

PLAN 2014 EXPEDITED REVIEW

Phase 1 Key Findings

Purpose of the Phase 1 study

The Great Lakes-St. Lawrence River Adaptive Management Committee, or GLAM Committee, has completed Phase 1 of the expedited review of Plan 2014. Since February 2020, the GLAM Committee has obtained and analyzed a great deal of additional data on the impacts of extreme high water on Lake Ontario and the St. Lawrence River. This new information will support the International Lake Ontario – St. Lawrence River Board (Board) when they are under authority to deviate from the provisions of Plan 2014. Deviations from the plan can be undertaken by the Board during periods of extreme water levels by increasing or decreasing the outflow from Lake Ontario through a large hydroelectric dam on the St. Lawrence River.



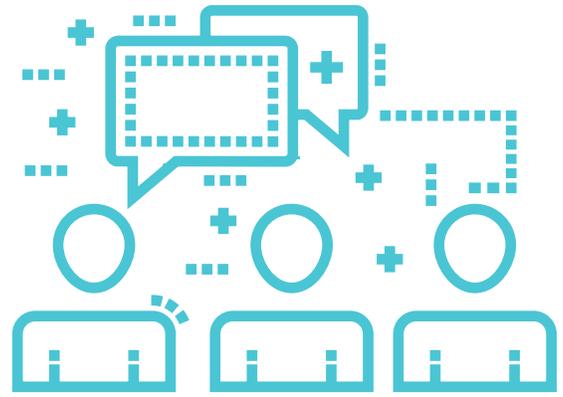
Soldiers of the New York Army National Guard at Sodus Point, NY



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Here are some of the key findings of Phase 1 of the expedited review:

Outreach and Engagement



Finding

Indigenous Nations located on or near the shorelines of the St. Lawrence River and Lake Ontario have deep, long-standing connections of those waterways and are susceptible to impacts from extreme high and low water, yet limited information on those impacts had been gathered from Indigenous populations. The GLAM Committee recognizes the unique cultural perspectives, knowledge and traditional practices of Indigenous Nations and the importance of their inclusion in the review of the regulation plans and the adaptive management process.

Response

The GLAM Committee and IJC began in 2021 to engage with First Nations, Tribal Nations and Métis Nations whose traditional territories are located along the Lake Ontario and St. Lawrence River shoreline or that have rights along the shore. The intention is to establish lasting relationships and learn how extreme high water affected Indigenous Nations. The engagement effort will continue in Phase 2 of the expedited review, and Indigenous Nation communities will be included in the review of the regulation plans and the on-going adaptive management effort.

Finding

The IJC established an 18-member Public Advisory Group (PAG) that worked with the GLAM Committee on Phase 1 of the Expedited Review. The GLAM Committee found the PAG to be a welcomed and valuable addition to the Phase 1 effort. Its members were highly engaged, willing to learn and exchange information, and were integral to the development of a Decision Support Tool for informing outflow management decisions. The group included representatives of the communities and interests on Lake Ontario and the St. Lawrence River including boating and tourism, municipal and private water systems, Indigenous communities, shoreline properties, commercial shipping, agriculture, hydropower production and natural ecosystems. They provided valuable insight into the impacts of extreme high water, helped increase the transparency of the adaptive management process, and helped inform on-going public engagement.

Response

The PAG was created so that representatives of groups both upstream and downstream of the dam, that are directly affected by Board outflow management decisions could bring their diverse experiences and insights into the impacts of extreme high water to the GLAM Committee. Assisted by a third-party facilitator, the GLAM Committee met regularly with PAG members throughout Phase 1. The GLAM Committee was pleased to accept the collective wisdom of the PAG and worked to include their ideas into the expedited review. The PAG produced a report that summarizes their views on the contribution of the PAG to the Phase 1 effort, the challenges and limitations of the process and their recommendations for future public engagement. The GLAM Committee wholly supports and recommends the continued involvement of the PAG in Phase 2.



Flooding of homes along the shoreline within the Tyendinaga Mohawk Territory, May 2017



Wetland along the St. Lawrence River

Understanding Risk and Uncertainty

Finding

Members of the Board recognize several factors that complicate outflow management decisions. One such factor is the uncertainty and lack of reliable longer-term forecasts of the supply of water into the Great Lakes – St. Lawrence River system.

Climate change, which can cause more extreme precipitation and variability in the water supply, makes the problem worse.

Response

The GLAM Committee compiled historical data on Lake Ontario - St. Lawrence River water supplies and modelled even more extreme water-supply scenarios that go beyond the historical record. The Board will be able to take these scenarios into consideration as it assesses the risks of possible future water supplies.

