTAL	**5**	**6.36**

8.0 Measures to Promote Jobsite Integration of Cree Workers

To promote the integration of Cree workers, three groups of measures were implemented:

Specialized Cree personnel hired at the jobsite:

- Cree liaison officers to assist industrial safety officers in their dealings with Cree workers and to promote awareness of camp regulations among the workers;
- A Native social worker;
- A Native recreation attendant.

Support for Cree cultural projects in cooperation with Niskamoon Corporation:

- Construction of three Cree gathering places (*Shaapuhtuwaan*) at Rupert, Nemiscau and Sarcelle workcamps;
- Organization of traditional suppers for Cree workers;
- Use of the *Shaapuhtuwaan* by Cree workers to cook game or hold friendly gatherings;
- Organization of French courses in 2009 and 2010.

Access for Cree workers to electronic media and infrastructure to maintain ties with their families and their community:

- Local Cree radio broadcasts in the workcamps;
- Free Internet access in recreation centers for all workers;
- Possibility for each worker to have a family member visit the workcamp instead of taking a regular leave.

9.0 Participation by Tallymen in Implementation of Mitigation and Enhancement Measures

The various aspects of implementing the mitigation and enhancement measures on the traplines, from design to execution, are shown in Table CH-6.

Note also that the tallymen or designated family members:

- Were systematically included in consultants' crews during field work and surveys required to determine and optimize mitigation measures; and
- Also participated in all environmental monitoring including studies on the effectiveness of the mitigation measures.

Table CH-6 – **Implementation of Mitigation and Enhancement Measures**

Design and Site Selection	Execution	
Incorporation of Cree Users' Traditional Knowledge	***Contracts with Chisasibi Tallymen***	***Contracts with Cree Companies from Chisasibi***
• Validation of site for boat ramp • Choice of construction roads to be kept in place • Validation of goose-hunting pond sites in affected areas	• Building of a boat ramp (2012) • Development of three goose-hunting ponds (2010) • Planting on affected sites (55,950 plants) (2010-2011)	• Placement of granular blankets

Boat ramp built by Mookabi Construction, a company chosen by the tallyman

Poplar seedling planted as part of the program carried out by the tallymen

10.0 Effectiveness of the General Measures to Promote Economic Spinoffs and the Integration of Cree Workers

Table CH-7 summarizes the results of the 2010-2011 follow-up studies monitoring the effectiveness of these measures. Note that the effectiveness of the mitigation and enhancement measures on the two community traplines is discussed in section 2.

Table CH-7 – **Effectiveness of the General Measures to Promote Economic Spinoffs for the Crees and Jobsite Integration of Cree Workers**

