

Atlin Lake Enhancement Concept



Dec. 2010

Keeping You Up to Date

When Yukon Energy first began our research into the possibility of building a weir on the Atlin River, we promised to share the results of our studies with the Taku River Tlingit First Nation, the Atlin Community Improvement District (ACID), other stakeholders and the residents of Atlin. This newsletter gives a summary of what we've learned so far, what we still need to find out, and what the next steps are in this process.

We are still a long way from knowing whether a weir could be built without harming Atlin Lake and River, and the users of these waterways. We ask that you keep an open mind until we complete all the studies and analyze the data. We are committed to regular and meaningful discussions with you and we will take all your concerns seriously.

Background

Yukon's energy demands are quickly outgrowing our clean energy supply. If we cannot meet the rising energy demands with our renewable generating capacity, we will be forced to burn diesel, which is expensive and harmful to the environment.

On a global basis, climate change is an issue for everyone, particularly Northerners. We feel it is our obligation to ensure, as much as possible, that the power we produce is from clean, renewable sources. We understand the reduction of greenhouse gases is a priority for B.C. as well, so in that we have a shared vision.



4th of July Bay at Atlin Lake

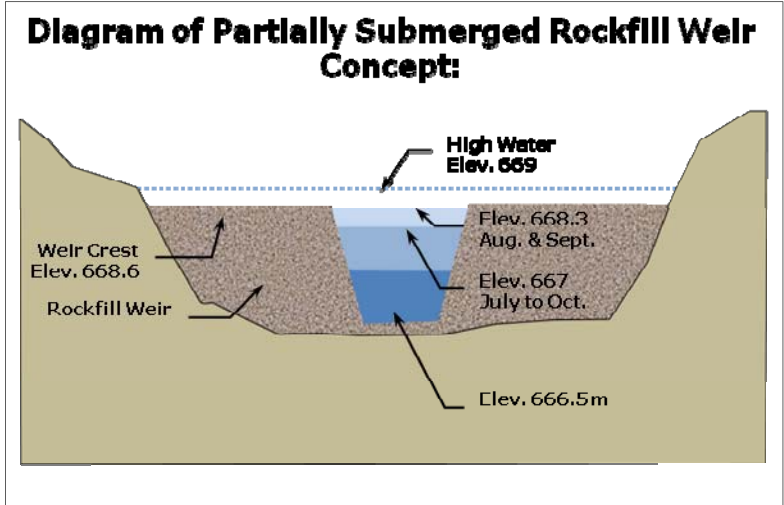
Yukon Energy is looking at all possible sources of renewable energy, including geo-thermal, wind, waste-to-energy, Demand Side Management (energy conservation) and the enhancement of our existing hydro assets. With 40 percent of the water at our Whitehorse plant coming from Atlin, we cannot ignore the potential of using that water more efficiently. That's why we are looking at the concept of building a submerged weir in the Atlin River. The weir would slow the rate at which the water flows out of Atlin Lake during the fall, so that there is water to use in the winter when we need it the most. The weir would allow for both boat and fish passage.

This concept, if it moves ahead, could displace between 2.5 and 5 million litres of diesel per year and could avoid the production of up to 12,600 tonnes of greenhouse gas emissions annually.

What Might a Weir Look Like?

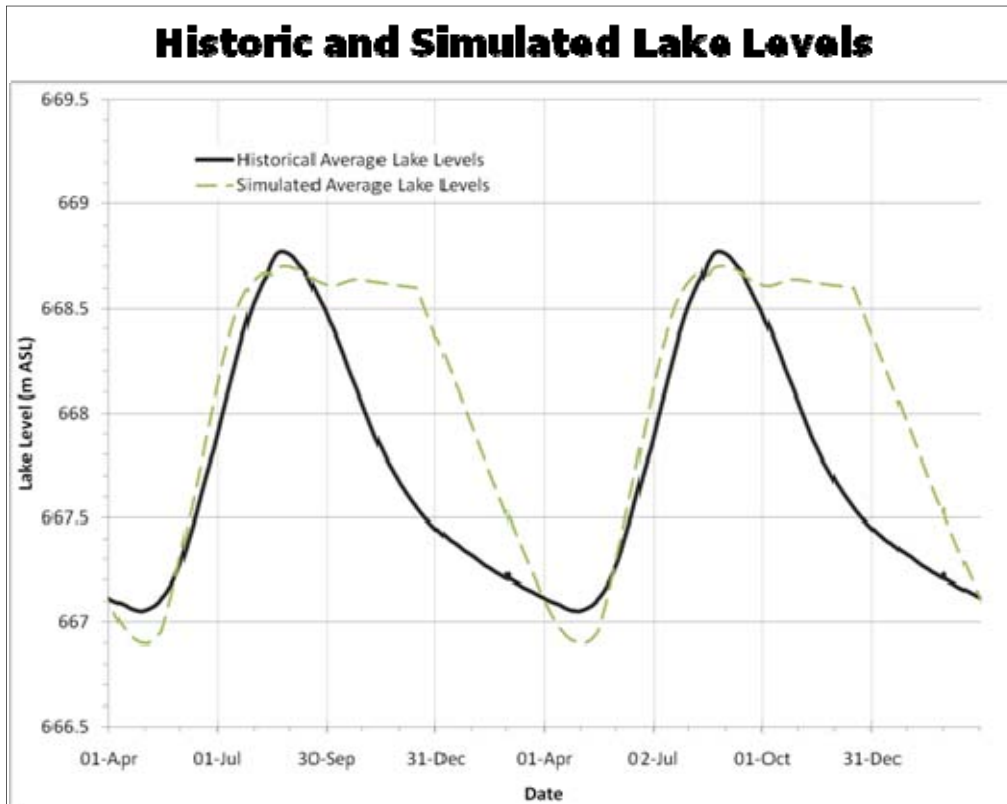
Any design must take the following needs into consideration:

- It must be able to regulate the Atlin River to increase winter flows
- It must allow boat passage in the river similar to current conditions
- It must allow fish migration year round in the Atlin River
- It should provide flood management on Atlin Lake



With that in mind, the sketch seen here is an early concept. It consists of two components: a partially submerge rock-filled weir, which would reduce river flow but still allow for passage of both boats and fish, and a gated diversion channel that would provide regulation of flow in the river. The weir would look like a gravel bar.

