

# Little Jackfish River

## HYDROELECTRIC PROJECT

### PURPOSE OF THIS OPEN HOUSE

- ▶ To update you on Ontario Power Generation Inc.'s (OPG's) proposal to develop a hydroelectric generating station on the Little Jackfish River.
- ▶ To share information about the recent decision to add transmission lines and the automation of Summit Control Dam to the proposal.
- ▶ To seek your feedback on local environmental considerations, issues or concerns that should be addressed through the environmental assessment process.



Site for the Proposed Generating Station



Summit Control Dam

# Little Jackfish River HYDROELECTRIC PROJECT

## WHO IS ONTARIO POWER GENERATION?



- ▶ OPG is an Ontario-based electricity generation company whose principal business is the generation of electricity in Ontario.
- ▶ OPG focuses on the efficient production of electricity from its generation assets, while operating in a safe, open and environmentally responsible manner.
- ▶ OPG is a commercial company, owned by the Province of Ontario – its sole shareholder.
- ▶ OPG has been given a mandate from the Province of Ontario to develop and expand its hydroelectric capacity.
- ▶ This Project will provide more clean, reliable and renewable electricity for Ontario.

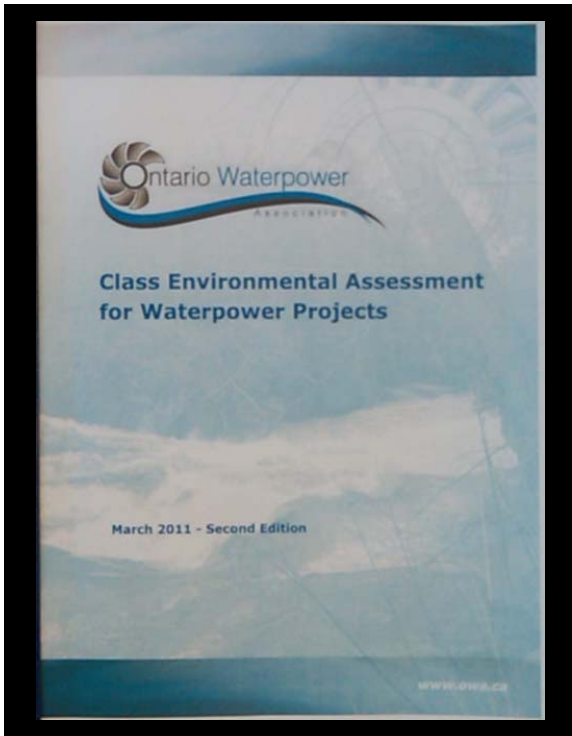


## Environmental Assessment Process



- ▶ Field work to help assess environmental effects was initiated in 2008.
- ▶ More comprehensive field work was carried out in 2009 and 2010.
- ▶ The focus of field work in 2011 is on the transmission line.
- ▶ The effects of the Project during construction and operation are now being assessed.
- ▶ Measures to avoid, prevent, eliminate, reduce, mitigate and compensate for negative effects will be identified.
- ▶ Measures to enhance positive effects will also be identified.
- ▶ Plans to manage environmental effects will be presented for feedback at the next round of Open Houses.

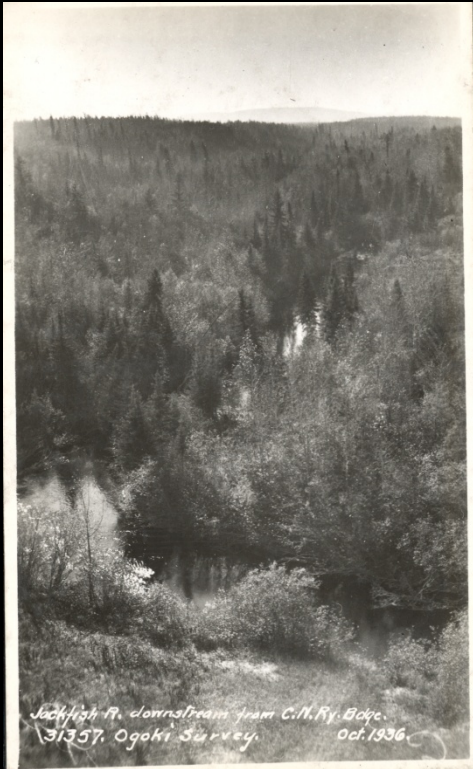
## Environmental Assessment Process



- ▶ The Environmental Assessment for the Project coordinates both provincial and federal requirements.
  - ▶ The provincial process is set out in a document called the Class Environmental Assessment for Waterpower Projects.
  - ▶ The federal process requires a screening by federal agencies, such as the Department of Fisheries and Oceans.
- 
- ▶ One Environmental Assessment Report will be produced to examine:
    - Aquatic Environment (impact on fish habitat / movement and impacts on other aquatic life)
    - Terrestrial Environment (habitat and flora and fauna)
    - Socio-Economic Environment (local economy, local social and economic use)
    - First Nations, Métis and Aboriginal communities (rights, values, uses and interests)
    - Archaeological Resources

