

Water Levels 2020

# Quick Break

Water Levels 2020



GEORGIAN BAY  
**FOREVER** 

# Water Levels 2020 – Gordon Walker, O.C.



- Gordon Walker, Q.C. is a former Cabinet Minister in Ontario, having represented a riding in London, for 12 years, and served twice as a Commissioner of the International Joint Commission – 1992-1995 and 2013-2018, Canadian Chair in the latter term.
- In 2019 he was invested into the Order of Canada for his work involving the Great Lakes and shared waters with Canada and the United States. He is a non-practising lawyer and makes his seasonal residence in Cognashene Lake, Georgian Bay. He and wife Harriet have a long history in Georgian Bay.

# Water Levels 2020 – Pierre Béland



- Dr. Pierre Béland is the Canadian Section Chair of the International Joint Commission.
- Dr. Béland is a scientist in environmental biology and toxicology, best known as an expert on the conservation of beluga whales and was a founder and research scientist with the St. Lawrence National Institute of Ecotoxicology.
- Dr. Béland has served for ten years as a Commissioner for BAPE, has previously headed the Fisheries Ecology Research Center with the Department of Fisheries and Oceans Canada, and was a paleoecologist with the National Museum of Nature.
- Prior to joining the IJC, he owned and managed a company manufacturing equipment for research and management of aquatic and marine ecosystems, and was a Director of AquaForum. Additionally, Dr. Béland has chaired for various environmental agencies and hosted a TV series on the environment.

# GBA/GBF Water Levels Symposium 2020: Afternoon Session

*Opening remarks by:*

Pierre Béland

Canadian Chair,

International Joint Commission

October 24, 2020



# The International Joint Commission



Pierre Béland  
Canadian  
Commissioner/Chair



Jane Corwin  
US Commissioner/Chair



Henry Lickers  
Canadian  
Commissioner



Merrell-Ann Phare  
Canadian  
Commissioner



Robert Sisson  
US Commissioner



Lance Yohe  
US Commissioner

## Two main functions:

- \* Rules on Applications for structures affecting boundary or transboundary waters and issues **Orders of Approval** for operation of these projects
- \* Investigates issues referred by governments (**References**) and makes non-binding recommendations



# Key Messages

- Education and Outreach
- Continue to rely on the best-available science
- Recognize limitation
- Balance of interests
- Promote resilience



## E. What improvements could be made to coordination between control boards and their coordination with other water levels control structures in the system to better address extreme high and low water levels?

### i. Sample Questions from Registrants

- a. In 1993 the IJC developed four action plans to mitigate high water - why aren't they using any of them?
- b. Can regulated parts of the Great Lakes-St. Lawrence System be better regulated to offset middle lakes shoreline degradation?
- c. A decision was made to reduce the September outflow from Lake Superior...who controls this and why has it taken so long?

### ii. The IJC only controls 2 water level control structures. There are numerous information products available through a variety of agencies, but the specific purpose of the data in each leads it to be presented without consideration of an uninitiated consumer's perspective. Experts can understand the intimations, the public often does not.

- a. What did we learn from the morning session that might provide some insight into potential coordination improvements?
- b. Would it be productive/possible to expand the membership and mandate of the International Lake Superior Board of Control to improve coordination?

**E. What improvements could be made to coordination between control boards and their coordination with other water levels control structures in the system to better address extreme high and low water levels?**

Speakers:

Erika Klyszejko, Engineering Advisor with the Canadian Section of the International Joint Commission in Ottawa, ON.