Measures	Follow-Up Results (as of December 31, 2011)
General Measures to Promote Economic Spinoffs for the Crees (Workers, Companies, Tallymen)	
Measures to promote the recruitment of Cree workers	
Presence of a resource person at the Commission de la construction du Québec (CCQ) [Québec construction board] to help Crees obtain competency certificates • By removing labour pool restrictions in the JBNQA territory • By making the English versions of documents available to Crees so they can prepare for the various CCQ examinations	According to the CCQ representative, the assessment of the CCQ competency certificates issued since 2007 is positive. Most Crees who have competency certificates obtained their first one on the Eastmain-1 and Eastmain-1-A/Sarcelle/Rupert jobsites. These projects were catalysts with regard to Cree worker accessibility in the construction field and helped them obtain good working conditions. To support their certification, the CCQ worked closely with an SEBJ Cree counsellor on the jobsite to make the application and processing of certain administrative measures more flexible. 2007, 2008 and 2009 were the most productive years with, respectively, 123, 180 and 206 Crees with a competency certificate, excluding exemption certificates. Many of them worked on the Eastmain-1-A/Sarcelle/Rupert project.
Hiring of Cree employment counsellors at the jobsite: • To facilitate and supervise the hiring of Cree workers • To educate employers and SEBJ personnel about hiring Cree workers • To participate in various management activities, such as health and safety committees	In early 2007, two Cree counsellors were hired to work at the Rupert and Eastmain workcamps. In 2008, when work began on Sarcelle powerhouse, a third counsellor joined the team. When activity slowed in 2011, the team was reduced to two counsellors for Sarcelle and Eastmain. The Cree counsellors promoted the hiring of Cree workers among contractors. However, the results were poor among non-Native contractors namely due to language issues, lack of experience or skills, restrictions regarding obtaining CCQ competency certificates and certain tax constraints. The Cree counsellors also promoted jobs offered on the jobsite in the Cree communities even though obtaining a job on the jobsite resulted mainly from a referral from a friend (47%); 18% were contacted by their employer and 15% had communicated with their current employer. Twelve workers, i.e. 8%, were hired through their band council.
Measures to promote the awarding of contracts to Cree companies	
Establishment of at least $240M and $50M in contracts to be negotiated with Cree companies during construction	Under the project, 165 contracts were awarded to 37 Cree companies and 151 to tallymen between 2007 and 2011. Most of the contracts were obtained based on the mechanism designed to give preference to Crees in the awarding of contracts ($447M). The amount paid to the companies as at December 31, 2011 was close to $831M, i.e. 27% of all expenses incurred during the project ($3,083,098,853). More than half of the contracts awarded to the Cree were in regard to work to be carried out, i.e. primarily clearing work and building permanent structures such as roads or weirs. In addition, contracts for the provision of services represented 43% of the value of the contracts awarded to Cree companies ($360M) whereas 4% ($32M) were in regard to camp infrastructures.
Direct negotiation of contract terms between the designated companies and SEBJ	Based on the mechanism designed to give preference to Crees in the awarding of contracts (Cree-designated companies), $427M of contracts were awarded to Cree companies out of a total amount of close to $791M.
Establishment of service contracts with the CRA and the Cree communities of Mistissini, Nemaska, Waskaganish, Eastmain, Wemindji and Chisasibi	For the six Cree Monitoring Committee representatives, salaries and administrative costs total approximately $0.5M annually. In addition, the environmental field work and studies led to employment for close to 500 different workers for both 2007 and 2008, 711 workers in 2009 and 455 workers in 2010. They generated income of approximately $7.42M during the 2007-2010 period.

Table CH-7 – **Effectiveness of the General Measures to Promote Economic Spinoffs for the Crees and Jobsite Integration of Cree Workers (continued)**