# Little Jackfish River HYDROELECTRIC PROJECT

## HISTORY OF THE LITTLE JACKFISH RIVER



**Jackfish Creek,  
1926**

- ▶ The Little Jackfish River was originally a small creek with an average flow of about 4 cubic metres per second.
- ▶ In 1943 the Ogoki Diversion was created to divert flow from the Ogoki River into the Great Lakes System.
- ▶ This was done to provide more water for power generation in support of Canada's efforts during World War II.
- ▶ The Ogoki Diversion required channel improvements and relocation of the CNR railway bridge.
- ▶ Two dams were built to divert water and increase flows down the Little Jackfish River to an average flow of about 120 cubic metres per second.



**Railway Bridge Relocation Project,  
1943**



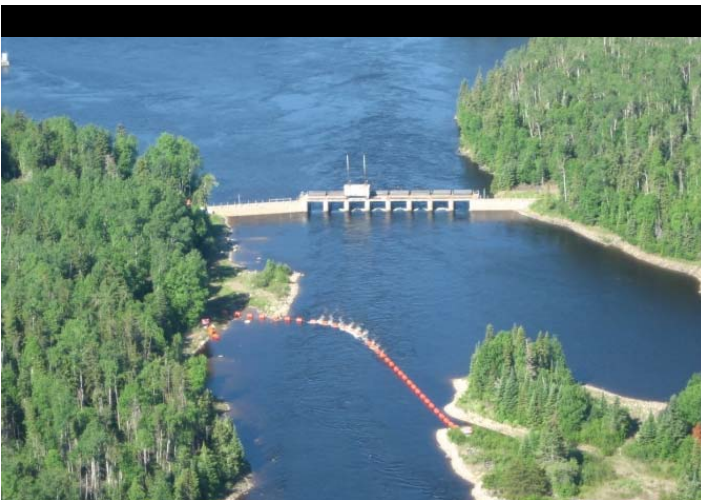
# Little Jackfish River HYDROELECTRIC PROJECT

## LITTLE JACKFISH RIVER **TODAY**



**Little Jackfish River, 2009**

- ▶ Today, flows on the Little Jackfish River are regulated by the Nipigon River System Water Management Plan.
- ▶ There are no hydroelectric generating stations on the Little Jackfish River.
- ▶ Ontario Hydro, now OPG, considered developing the Little Jackfish River in the 1980s and early 1990s, but did not proceed.



**Summit Control Dam controls flow to the Little Jackfish River**



**Waboose Control Dam controls flow to the Ogoki River and the Arctic Watershed**

# Proposed **Generating Station** and **Other Facilities**



Jackfish Road Bridge



Jackfish Road

- ▶ A 73 MW generating station near the Jackfish Road Bridge is now the focus of the Project.
- ▶ The development of a generating station at Seven Veil Falls is not proceeding.
- ▶ A large temporary construction camp to service up to 350 workers during peak construction periods.
- ▶ A concrete batch plant for construction.
- ▶ Temporary access roads to support construction.