Rick Layzell, Executive Director, Boating Ontario





# Coordination within the Great Lakes– St. Lawrence River System

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October 24, 2020

Erika Klyszejko, IJC Engineering Advisor



# IJC Control Boards



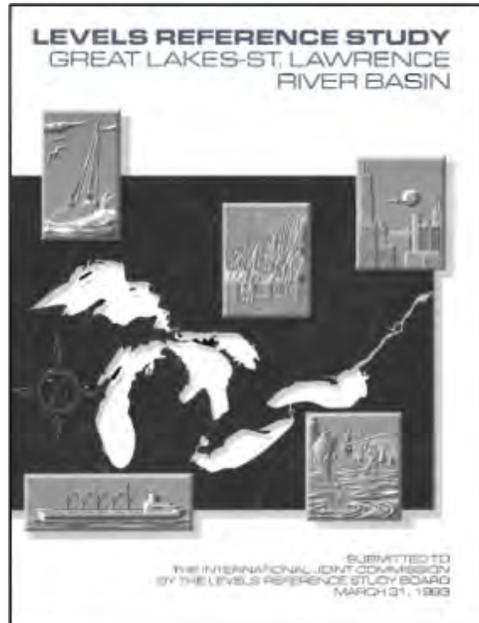


# Applications & Orders of Approval

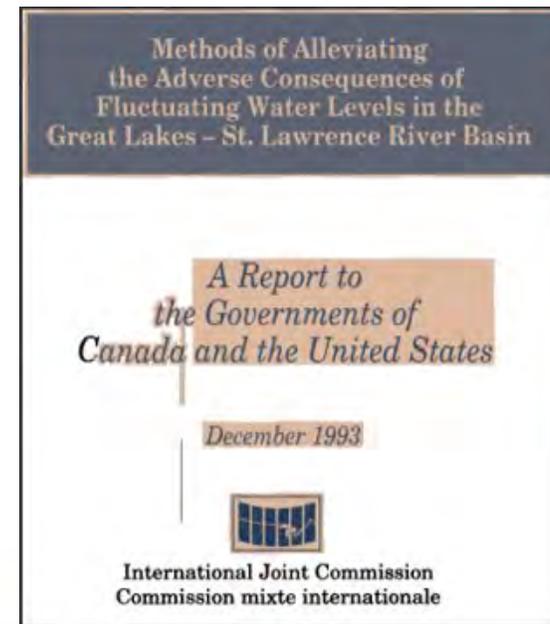
- The IJC acts as a quasi-judicial body by deciding whether certain types of projects, such as dams, diversions or bridges, can be built or undertaken in rivers or lakes that flow along or across the international boundary.
- If the IJC approves a project, it issues an **Order of Approval**.
  - Consistent with its rule of procedure, the IJC will hold a **hearing or hearings** at which all persons interested are entitled to be heard.
  - In cases where the operation of the project must meet certain conditions, such as flow requirements through a dam, the IJC **appoints a board** to monitor compliance with the Order of Approval on an ongoing basis.



# Levels Reference Study

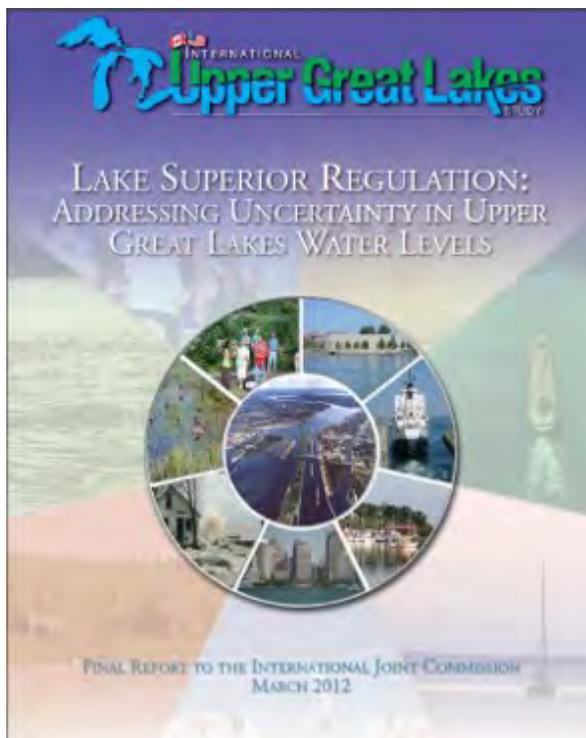


- Following a period of record-high water levels in the mid-80s, the IJC received a reference from governments.
- Levels Reference Study Board completed its report in 1993 and provided a number of recommendations, including recommendations for a review of IJC's Lake Superior regulation plan.
  - Annex 6 of the report specifically focuses on Crisis Condition Responses
- The IJC provided its recommendations to governments later in 1993;
  - The IJC recommended that **no further consideration be given to multi-lake regulation as a means of reducing flood damage.**
  - It also stated **no definitive conclusion can be reached regarding the use of diversion** until the potential impacts within and outside the Great Lakes – St. Lawrence River basin are determined.





# How did we get to Plan 2012?



Preserves Lake Superior levels and flow through the St. Marys River during extremely dry conditions



Protects important Lake Sturgeon spawning habitat in the St. Marys River



Economic benefits to navigation and hydropower, and reduced costs to protect and maintain shoreline property



More predictable flows and smaller month-to-month changes benefit hydropower and St. Marys Rapids interests



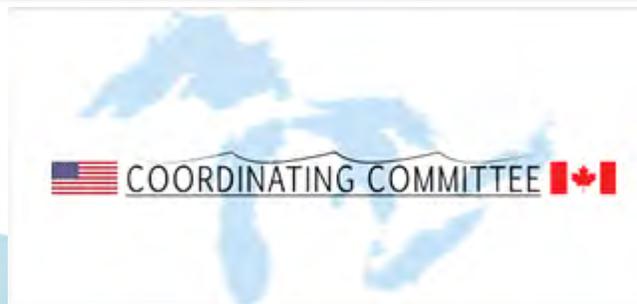
More natural St. Marys River flows help sustain riverine ecosystem health