The chart below indicates the historic pattern of levels on Atlin Lake (solid black lines) and the simulated levels with a weir in place (broken green lines).



Fish and Fish Habitat Studies

Yukon Energy has undertaken a number of studies to determine the current status of various aspects of the water system and surrounding area, and its inhabitants. The research areas for the aquatic program included Atlin Lake, Atlin River and Graham Inlet.

Instream Flow Studies

The studies involved measuring water flows and surveying water levels at 15 cross sections on the Atlin River. The studies also looked at the fish habitat available at different flows in the river. This data will allow us to evaluate the potential effects of changes in flows on fish habitat. It will also help us establish what water flows are needed for the various species of fish that use the river.

Assessing Wetlands

Three wetlands (North End, Logger Bay and O'Donnell) were chosen to be assessed. We looked at water quality, sediment, hydrology, aquatic organisms and vegetation. Further studies of these wetlands will include fish use and how the wetlands are affected by levels on Atlin Lake.

Lake Ecology

Scientists took water quality samples from a number of sites on Atlin Lake, Atlin River and Graham Inlet to measure the levels of suspended solids and metals. They also collected invertebrates and planktons from Atlin Lake and Atlin River. This information will help us better understand the ecology of the system.

Fish and Fish Habitat

We looked at two potential weir locations, along with the deepest pool in the uppermost reach of the river where groups of Arctic grayling and round whitefish were seen. This pool offers a large holding area for fish of various sizes and ages, and consists of various types of habitat in terms of water depth, how fast the water runs, and the type of materials that make up the bottom of the creek.

Lake Trout Spawning

An assessment was done at the islands in Telegraph Bay, the outer islands of Scow Bay, island off-short of Atlin, and Fish Camp Bay. Biologists also confirmed two spawning areas at the 4th of July Bay and the outer islands of Scow Bay. Observations showed that spawning was largely finished by mid-October and that lake trout spawning occurs on reefs exposed to prevailing wave action, having cobble (rock smaller than boulders but larger than pebbles) with steep drops and at depths of between one and three meters. Further work will be done to determine if this lake trout spawning habitat is typical of the entire lake or if there are other types of spawning areas in different parts of the lake.

Further Studies Will Focus On...

- Better understanding of lake trout spawning and egg survival over the winter
- Confirming if the observed profile of the spawning habitat is consistent throughout Atlin Lake
- Understanding changes in Atlin River flows on the downstream aquatic environment in the river and Graham Inlet
- Determining water flow needed for various fish species in the Atlin River
- Identifying the physical characteristics of the wetlands (ice conditions, timing of melt, temperatures, and how they interact with Atlin Lake) and use by fish, especially in the spring when the lake levels are at their lowest.



Scow Lake trout spawning area

Wildlife and Vegetation Studies

Biologists completed wetland and ground vegetation mapping using aerial photography. They also documented seasonal habitat use, and the presence of shoreline birds, aquatic mammals, amphibians and rare plants, using ground and aerial surveys as well as historical data.

Observations

Wetlands are quite limited around Atlin Lake. The largest wetlands are found at the O'Donnell River, and the Hoboe and McKee Creeks. These wetlands are influenced by both upstream inflows and Atlin Lake levels, and have adapted to fluctuating water levels.

Beaver have adapted to lake level changes by building multi-level entrances in their lodges.



Waterfowl don't appear to extensively use Atlin Lake in the fall and summer. However osprey and bald eagle nests are relatively common in snags and trees on islands and near the shoreline of Atlin Lake.

Further Studies Will Focus On...

- Understanding how lake levels influence wetlands, along with other inflows from upstream sources.
- Doing spring waterfowl use and winter wildlife surveys.

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Shoreline Erosion

Observations

Shoreline erosion is a natural process within the major headwater lakes of the Yukon River (the Southern Lakes). Atlin Lake appears to have the least amount of active erosion as compared to other Southern Lakes.

The majority of the Atlin Lake shoreline consists of stable beaches with cobble

and boulders and is not as prone to erosion from wave action.



Erosion along northern part of Atlin Lake

On Atlin Lake, active erosion was observed within the northern portion of the lake, where silt bluffs are exposed to prevailing winds and waves. Scientists also observed some erosion along bedrock bluffs at several exposed locations on the southern shore of the lake.

Next Steps

Yukon Energy will continue to engage with the Taku River Tlingit First Nation, the Atlin Community Improvement District, the B. C. government, Atlin residents and other stakeholders.

We will identify information gaps and collect any additional baseline data needed. We will then prepare an environmental and socio-economic impact assessment. We will continue to refine the engineering design of the weir.

Project approvals would include but may not be limited to: a federal project assessment by the Canadian Environmental Assessment Act, B. C. licencing (water licence and land tenure), a Fisheries Act authorization and a Navigable Waters authorization.