# DESIGN CONCEPT for the Generating Station





## Automation of Summit Control Dam

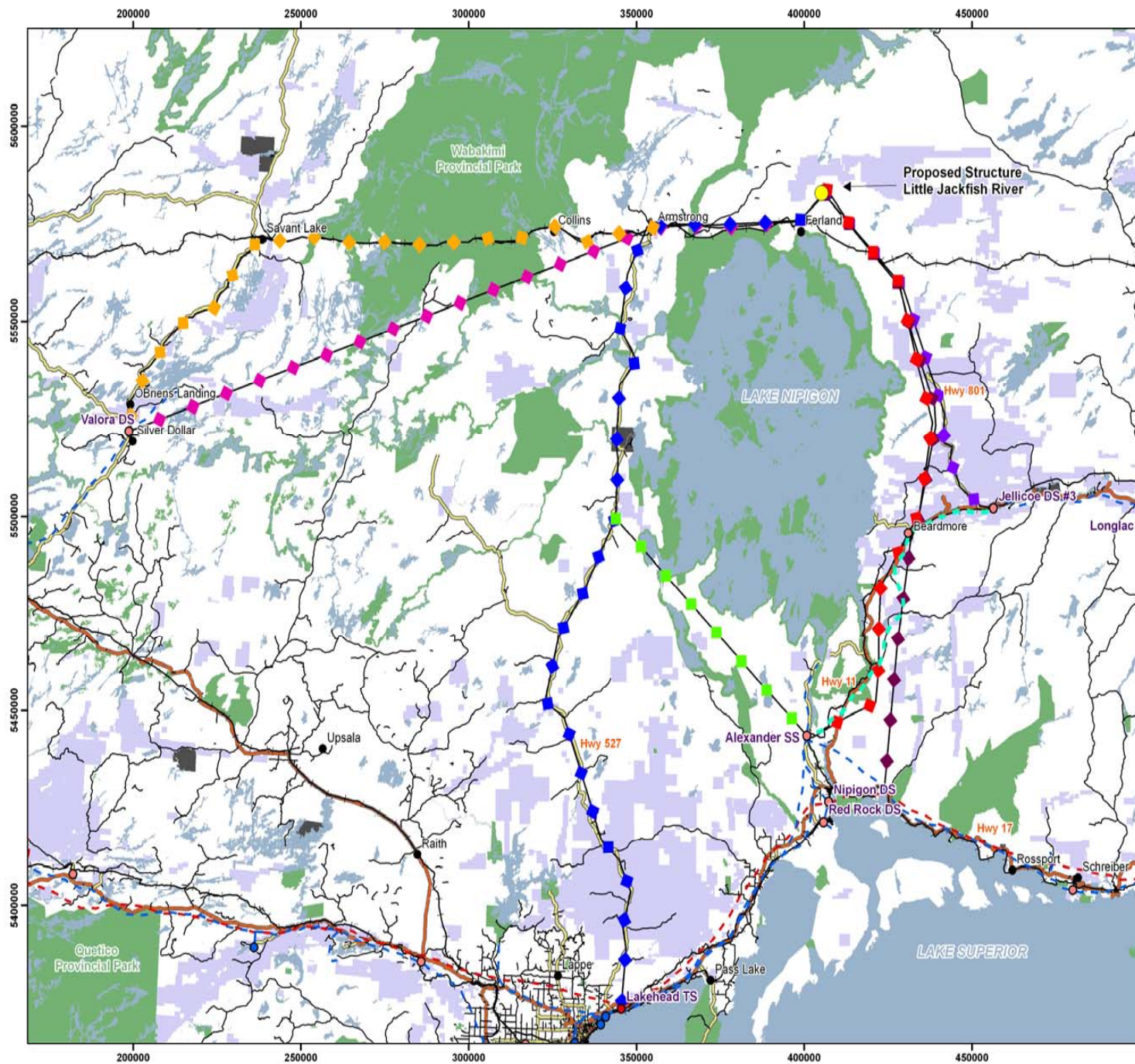


- ▶ The revised Project requires the automation of the existing Summit Control Dam, located at the north end of the Little Jackfish River, south of Mojikit Lake.
- ▶ Summit Control Dam is being assessed for construction requirements.
- ▶ Automation of this Control Dam requires a 44kV wooden pole transmission line.
- ▶ Automation of Summit also requires a road to construct and operate the dam.
- ▶ Attempts will be made to route the access road and transmission line along existing logging roads.
- ▶ Access restrictions and controls need to be a key part of the proposal.

## Transmission Line Alternatives

- ▶ Five transmission alternatives were explored:
  1. Transmission line on either the east or west side of Lake Nipigon connecting to Alexander Generating Station on the Nipigon River
  2. Transmission line to the Jellicoe Distribution Station
  3. Transmission line to the west connecting to Valora Transformer Station located north of Ignace at Silver Dollar
  4. Transmission line to Thunder Bay Transformer Station via the west side of Lake Nipigon
  - 5. Transmission line to Kama Bay via the east side of Lake Nipigon**
- ▶ Alternatives #1 and #2 were eliminated for technical reasons, which made the Project infeasible.
- ▶ Alternative #3 was eliminated for a combination of technical, economic and environmental reasons.
- ▶ Alternative #4 was eliminated for economic reasons.
- ▶ **Alternative #5 is the only alternative that is considered feasible for the proposed Project.**





## Alternative Transmission Routes from Little Jackfish River

**ONTARIOPOWER**  
GENERATION

Projection: Nad 1983 UTM Zone 16N



### Alternative Transmission Routes

- Alternative: LJF to Kama Bay
- Alternative: LJF to Lakehead TS
- Alternative: Alternate termination at Alexander SS
- Alternative: LJF to Jellicoe DS
- Alternative: LJF to Valora TS
- Alternative: Alternate route to Valora TS
- Alternative: LJF to Alexander SS
- Required Upgrade to Alexander SS

