Mactaquac Dam Comparative Reviews

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Kingsclear First Nation

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MSES

MSES – Who are we?

Management and Solutions in Environmental Science

Who:

Network of senior scientists & engineers – work for Aboriginal groups across Canada to review Environmental Assessments (EA) through an "Aboriginal lens" (pipelines, oil and gas, metals mining, roads, marine shipping, forestry, hydro-dams, wind farms, etc…)

What we do:

*Provide independent expert technical advice & guidance.

*Inform clients about potential local and regional impacts.

*Provide effective scientific solutions and empower communities.

MSES

MSES Independent Scientists & Engineers

- Groundwater Quantity
- Surface Water Quantity and Quality
- Fish and Fish Habitat
- Air Quality
- Noise
- Health (human and wildlife)
- Vegetation and Wetlands
- Wildlife (terrestrial and aquatic)
- Heritage Resources
- Traditional Land and Resource Use

Mactaquac Dam Overview

- The Mactaquac Dam is located on the St. John River.
- NB Power must retire the Dam because the cement used to build several structures is expanding and cracking.
- The dam is currently expected to function until 2030.

Mactaquac Dam Overview

Extend the life of the Dam (Repair sections of the dam)

- Replace parts or all of the concrete in the powerhouse, powerhouse, main spillway, diversion sluiceway, etc.
- Install new turbines and generators

Mactaquac Dam Overview

Option 1 – Complete rebuild (build new infrastructure for continued power generation)

- Retain earthern dam.
- Build new approach and and discharge channels on on the south bank of the the River
- Build new main spillway, sluiceway and switchyard switchyard
- Build a new fish passage passage structure

Mactaquac Dam Overview

Option 2 – Keep the lake without generating power

- Retain earthern dam.
- Build new approach and discharge channels on the south bank of the River
- Build new main spillway and and sluiceway.
- Build a new fish passage structure

Mactaquac Dam Overview

Option 3 –Remove the dam and its infrastructure

- Remove earthern dam.
- Remove powerhouse, main spillway, diversion sluiceway, etc.
- Rehabilitate the site, plus plus some up- and downstream areas

NB Power's Decision

NB Power has been conducting information sessions, has an online survey and has been engaging with First Nations and stakeholders to collect feedback about these Options.

<u>The Decision has not been made yet!</u>

Comparative Environmental Review (CER)

NB Power has published a review of Options 1, 2 and 3 that compares the environmental impacts.

Social Impact Comparative Review (SICR)

NB Power has published a review of Options 1, 2 and 3 that compares the impacts to people.

MSES is reviewing the CER and the SICR on behalf of the Maliseet

I am here to **inform** you about the potential **environmental and social impacts** of the

We would also like to **hear from you**:

- What are your concerns?
- What environmental impacts are you most concerned about?
- What aspects of each Option do you want your scientists to focus on?
- What do you want your scientists to know about your current use of the land and water?

Option 1 and Option 2

Option 1 (Rebuilding) and Option 2 (Retaining the lake) will have impacts on the south shore of the River.

- A new approach and discharge channel will be excavated from the south shore for both Option 1 and 2
- Areas on the north and south shores will be cleared as work areas during construction
- Fish passage structures will be included (specific)
- For up to 10 years, construction will
  - create noise and impact air quality
  - impact River flows and probably water quality
  - Remove vegetation
  - Subsequently impact fish and wildlife

Option 1

Existing concrete structures to be removed

Intake/Discharge Channel

New powerhouse, spillways, switchyard

Proposed construction service area

Option 2

Existing concrete structures to be removed

Intake/Discharge Channel

New spillways

Proposed construction service area

Option 1 vs. Option 2

- River flow regimes and lake water level may be different
  - Option 2 should not require releasing water during peak power usage

- Option 1 will require a larger excavation and more land on both shores compared to Option 2

- Construction: 10 years vs. 7 years

Option 3

Option 3 is a "game-changer" for virtually every environmental measure, as well as for socioeconomic impact measures and for traditional land use (TLU).

Remember that there are impacts in both cases…

Water

- The Mactaquac reservoir (lake) will no longer exist, large areas of the reservoir bottom will be exposed
- Water levels up to Hartland are expected to be lower, while downstream water levels may be higher
- Ice jam flooding occurrence may increase, especially near the current dam site
- Sediment transport will most likely change
  - Sediment build-up in the lake
  - Deposition of sediments in downstream areas
  - Formation of new sand/gravel bars, perhaps even islands

Water

- It isn't clear how the dam has affected water quality, but there are problems with some high metals concentrations, bacteria and low oxygen levels
- The dam has increased water temperature, and this will decrease
- No analysis of mercury in NB Power's CER
- Some wells, surface water intakes, and wastewater outfalls may become stranded if they currently withdraw or discharge to the lake
- There may be a loss of waste dilution, but also an increase in flow rates (removal)

Fish

- The dam has generally had a negative impact on several species, including Atlantic salmon
- Atlantic salmon and gaspereau are transported around the dam
- There is a DFO-run Atlantic salmon hatchery downstream of the dam. It isn't clear if this will continue to operate after dam removal.
- Unclear what fish habitat will be like in the former lake area and downstream of the dam after dam removal.
- No habitat restoration has been proposed yet.
- Studies are ongoing…

Vegetation

- It isn't clear how newly exposed land will be revegetated, or if there is currently a plan to do so
- New land may not be suitable for revegetation, or invasive plants (weeds) may grow
- Wetlands that are connected to the St. John River and especially the lake may be drained or isolated, fiddlehead gathering opportunities may change

Wildlife

- NB Power has considered some impacts to waterfowl, deer and moose but not to predators like black bears or coyotes