Measures	Follow-Up Results (as of December 31, 2011)
General Measures to Promote Economic Spinoffs for the Crees (Workers, Companies, Tallymen) (continued)	
Measures to benefit the tallymen	
In accordance with the commitments set out in the *Boumhounan Agreement*, SEBJ implemented various measures to promote the participation by the tallymen in carrying out the mitigation measures. Steps taken to meet this commitment were initiated in 2007 when the project began. In fact, it was at that point that the company first decided to offer the tallymen the experience of carrying out clearing work in the sectors where there had been no recovery. Given that the experience was generally positive, SEBJ began awarding more and more contracts for increasingly diversified work as the project progressed.	The most used measure was the breakdown of contracts based on trapline boundaries. For instance, the clearing of the diversion bays was broken down into 17 contracts awarded to 8 tallymen or their company for an approximate value of $15M. Similarly, with regard to carrying out portages, instead of negotiating and managing a single contract, the company chose to divide the work between 10 contracts awarded to the tallymen. The same was true for the seeding of exposed banks and planting in the areas affected by the project.
Measures to Promote Jobsite Integration of Cree Workers	
Specialized Cree personnel hired at the jobsite	
• Cree counsellors hired to organize awareness-building activities with employers (preventing integration issues, promoting sponsorship, etc.) and with Cree workers (information on the services available, awareness of camp regulations, etc.) to promote the integration of Cree workers	• Three Cree counsellors were hired and worked in the different workcamps used during the project. They participated in the jobsite management committees and played a key role in implementing the measures designed to promote the integration of Cree workers.
• Cree liaison officers to assist industrial safety officers in their dealings with Cree workers and to promote awareness of camp regulations among the workers	• Approximately 10 liaison officers were hired between 2007 and 2010. According to the jobsite representatives interviewed in 2008 and 2010, the hiring of a Cree liaison officer was a very useful measure. The liaison agents reduce the potential for conflict during dealings involving security agents and their daily interaction with Cree workers help raise awareness regarding the camp regulations and industrial safety.
• A Native social worker	• A Native social worker was hired in 2008. She had between 81 and 102 consultations per year in 2009 and 2010.
• A Native recreation attendant	• One Cree recreation attendant was hired. The attendant's presence and work were appreciated by the Cree workers. Participation in leisure activities was good on all the camps. Their participation seems to have been related more to the fact that they liked the activities offered (hockey, volleyball, bingo, etc.) than to the presence of a Cree attendant.
• A resource person able to act as a Cree-French or Cree-English interpreter where necessary	• The Cree counsellors and other Cree SEBJ employees occasionally played this role but most interpretation needs were met within the work teams.
Consultation with Cree agencies regarding prevention and support measures for Cree workers	
With the Natimachewin project financed by the Niskamoon Corporation, many activities were carried out for Cree workers, including:	
• Construction of three Cree gathering places (Shaapuhtuwaan) at Rupert, Nemiscau and Sarcelle workcamps	• The *Shaapuhtuwaan* at the Rupert workcamp (2008 to 2009), the *Cree Cabin* at the Nemiscau workcamp (2009 to 2010) and the *Mitchuap* at the Sarcelle workcamp (2009 to 2012) were used by Cree workers to organize traditional meals or other social activities. According to follow-up results, 63% of Cree workers participated in activities or gatherings in these sites.
• Organization of traditional suppers for Cree workers at Rupert and Nemiscau workcamps	• In their free time, an average of 63% of Cree workers participated in traditional meetings or suppers organized by the Natimachewin project. The traditional suppers were the most popular activity among Cree workers.
• Organization of French courses	• French classes were provided from 2008 to 2010. The initial enthusiasm for these courses decreased over time.
• Organization of various activities based on the workers' interests (health walks, berry picking, etc.)	• From 2008 to 2010, a Cree activity coordinator organized traditional suppers and occasional activities based on the needs expressed by the workers.
• Support in creating a Cree AA group	• A meeting place could have been made available for this type of group but a Cree AA group was not created given that the Cree workers preferred meeting with the social worker individually.
• Managing violations of camp regulations	• Based on the camp management regulations, expelled workers were allowed to return to the camp to work following a specific time period depending on the seriousness of the violation. An average of 5% of Cree workers were expelled from the workcamp between 2002 and 2010.

Table CH-7 – **Effectiveness of the General Measures to Promote Economic Spinoffs for the Crees and Jobsite Integration of Cree Workers (continued)**

Measures	Follow-Up Results (as of December 31, 2011)
Measures to Promote Jobsite Integration of Cree Workers (continued)	
Measures to promote ties between workers and their families/community	
• Local Cree radio broadcasts in the workcamps • Free Internet access in the recreation centres • Possibility for a Cree worker to have a family member visit the workcamp, rather than take a regular leave. Visits by a family member were permitted. Visits of several days, including accommodation, could be authorized if a worker wished. • News from the workcamp was relayed to the communities	• During their time at the camp, 73% of the Cree workers listened to community radio broadcasts. • Free Internet stations were available in the leisure centers at all the workcamps. The Internet was used by 54% of the Cree workers in their free time, particularly the youngest workers, and 28% of the workers said they used the Internet to maintain contact with their family. • The possibility of replacing the regular leave with a visit was not used very often, but it was appreciated by those who did take advantage of it. • News from the workcamp was delivered via the Boumhounan Newsletter, the Hydlo and Friends program and the Monitoring Committee's information tours. Based on follow-up results, all the workers said they maintained contact with their family during their stay at the workcamp. They did so mainly by phone (99%) or through visits during their free time (55%).
Measures to promote relations between Cree workers and non-Native workers	
• Building awareness among camp residents regarding Cree culture • Building awareness among SEBJ personnel regarding Cree culture • Promoting Cree participation in sport and leisure activities	At the mandatory orientation session, the workers are made aware of the presence of Cree workers. In addition, the jobsite welcome centres highlight different aspects of the Cree culture and Cree involvement in the project. Posters illustrating Cree culture were placed in different locations (airport, cafeteria, administration offices). Some Crees nevertheless feel that more could have been done in terms of raising awareness of all of the workers on the project. The Hydro-Québec's Aboriginal Relations training program was given on three occasions on the jobsite in 2008. From 2007 to 2010, 44 SEBJ employees took the training program either at the jobsite, in Montréal or in Québec City. It should be noted that 121 SEBJ employees had already taken the training program as part of the Eastmain-1 project. The Crees' interests were taken into account when organizing the leisure activities. Participation by the Crees was good: 37 % participated in team sports, 51 % opted for individual sports (weightlifting/working out, badminton, golf) and 85 % participated in games (bowling, pool, etc.). Although there were sports teams including both Crees and non-Crees, people generally formed teams with people from their background. Relations between Cree workers and non-Native workers are good. Based on follow-up results, 94% of Cree workers feel that relations with their non-Native colleagues are very good (53%) or fairly good (41%) and 95% of workers feel that social relations at the workcamp are very pleasant (55%) or fairly pleasant (40%).