### Transmission & Distribution

- Distribution Station
- 115 kV Transmission Station
- 230 kV Transmission Station
- 500 kV Transmission Station
- 115 kV Circuit
- 230 kV Circuit
- 500 kV Circuit

### Base Layers

- Proposed Structure Little Jackfish River
- Railway
- Highway
- Primary Road
- Secondary Road
- Settlement
- First Nation
- Protected Area
- Mining Claim
- Waterbody

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# Study Area for **Transmission Corridor**



- ▶ A study area for the transmission corridor has been selected.
- ▶ The study area width ranges from 1 to 6 kilometres, but the final corridor only needs to be 45 metres wide.
- ▶ First Nations, Métis, public and regulatory consultation will help to determine the final corridor and route.
- ▶ The environmental assessment team is considering a variety of route alternatives in the north end of the study area.
- ▶ A transmission line with minimal impacts to woodland caribou as well as other environmental, social and cultural values is the optimal goal of this study.

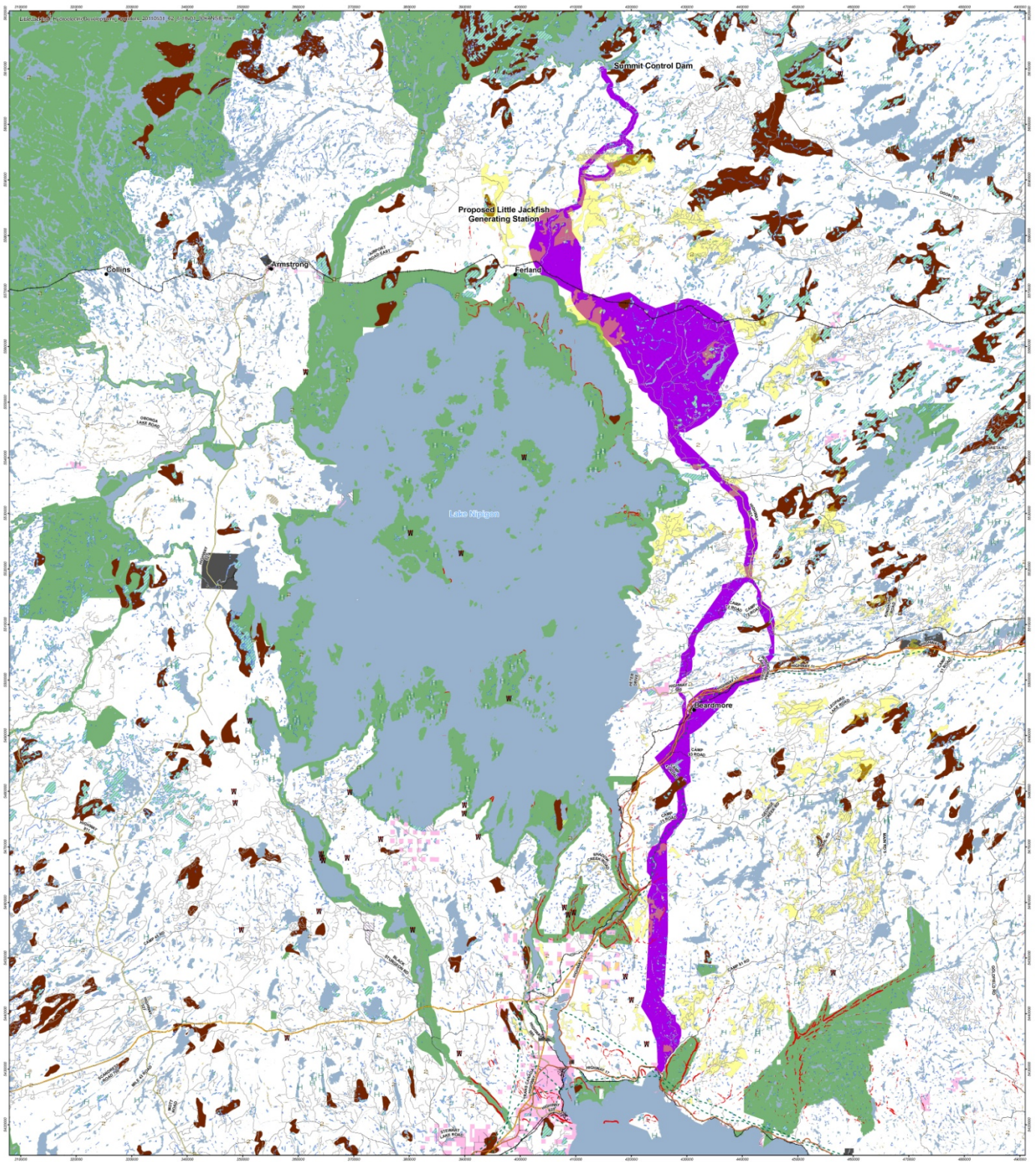


## Study Area for **Transmission Corridor**



- ▶ The study area was chosen to **avoid** major environmental, socio-economic and technical constraints such as:
  - Large water bodies
  - Parks and Protected Areas
  - Airports
  - Townsite of Beardmore
  - Large organic soil deposits and wetlands
- ▶ The study area was also chosen to take advantage of certain **opportunities**:
  - Follow existing roads and railway lines
  - Follow and use temporary roads, decommissioned roads and recent harvest areas
- ▶ The study was further defined by **avoiding** almost all other known environmental, socio-economic and cultural values such as:
  - Moose Aquatic Feeding Areas
  - Waterfowl Concentration Areas
  - Mineral Licks
  - Private Lands
  - Tourist Operations
  - Trappers Cabins and other values





<p><b>Little Jackfish Hydroelectric Development Study Transmission Corridors</b></p> <p><b>ONTARIO POWER GENERATION</b></p> <p>Map 10</p> <p>Scale: 1:50,000</p> <p>Projection: NAD 83 UTM Zone 18N</p> <p>Map 10</p> <p>Scale: 1:50,000</p> <p>Projection: NAD 83 UTM Zone 18N</p>		<table border="0"> <tr> <td>• Settlement</td> <td>Collector</td> <td>1:1</td> <td>Waste Aquatic Feeding Area</td> </tr> <tr> <td>W Wetland</td> <td>Expressway / Highway</td> <td>Corridor</td> <td>First