Simpler rules make Plan 2012 easier to manage



# How do we coordinate now?

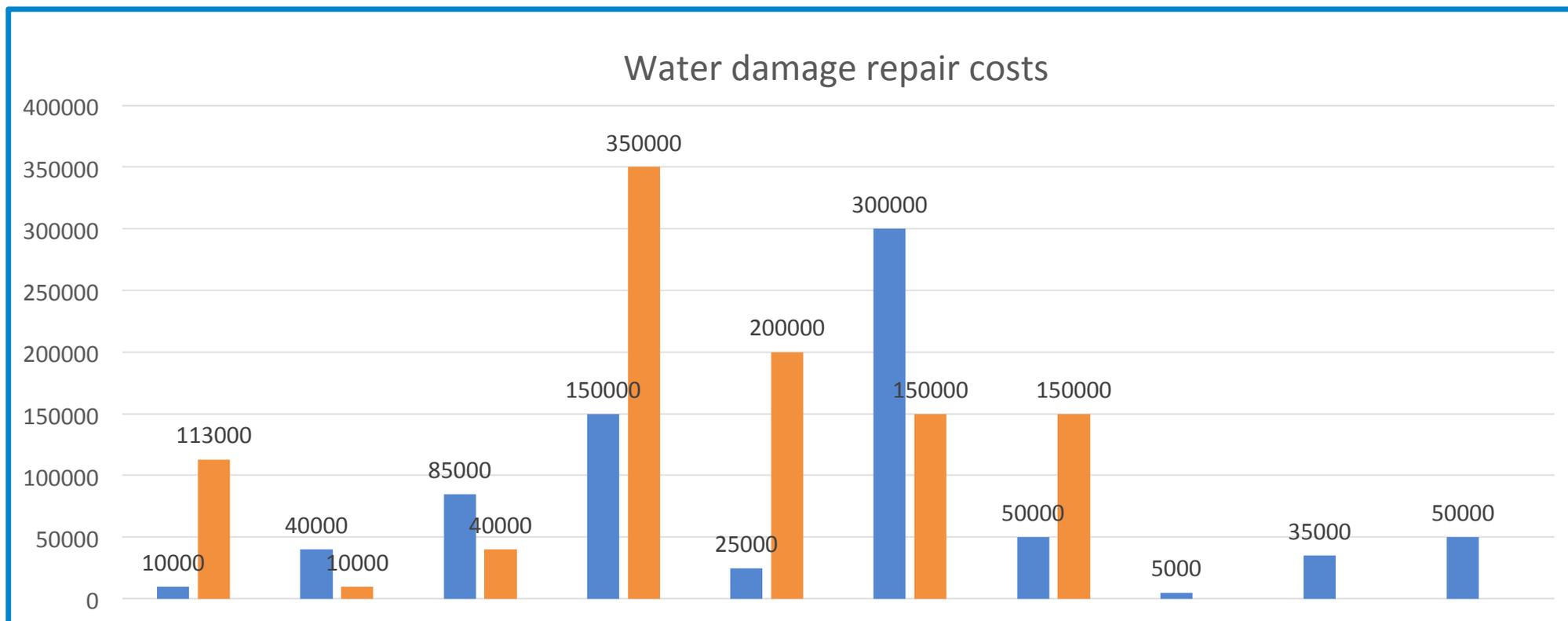


# Boating *Ontario*

Industry impacts

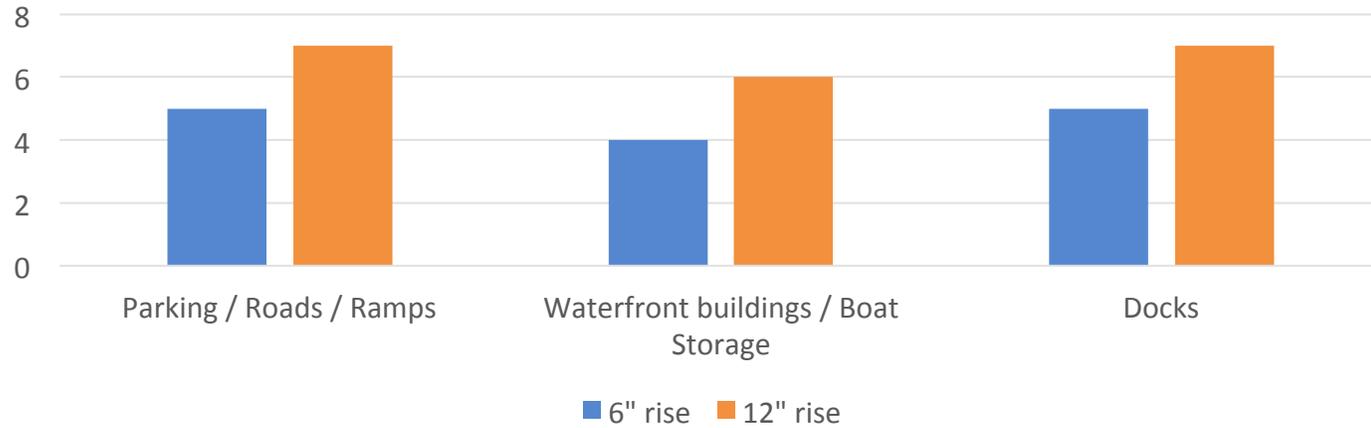
## October 2020 survey to 40 Georgian Bay marinas – 14 responses (35%)