Finding

Risk and uncertainty surround Board decision-making. These factors can never be eliminated, but the GLAM Committee was asked to better characterize these factors.

This has not been easy given the large size of the basin, the difficulty in gathering information during extreme conditions, and because of the level of detail required to inform an outflow decision that has an outcome measured in centimeters and inches, not feet and meters.

Response

As already noted, one feature of the tool addresses the uncertainties about future water supplies caused by the lack of reliable weather forecasts. The tool addresses other uncertainties by informing the Board of potential impacts from wind, waves, surge and tributary flows and the seasonal likelihood of major storm events and how that may or may not affect the outcomes of an outflow strategy.

Through adaptive management, the GLAM Committee will continue to better identify the risks and reduce the level of uncertainty as much as possible through on-going monitoring, modeling and verification and present this information to the Board to inform its decision-making and continue to make improvements to the Decision Support Tool.



Exploring Options



Finding

While the Board was well aware that damaging flooding was occurring to properties both upstream and downstream during the 2017 and 2019 extreme events, more information was needed on the potential outcomes of deviating from the regulation plan and the possible consequences of different outflow strategies on various interests and regions. The Board wanted to better understand how impacts might shift from one interest to another, or from one region to another, by the changes in outflow from Lake Ontario into the St. Lawrence River.

Response

The GLAM Committee characterized impacts on a number of interests and regions so that the Board can better understand how different outflow strategies might affect those various interests. The GLAM Committee developed an interactive Decision Support Tool to provide factual information about tradeoffs: the potential benefit of changing the flow to help one interest or region versus the harm that a change could bring to another interest or region.

Finding

When water levels rise or fall toward an extreme, there are a number of limits built into Plan 2014 that can govern outflows to lessen the impact of high or low water on the various uses and interests. When water levels are very high, these limits come into play and serve to restrain the outflow from Lake Ontario to protect interests on the river, such as water systems, commercial shipping, recreational boating and downstream shoreline properties. Over the course of the Phase 1 effort, new research and experience has revealed some possibility for deviations from or modifications to these limits in the future with some tradeoffs. Some flexibility of these limits may be possible.

Response

The Decision Support Tool will provide the Board with insight into the potential consequences of deviations from the limits. The Committee also researched the history and functioning of the limits and found useful strategies for deviating from or potentially modifying them. The research identified a number of possible incremental improvements to the limits that will be further explored in Phase 2.

Vessel on the seaway near Montreal, Quebec



Continued Efforts

Finding

The Decision Support Tool better informs the Board by allowing them to examine impacts of outflow strategies across interests and regions, but it cannot eliminate impacts, nor will it make decisions for the Board. The responsibility for making deviation decisions remains firmly with the Board and within the context of existing binational agreements and policies.

Response

The Decision Support Tool provides systematic, objective information to the Board. The Decision Support Tool provides a couple of broad-based metrics of impacts across the system (e.g. inundation of shoreline buildings and tons of commercial navigation cargo affected) along with a feature known as “impact zones” to allow the Board to compare localized high-water impacts on a number of local communities on the Quebec, Ontario and New York shorelines, as well as on Lake St. Lawrence. The Board can examine tradeoffs in consideration of the requirements of the existing Orders of Approval.

Even with the additional information provided by the Decision Support Tool, outflow decisions during extreme conditions will not be easy for the Board. It will be important for the Board to continue to use and practice with the Decision Support Tool under different extreme scenarios to prepare for the next crises conditions.



Finding

More research is needed on extreme low water impacts, a fact driven home in the early summer of 2021 when a drought across the region caused the levels of Lake Ontario and the St. Lawrence River to fall well below average. Additional study also is needed of ecosystem and other impacts, and data on these matters should be added to the Decision Support Tool.

Response

Additional research is planned during Phase 2 of the expedited review to provide more information for the interactive tool.

Low water impacts on various interests and regions are being studied and will be added to the Decision Support Tool, so the Board can consider the potential consequences of outflow strategies during times of extreme low water. Ecosystem impacts in the upper and lower St. Lawrence River will also be studied and added to the Decision Support Tool to better inform deviation decisions.

Other research will focus on, for example, erosion of the shoreline in the lower St. Lawrence River and Lake Ontario and on the impacts of extreme water levels on recreational boating and tourism. Work is also planned to develop additional metrics on the commercial navigation sector.

The GLAM Committee will continue to undertake targeted efforts to improve information needed by the Board to inform their outflow decisions and improve Lake Ontario outflow management in the future.