Nation</td> </tr> <tr> <td>W Wetland</td> <td>Proposed</td> <td>Slope &gt;40%</td> <td>Prohibited Area</td> </tr> <tr> <td>W Wetland</td> <td>Trapper Cabin</td> <td>Antenna</td> <td>Wetland</td> </tr> <tr> <td>W Wetland</td> <td>Transmission Line</td> <td>Local / Street</td> <td>Wetland</td> </tr> <tr> <td>W Wetland</td> <td>Gas Pipeline</td> <td>Local / Street</td> <td>Wetland</td> </tr> <tr> <td>W Wetland</td> <td>Local / Street</td> <td>Clear Cut</td> <td>Wetland</td> </tr> <tr> <td>W Wetland</td> <td>Temporary Road</td> <td>Organic Deposit</td> <td>Wetland</td> </tr> <tr> <td>W Wetland</td> <td></td> <td>Private Land</td> <td>Wetland</td> </tr> <tr> <td>W Wetland</td> <td></td> <td>Federal Land, Other</td> <td>Wetland</td> </tr> </table>	• Settlement	Collector	1:1	Waste Aquatic Feeding Area	W Wetland	Expressway / Highway	Corridor	First Nation	W Wetland	Proposed	Slope >40%	Prohibited Area	W Wetland	Trapper Cabin	Antenna	Wetland	W Wetland	Transmission Line	Local / Street	Wetland	W Wetland	Gas Pipeline	Local / Street	Wetland	W Wetland	Local / Street	Clear Cut	Wetland	W Wetland	Temporary Road	Organic Deposit	Wetland	W Wetland		Private Land	Wetland	W Wetland		Federal Land, Other	Wetland	<p><b>4DM Inc.</b> Toronto, Ontario M4J 1L3 Canada</p> <p>This map is for illustrative and reference purposes only. No responsibility will be accepted by 4DM for any consequential loss or damage arising from its use.</p> <p>Produced by 4DM under license from Ontario Ministry of Natural Resources, Copyright Queen's Printer for Ontario, 2011. Copyright Department of Natural Resources Canada. All rights reserved.</p>
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### Transmission Corridor - Next Steps



- ▶ The study area for the Transmission Corridor will be further examined in the field and by desktop studies.
- ▶ Some environmental studies include:
  - Forest and vegetation assessments
  - Aerial Surveys (Caribou, Raptors, Beaver Lodges)
  - Bird Surveys
  - Socio-Economic Assessment
  - Cultural Heritage Assessment
- ▶ Are you aware of any values or other important considerations that are within or near the study area?
- ▶ Do you agree with the idea of trying to align the transmission corridor with linear features such as roads and railway lines?
- ▶ Now is the time for you to express your views about the study area!



