



Contact

Sustainable Hydropower Website
C/- Hydro Tasmania
4 Elizabeth St
Hobart TAS 7000
AUSTRALIA

sustainable.hydropower@hydro.com.au

Local capacity building

La Grande (LaForge-1), Canada

With the LaForge-1 hydropower development in Quebec, Canada, the Cree Amerindian community have been extensively engaged in the management and implementation of environmental rehabilitation/mitigation programs, boosting local capacity and maintaining traditional lifestyles.

Overview

The James Bay territory in Northern Québec, Canada, lies between the 48th and 55th North parallels and covers 350,000 km² (135,187 sq. mi.).

The La Grande complex was constructed to produce electric power from the Grande Rivière and from the Caniapiscou and Eastmain rivers, both of which have significant proportions of their flow diverted into the Grande Rivière catchment.

In its entirety, the complex is one of the largest hydropower installations in the world, with a generating capacity of 15,238 MW. The two-phase project comprised eight generating stations and the creation of eight reservoirs with a total surface area of 12,953 km², including 10,809 km² of flooded terrestrial land. The complex is serviced by the longest high voltage transmission system in North America and cost upward of 20 billion US dollars to build.

The Caniapiscou-LaForge Diversion, located in the northeast sector of the James Bay territory, is an important part of the La Grande complex. When this 230-km-long diversion was commissioned in 1984, its purpose was to channel water from the upper Caniapiscou basin to the Grande Rivière generating stations. In 1989, a second construction phase was undertaken to develop the remaining hydroelectric potential.

The LaForge development included the construction of three new generating stations with a total installed capacity of 1700 MW and required the impoundment of a new reservoir and construction of additional power lines and access roads. LaForge-1 is the largest of these, with a capacity of 878MW.

Scheme Specifications

Dam Name

Scheme operator Hydro Quebec	Size of scheme (MW) 878
Country Canada	Catchment area
River	Effective reservoir capacity
Construction years 1984-89	Reservoir size 1288 km ²

External Recognition

Nil

Details

The Opimiscow-Sotrac Company was formed during the construction of the LaForge-1 project and was mandated to study, plan, evaluate, authorize and implement remedial measures required to:

- facilitate the pursuit of native traditional activities
- alleviate the negative impacts of the project
- facilitate Cree usage of the area affected by the projects
- preserve productivity and the biological and visual qualities of the environment
- restore wildlife habitats

The board of directors had six voting members, three appointed by the Cree and three by Hydro-Québec. Any resolution taken by the board had to have the consent of the majority.

According to the Opimiscow-La Grande Agreement, remedial measures, as a general rule, were to be carried out by Cree entities. In compliance with this provision, Chee-Bee Cree Construction (CBCC) was chosen to do the work. CBCC is a joint venture formed by Chisasibi-based Chee-Bee Construction and the Cree Construction and Development Company Ltd.

Beyond its role as project manager, CBCC was responsible for financial budgeting and planning, supply and coordination of logistical services and quality control. From the outset, the CBCC provided technical advice on the selection and planning of environmental remedial strategies and maintained both permanent and temporary

accommodation facilities for remote work teams. The Cree now manage these facilities as tourist accommodation.

A training program was provided during the first four years, in compliance with the Opimiscow program, favoring the development of human resources and the goals sought by CBCC. The programs were essentially coaching-based. The following table shows the types of jobs involved and the length of the training sessions.

Personnel Training					
Job Title	Number of Weeks				
1993	1994	1995	1996	Total	
Assistant project manager	12	-	22	-	34
Assistant coordinator	-	-	11	21	32
Camp manager	-	-	-	13	13
First and assistant cook	-	20	38	-	58
Administrative clerk	12	9	16	19	56
Maintenance men/camp	-	22	19	23	64
Mechanic/small tools	12	-	-	-	12
Foreman/mechanic piling	-	14	-	-	14
Apprentice tallyman	-	-	-	9	9
Total	36	65	106	85	292

The success of the on-the-job training programs prompted CBCC employees to further develop their skills via:

- Training sessions with the CBCC and CCDC.
- Winter land surveying courses
- Remote area first aid courses
- Cooking courses

These were financed by the CBCC and local organizations and many participants have secured permanent jobs within the local community as a result of the training.

Other aspects

[Biodiversity and Threatened Species](#)

The formation of the Opimiscow-Sotrac Company facilitated a range of environmental mitigation and rehabilitation projects associated with the development. Projects included:

- Deforesting vast areas around Laforge-1 Reservoir (50 to 250 ha) to recreate open waterfowl habitat (topsoil tilling, seeding of grassy plants and creation of shallow wet zones was also undertaken)
- Building weirs (4) along the Vincelotte River to raise water levels and restore fish habitat (facilitating navigation was a secondary objective)
- Seeding grassy plants on newly exposed parts of the shore of the Vincelotte River and mechanical control of invading shrubs

- Clearing islands in Laforge-1 Reservoir to create nesting habitat for waterfowl and seagulls
- Clearing the summit of hills around Laforge-1 Reservoir to create snow goose migration staging areas
- Felling of dead wood and clearing of ligneous debris on the reservoir shores
- Mowing of berry plants

Community engagement and acceptance

The project area was not populated, but was a traditional hunting ground for the Cree Amerindians. The involvement of a Cree owned company with equal representation at the board level ensured engagement and acceptance of the project, and protected Cree values and heritage. This was further strengthened by the engagement of Cree companies to implement the works.

Further information

Source: Hydropower Good Practices Workshop, Annex VIII - Examples for Good Practice Report, Villach, Austria, October 2005. International Energy Agency.

http://www.hydroquebec.com/generation/hydroelectric/la_grande/index.html

CBCC/Opimiscow-Sotrac Company. 1998. Overview Report. Remedial Measures 1993-1997. Laforge 1 Reservoir, Vincelotte River, Lac des Oeufs.

Cotter, R.C., H. Senneville, Y. Aubry and P. Lamothe. 2002. Utilisation des habitats riverains du réservoir Laforge-1 par les oiseaux de ravage en 2001. Hydro-Québec, Hydraulique et Environnement and Environment Canada, Canadian Wildlife Service. Montréal. 66 p.

Goyette, D. M.J. Grimard and R. Denis. 1999. Vincelotte River and Surroundings of Laforge 1 Reservoir – Monitoring of Remedial Measures. Report submitted to Hydro-Québec, Hydraulique et Environnement, Groupe Production. Montréal. 43 p.

Morneau, François. 1999. Utilisation des aménagements correcteurs par les Anatidés et d'autres espèces aviaires sur la rivière Vincelotte et dans le secteur W-1 du réservoir Laforge 1 en 1999. Report prepared for Hydro-Québec. Hydraulique et Environnement. Suivi environnemental du Complexe La Grande. Montréal, (Québec). 31 p., appendices.