CONCLUSION

The signature of the *Boumhounan Agreement* in 2002 launched the Eastmain-1-A and Sarcelle powerhouses and Rupert diversion project, which was intended to be carried out under the new relationship between Hydro-Québec/SEBJ and the Cree, a relationship based on cooperation and mutual respect.

This new relationship was reflected in the participation by the Cree in designing both the project and the mitigation and enhancement measures. Cree companies, workers and tallymen were also involved in the work related to the project and in carrying out the mitigation and enhancement measures. Finally, the tallymen participated in all the technical and environmental surveys in the draft design and construction phases as well as in all the environmental follow-up studies, some of which are currently planned until 2019.

Although the community of Chisasibi did not sign the *Boumhounan Agreement*, the same type of involvement was applied to the community when designing and carrying out the mitigation measures and implementing the environmental follow-up programs.

Mitigation and Enhancement Measures

On the two affected traplines in the community of Chisasibi, in addition to the placement of granular blankets on the south shore of La Grande Rivière downstream of La Grande-1, certain mitigation and enhancement measures were defined, in particular regarding maintaining or improving access to the territory as well as hunting and fishing activities. At the end of 2011, these measures were, for all intents and purposes, completed and only some planting in affected sites still remained to be carried out in 2012.

During the fall of 2011, the two tallymen concerned were consulted on the effectiveness of the mitigation and enhancement measures carried out on their respective traplines.

With regard to the granular blanket, the tallyman on trapline CH33 feels that it is a good measure but that the protection area is not high enough on the slope of the bank.

Of the construction roads kept in place at the request of the tallymen, four of them are used—one to reach a camp and the other three to access goose-hunting sites in the spring.

Regarding the goose-hunting ponds developed in the borrow pits, the tallyman on trapline CH33 noted that although he does not use them, his brother and other members of the community have captured some geese at the ponds.

Finally, one tallyman has doubts regarding the survival of the poplars planted as part of the revegetation of affected sites.

Economic Spinoffs

Since 2007, a Cree company in Chisasibi has obtained three contracts, primarily for the construction of the granular blankets and the boat ramp at La Grande 1 reservoir. Three contracts were also granted for planting in affected sites.

From 2007 to 2011, 5% of Cree workers on the project were from the community of Chisasibi.

Environmental Follow-up

Between 2007 and 2011, members of the Cree community of Chisasibi participated in the follow-up programs carried out on their territory. Their involvement will be maintained given that certain follow-up studies will continue until 2019. These studies concern hydraulics, bank dynamics, water quality, eelgrass and land use.

Committees

During 2012, the transition from the construction crews to the operations crews will accelerate. Continuity will be assured, in part, by the Cree–Hydro-Québec joint committees, namely Monitoring Committee and Chisasibi Working Group Committee.