# Aquatic Environment - Preliminary Findings

## Fish Movement

- ▶ Fisheries studies included fish habitat assessment, spawning studies, telemetry studies, sturgeon netting, brook trout assessment, walleye genetics, sturgeon index netting and larval drift netting.
- ▶ While the proposed dam will restrict upstream fish movement to Zigzag Lake, it will improve fish movement from Lake Nipigon to the dam before spring spawning season.
- ▶ Fish movement can be improved by periodically reducing flows through the railway chute located upstream of the river mouth.
- ▶ In order to accomplish this, OPG must automate Summit Control Dam.





# Aquatic Environment - Preliminary Findings

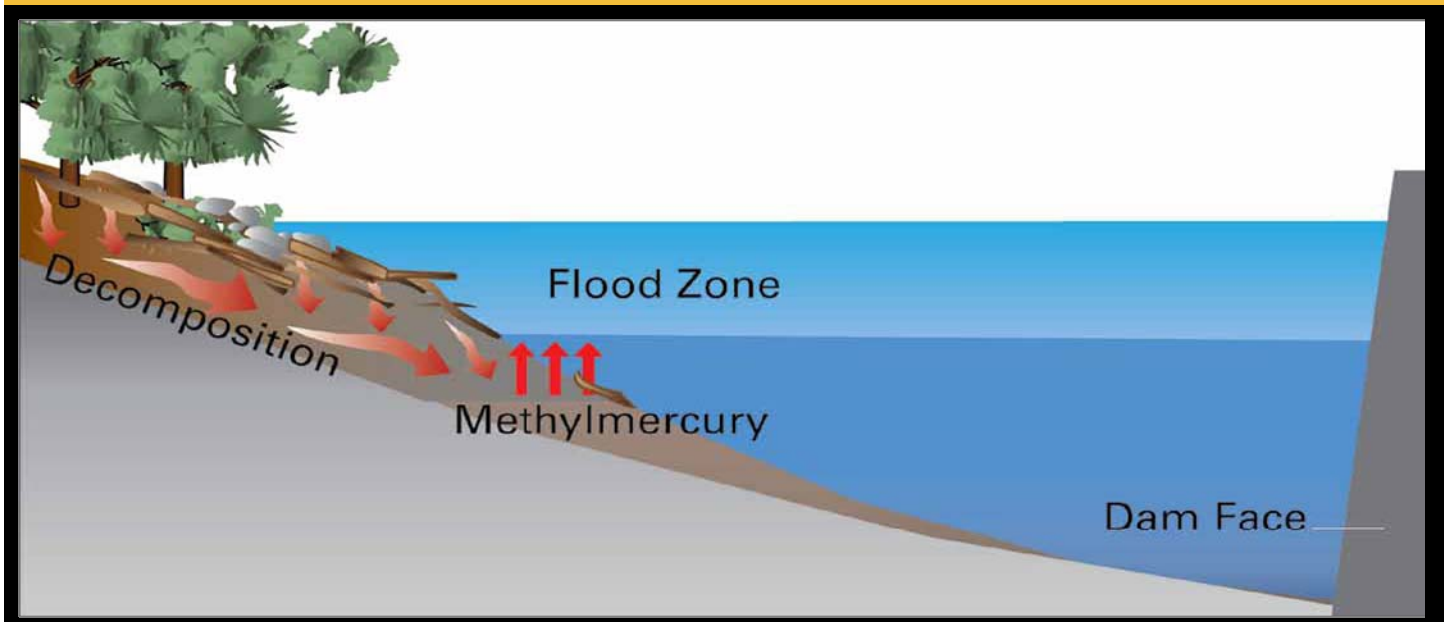
## Fish Habitat



- ▶ While some fish habitat will be negatively impacted by the Project, this effect can be mitigated by creating new habitat in locations that will encourage fish spawning.
- ▶ While sturgeon are present in the system, no sexually mature sturgeon or larval sturgeon have yet to be found around the proposed generating station site.
- ▶ Brook trout are present in the River immediately in the area around Major Creek. Efforts are being made to ensure there is appropriate habitat connection.