- Without the lake, routes across the valley may become usable for wildlife, hunting opportunities may change

Traditional Land Use

- TLU impact assessment incomplete until NB Power receives information directly from the Maliseet
- The Maliseet will complete their own traditional land and resource use study
  - Dr. Ave Dersch (Moccasin Flower Consulting)
  - Natasha Sacobie (Kingsclear First Nation)
- Interviews and mapping will be completed in each community by co-researchers (Natasha Sacobie- KFN)
- Most interviews should be completed by June 30, 2016

Historical Resources

- Options 1 and 2 will disturb land and will require an archaeological assessment
- Option 3 becomes very complex as historical resources flooded by the dam may become exposed and subject to impacts from erosion
- Numerous historical resources of critical significance to the Maliseet (e.g., Meductic) were flooded after the construction of the dam in 1968
- The path forward must include deep consultation with the Maliseet and the involvement of Maliseet archaeologists

What is MSES doing now?

Comparative Reviews – Informing Communities

- MSES is reviewing NB Power's Options (Environmental and and Social Impact)
- MSES will provide a draft report by the end of June to the the Maliseet and eventually NB Power

Traditional Land Use Study – Gathering Traditional Knowledge

- A TLU study will be completed by September (Moccasin (Moccasin Flower)
- Maliseet Co-researchers
- This report will be provided to the Maliseet and eventually eventually NB Power

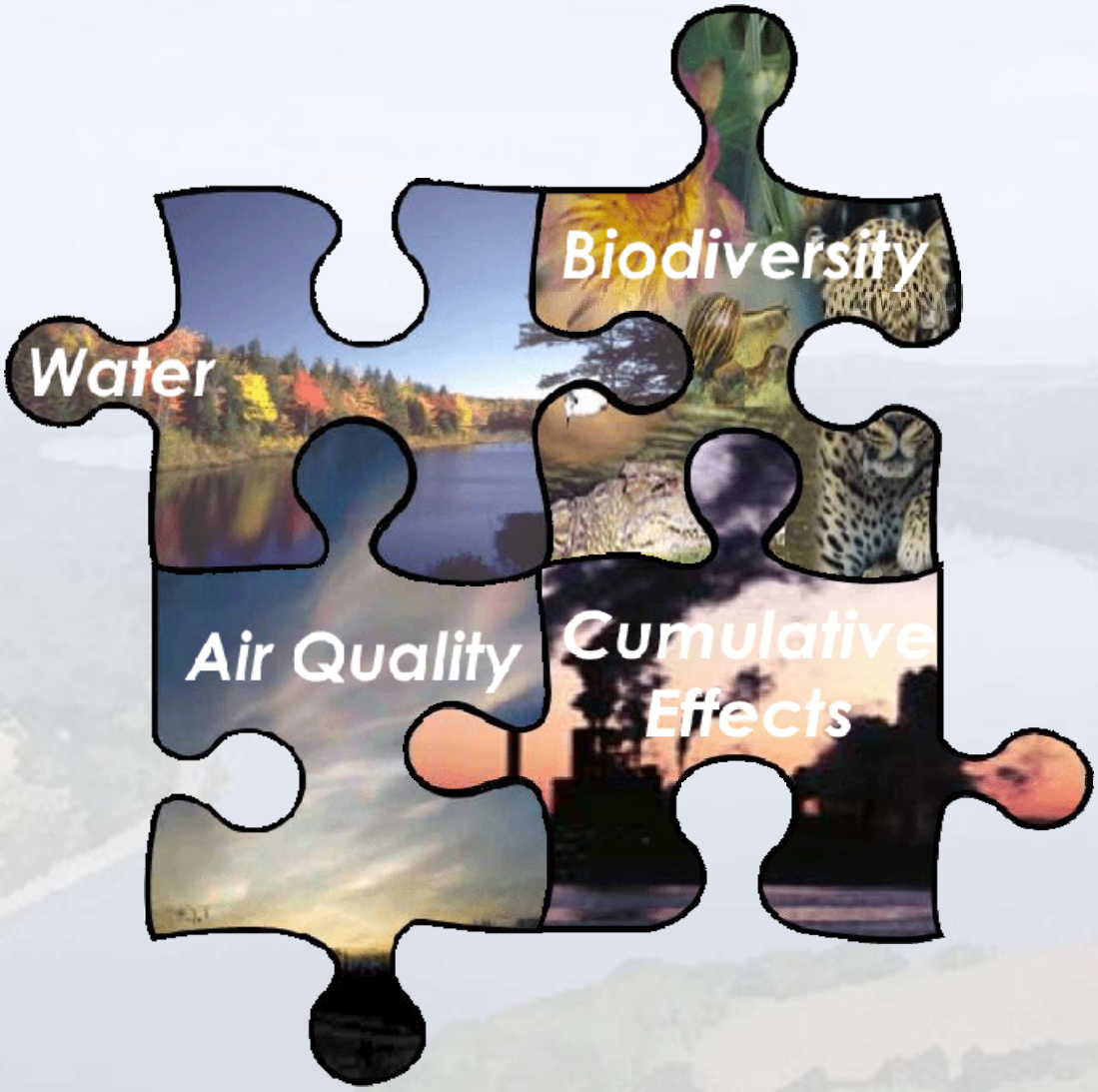
Giving you the information you need to make informed decisions

Next Steps

NB Power will Make a Decision
Between the 3 (plus 1) Options in 2016

- Once a decision is made, the regulatory phase, phase, possibly including a comprehensive environmental impact assessment (EIA), will be completed by NB Power

- It is NB Power's intention to use the input received received on the Options to
  - Decide which Option to take
  - Help them decide what to focus on in the EIA EIA



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