Agreements

As part of the agreements between Hydro-Québec and the Cree managed by the Niskamoon Corporation, several dedicated funds are available to meet the needs of the Cree regarding community projects as well as projects designed to help them pursue their traditional activities.

REFERENCES

Impact Statements

HYDRO-QUÉBEC PRODUCTION. 2004. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Étude d'impact sur l'environnement.* 9 volumes.

HYDRO-QUÉBEC PRODUCTION. 2005. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Complément de l'étude d'impact sur l'environnement. Réponses aux demandes de renseignements additionnels de l'administrateur provincial de l'environnement de la Convention de la Baie James et du Nord québécois et de la Commission fédérale d'examen.* 10 volumes.

HYDRO-QUÉBEC PRODUCTION. 2005. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Complément de l'étude d'impact sur l'environnement. Réponses aux demandes de renseignements additionnels de l'administrateur provincial de l'environnement de la Convention de la Baie James et du Nord québécois et de la Commission fédérale d'examen.* Volumes A and B.

Summary Reports

COMITÉ PROVINCIAL D'EXAMEN. 2006. *Centrale de l'Eastmain-1-A et dérivation Rupert. Rapport du comité provincial d'examen à l'administrateur du chapitre 22 de la Convention de la Baie-James et du Nord québécois.* 2006. 523 p. and maps.

HYDRO-QUÉBEC ÉQUIPEMENT. 2007. *Centrale de l'Eastmain-1-A et dérivation Rupert. Engagements environnementaux d'Hydro-Québec et conditions des autorisations gouvernementales. Mesures environnementales intégrées à la conception du projet. Mesures d'atténuation, de compensation et de mise en valeur.* Suivi environnemental. 184 p. and app.

HYDRO-QUÉBEC ÉQUIPEMENT. 2007. *Centrale de l'Eastmain-1-A et dérivation Rupert. Engagements environnementaux d'Hydro-Québec et conditions des autorisations gouvernementales. Ententes de juin 2007. / Mitigation measures for tallymen. June 2007 Agreements.* 94 p.

HYDRO-QUEBEC PRODUCTION AND SOCIETE D'ENERGIE DE LA BAIE JAMES (SEBJ). 2007. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Programme de suivi environnemental 2007-2023.* 138 p. and app.

HYDRO-QUEBEC PRODUCTION AND SOCIETE D'ENERGIE DE LA BAIE JAMES (SEBJ). 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Bilan des activités environnementales 2007.* 102 p.

HYDRO-QUEBEC PRODUCTION AND SOCIETE D'ENERGIE DE LA BAIE JAMES (SEBJ). 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Bilan des activités environnementales 2008.* 113 p.

HYDRO-QUEBEC PRODUCTION AND SOCIETE D'ENERGIE DE LA BAIE JAMES (SEBJ). 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Bilan des activités environnementales 2009.* 186 p.

HYDRO-QUEBEC PRODUCTION AND SOCIETE D'ENERGIE DE LA BAIE JAMES (SEBJ). 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Bilan des activités environnementales 2010.* 184 p.

Human Environment

Land Use

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de l'utilisation du territoire par les Cris en 2007.* Août 2009. Multiple pages and app.

GENIVAR. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de l'utilisation du territoire par les Cris en 2008-2009.* Novembre 2010. Multiple pages and app.

Ice Cover Conditions and Safety

AECOM TECSULT. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de la couverture de glace (hiver 2009-2010).* 51 p. and app.

WASKA RESSOURCES. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des glaces pour la sécurité des utilisateurs. Formation des observateurs cris.* 20 p. and app.

Economic Spinoffs

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des retombées économiques 2007. Rapport d'activités.* Multiple pages.

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des retombées économiques 2007.* Multiple pages.

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des retombées économiques 2008.* Multiple pages.

GENIVAR. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des retombées économiques 2009. Rapport préliminaire.* Multiple pages.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des retombées économiques 2010.* Décembre 2011. Multiple pages and app.

Training Programs

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des programmes de formation 2007.* Multiple pages.