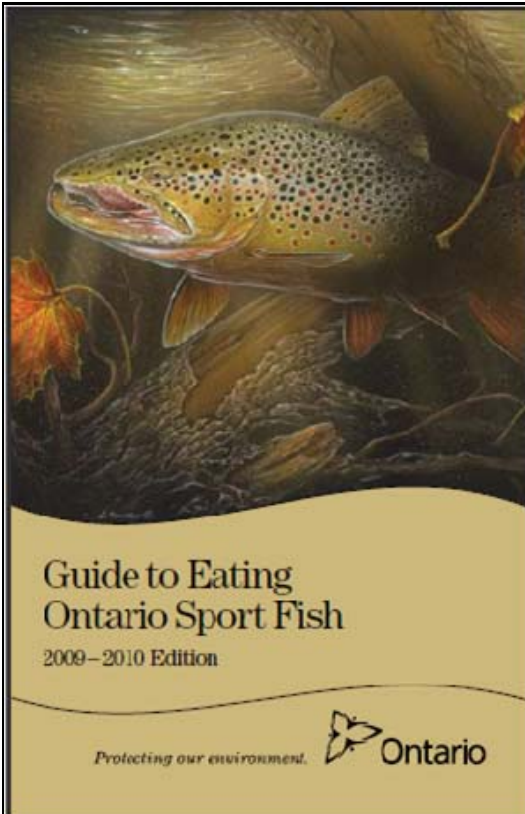
# Hydroelectric Development and **MERCURY** in the Environment

- ▶ The Project has the potential to increase methylmercury levels in fish. Decomposing material in the flood zone that is created behind the new dam releases methylmercury into the food chain.
- ▶ The amount that the Project may increase methylmercury levels in fish is being assessed through field studies and modeling.
- ▶ OPG is receiving assistance from external experts to ensure that concerns about this issue are taken seriously and addressed.
- ▶ Plans to address this issue will be developed in consultation with concerned people and government agencies.





## Hydroelectric Development and **MERCURY** in the Environment



Guide to Eating Sport Fish



Sampling Soil for Current  
Mercury Levels at Moule Lake

- ▶ OPG will ensure that concerns about increased methylmercury levels are addressed and appropriate measures are in place that will allow fishing to continue.
- ▶ Mercury study results will be disclosed in the Environmental Assessment, which will be reviewed for adequacy by the Ministry of the Environment and other regulatory agencies.
- ▶ Prior to construction, OPG is conducting field and modeling studies to obtain baseline data.
- ▶ Minimizing the extent of flooding and minimizing frequent and extensive water level fluctuations will help to reduce methylmercury production.
- ▶ Cutting and removing vegetation from the flood zone will also help reduce methylmercury production.
- ▶ During and after construction, OPG is committed to monitoring fish mercury levels, communicating the results and ensuring the implementation of the most appropriate management strategies.

## Cultural Heritage Preliminary Findings

- ▶ Assessment of the Project's impact on cultural heritage is being carried out according to the *Ontario Heritage Act* and in conjunction with the Lake Nipigon First Nations.
- ▶ The areas associated with the generating station and flooded areas have been studied.
- ▶ Areas studied included all previously recorded archaeological sites on the Little Jackfish River and areas proposed for development.
- ▶ Some archaeological resources were identified in areas that are normally under water.
- ▶ An archaeological assessment is required for the transmission line.
- ▶ The results of the field work will also be discussed with First Nations, Métis and other Aboriginal communities.





## Socio-Economic Environment Preliminary Findings



- ▶ The Project is consistent with the current land-use direction for the area.
- ▶ The area around the Lower Site has been subject to intensive forest harvesting, road development and mineral exploration.
- ▶ It will be important to protect the remote character of the area north of Zigzag Lake to Mojikit Lake and Ogoki Reservoir.
- ▶ Access controls will be required to protect remoteness. Consultation with outfitters is required.
- ▶ The Project will generate significant construction employment. On average, approximately 250 construction workers will be working on the generating station for 3 years.
- ▶ In Northwestern Ontario, it is expected that the sales multiplier associated with the Project will be \$1.50, that is for every dollar expended on the Project, another \$0.50 will be spent within Northwestern Ontario.

## Project **Benefits**

- ▶ Production of more clean, reliable and renewable power for Ontario.
- ▶ Realization of local and regional socio-economic benefits associated with the construction and operation of the Project.
- ▶ Creation of economic benefits to First Nations, Métis and Aboriginal communities.
- ▶ Establishment of a physical barrier to help prevent invasive species, such as smelt, from getting into the Arctic watershed.
- ▶ Creation of a more stabilized flow regime on the Little Jackfish River.