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des programmes de formation 2008.* Multiple pages.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des programmes de formation en 2009.* Janvier 2011. Multiple pages.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi des programmes de formation en 2010.* Décembre 2011. Multiple pages.

Integration of Cree Workers

CROP. 2008. *Centrales de l'Eastmain-1-A, de la Sarcelle et dérivation Rupert. Suivi des conséquences pour les travailleurs cris. Résultats de l'enquête 2007*. 43 p.

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Enquête générale auprès des travailleurs cris 2008.* 71 p.

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Enquête longitudinale auprès des travailleurs cris 2008.* 88 p.

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Enquête générale auprès des travailleurs cris 2009.* 71 p.

GENIVAR. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de l'intégration des travailleurs cris 2008.* 76 p. and app.

GENIVAR. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de l'intégration des travailleurs cris 2009. Janvier 2010.* Multiple pages and app.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Enquête générale auprès des travailleurs cris 2010.* 60 p.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Enquête longitudinale auprès des travailleurs cris 2010.* 96 p.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de l'intégration des travailleurs cris 2007-2010. Rapport final.* Janvier 2012. Multiple pages and app.

Opinion Surveys

GENIVAR. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Enquête de perception auprès de la population crie 2008.* 72 p.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Enquête de perception auprès de la population crie 2010. Rapport final.* 89 p.

GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Bilan des enquêtes de perception auprès de la population crie 2005, 2008 et 2010.* Septembre 2011. Multiple pages.

Health and Mercury

CONSORTIUM WASKA-GENIVAR. 2011. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Évaluation de l'efficacité des outils d'information sur le mercure et la consommation de poisson.* Multiple pages and app.

GENIVAR. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi 2008 des déterminants de la santé des Cris.* Décembre 2010. Multiple pages.

GENIVAR. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi 2010 des déterminants de la santé des Cris. Version préfinale.* Janvier 2012. Multiple pages.

Physical Environment

Geomorphology

POLY-GÉO. 2009. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Mise en place de tapis granulaires sur la rive sud du tronçon estuarien de la Grande Rivière (entre les PK 9,7 et 22,5). Document sur les risques de glissements de terrain pour les segments de rive situés entre les PK 16,9 et 21,8.* 8 p. and app.

POLY-GÉO. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Construction de tapis granulaires sur la rive sud du tronçon estuarien de la Grande Rivière (entre les PK 9,7 et 22,7). Bilan des travaux de construction des phases 1 et 2 (2007 à 2009).* 15 p. and app.

Water Quality

Waska Ressources-Biofilia. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de la qualité de l'eau des rivières Rupert et Nemiscau.* 33 p. and app.

Biological Environment

Vegetation

GENIVAR. 2010. *Centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Suivi de la zostère marine de la côte nord-est de la Baie James. État de référence 2009.* 54 p. and app.

Restoration of Affected Sites – Planting and Seeding

DEVAMCO. 2009. *Projet d'aménagement hydroélectrique centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. 15 mai 2009. Travaux d'ensemencement des sites affectés – Phase 1 (2008). Bilan des activités.* 11 p. and app.

DEVAMCO. 2009. *Projet d'aménagement hydroélectrique centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. 19 juin 2009. Travaux de plantation des sites affectés – Phase 1 (2008). Bilan des activités.* 13 p. and app.

DEVAMCO. 2010. *Projet d'aménagement hydroélectrique centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. 28 avril 2010. Travaux de reboisement et d'ensemencement des sites affectés – Phase II (2009). Bilan des activités.* 34 p. and app.

AECOM. 2010. *Projet d'aménagement hydroélectrique centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Décembre 2010. Travaux de reboisement et d'ensemencement des sites affectés – Phase III (2010). Bilan des activités.* 16 p. and app.

LE GROUPE CAF-TRAME . 2012. *Projet d'aménagement hydroélectrique centrales de l'Eastmain-1-A et de la Sarcelle et dérivation Rupert. Travaux de reboisement et d'ensemencement des sites affectés – Phase IV (2011). Bilan des activités. Version préliminaire.* 20 p. and app.