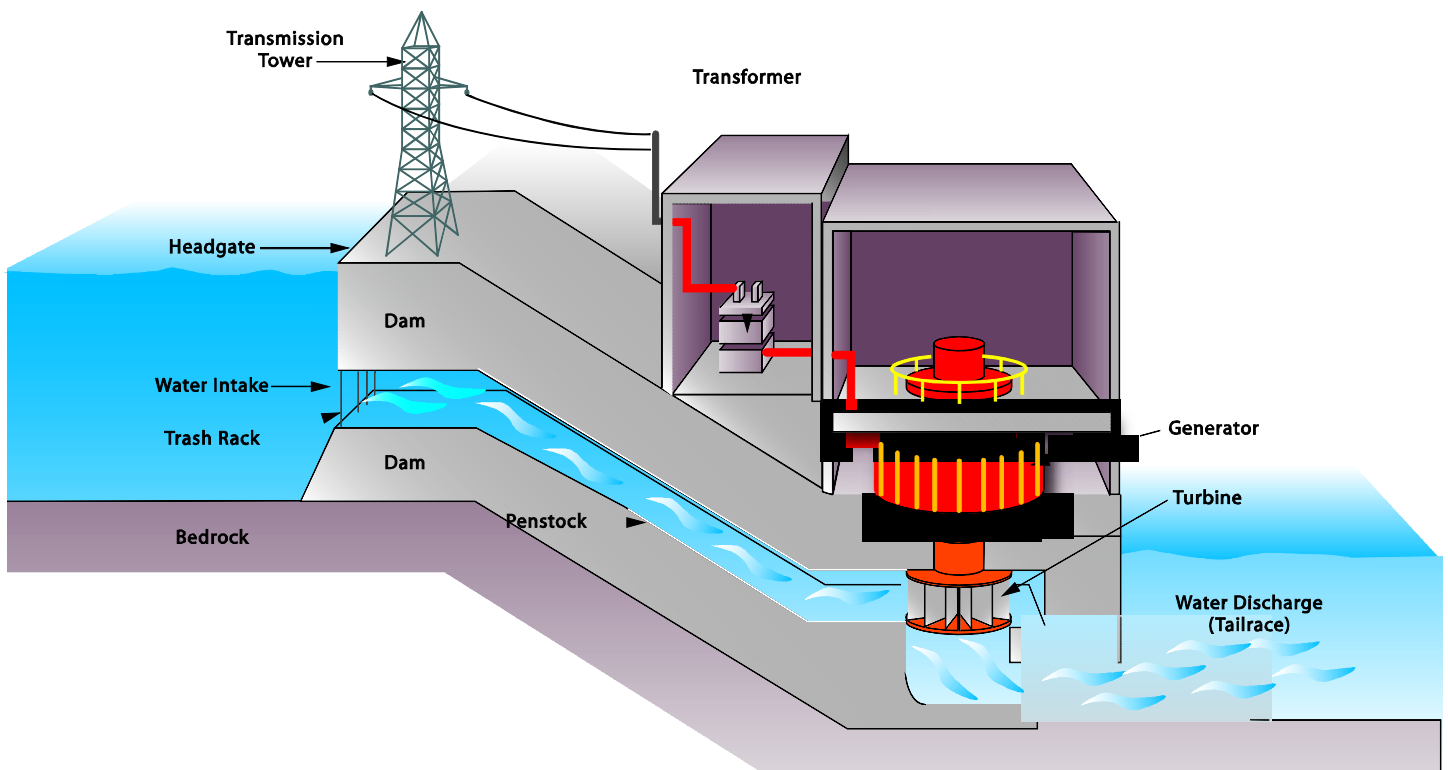




# Little Jackfish River HYDROELECTRIC PROJECT

## How Hydroelectric Power Works

- ▶ Hydroelectric power stations convert the kinetic energy of falling water into electrical energy.
- ▶ Hydroelectric stations use either the natural drop of a river, such as a waterfall, or a dam built across a river to raise the water level and provide the drop (head) needed to create a driving force.
- ▶ Water is collected at the top of the dam in what is called the forebay. From there, the water flows into a pipe called a penstock which carries it down to a turbine water wheel.
- ▶ The water pressure increases as it flows down the penstock. The pressure and flow of the falling water drives a turbine which in turn spins a generator.
- ▶ This creates electricity that can be sent across transmission lines to wherever the power is needed.



## We Value **Your Opinion**

- ▶ Please take the time to ask questions and complete the Comment Sheet.
- ▶ Consultation is a key component of the Environmental Assessment process as it provides you with an opportunity to contribute and inform decisions relating to the proposed Project.
- ▶ Another Open House will be held in late 2011.
- ▶ Separate meetings and distinct consultation activities will also be held with First Nations, Métis and Aboriginal communities.
- ▶ We would like to know if there are any important environmental or social values, interests or concerns you might have about the Project.
- ▶ There will be additional opportunities for you to participate in the Environmental Assessment process.