- **High water** 2017 – 2020 – 100% impacted
  - 10/14 shared detail \$745,000 combined
- **Low water** 2012 – 2013 – 50% impacted
  - 7/14 shared detail \$878,000 combined

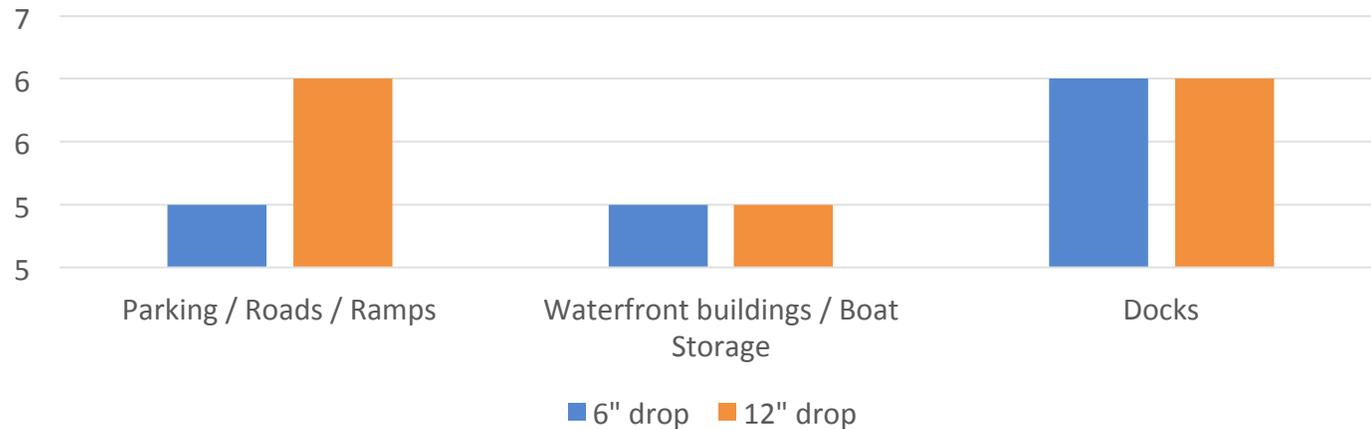


# Infrastructure impact

Rising waters impacts



Declining waters impacts





- Insurance impact  
Underwriters are removing / restricting / increasing rates for flood coverage
- Shared responsibilities to mitigate impact and soften 'peaks & valleys'  
Industry cannot sustain continuing capital requirements
- Six respondents feel long term future in doubt from water levels
- We cannot simply 'move' a marina  
Impact on water access cottagers, all users
- Open / frequent / understandable communications

## E. What improvements could be made to coordination between control boards and their coordination with other water levels control structures in the system to better address extreme high and low water levels?

Panel Discussion:

Erika Klyszejko, Engineering Advisor with the Canadian Section of the International Joint Commission in Ottawa, ON.

Rick Layzell, Executive Director, Boating Ontario

Dr. Pierre Béland, Canadian Section Chair of the International Joint Commission



## **F. Is there consensus on action that could be taken to improve coordination and ensure that we collectively use all available methods to mitigate future extreme high and low water levels?**

### **i. Sample Questions from Registrants**

- a. Are there complementary efforts that can be taken by those other than control boards (i.e. Ontario Power Generation and local and provincial governments)?

### **ii. The IJC has a number of Control Boards with overlapping membership to implement the regulations governing their control structures. The coordinating committee and GLAM Committee provide input to these Boards.**

- a. How can the competing interests of the existing control boards and managers of other water levels control structures be reconciled?
- b. What will be needed to progress towards better coordination?
- c. Could the IJC recommendations of 2013 to put in place a Great Lakes Water Levels Advisory Board be revisited and provide guidance on how coordination improvements could be achieved?

**F. Is there consensus on action that could be taken to improve coordination and ensure that we collectively use all available methods to mitigate future extreme high and low water levels?**

Speakers:

Erika Klyszejko, Engineering Advisor with the Canadian Section of the International Joint Commission in Ottawa, ON.

Wendy Leger, Canadian Co-Chair, Great Lakes-St. Lawrence River Adaptive Management Committee





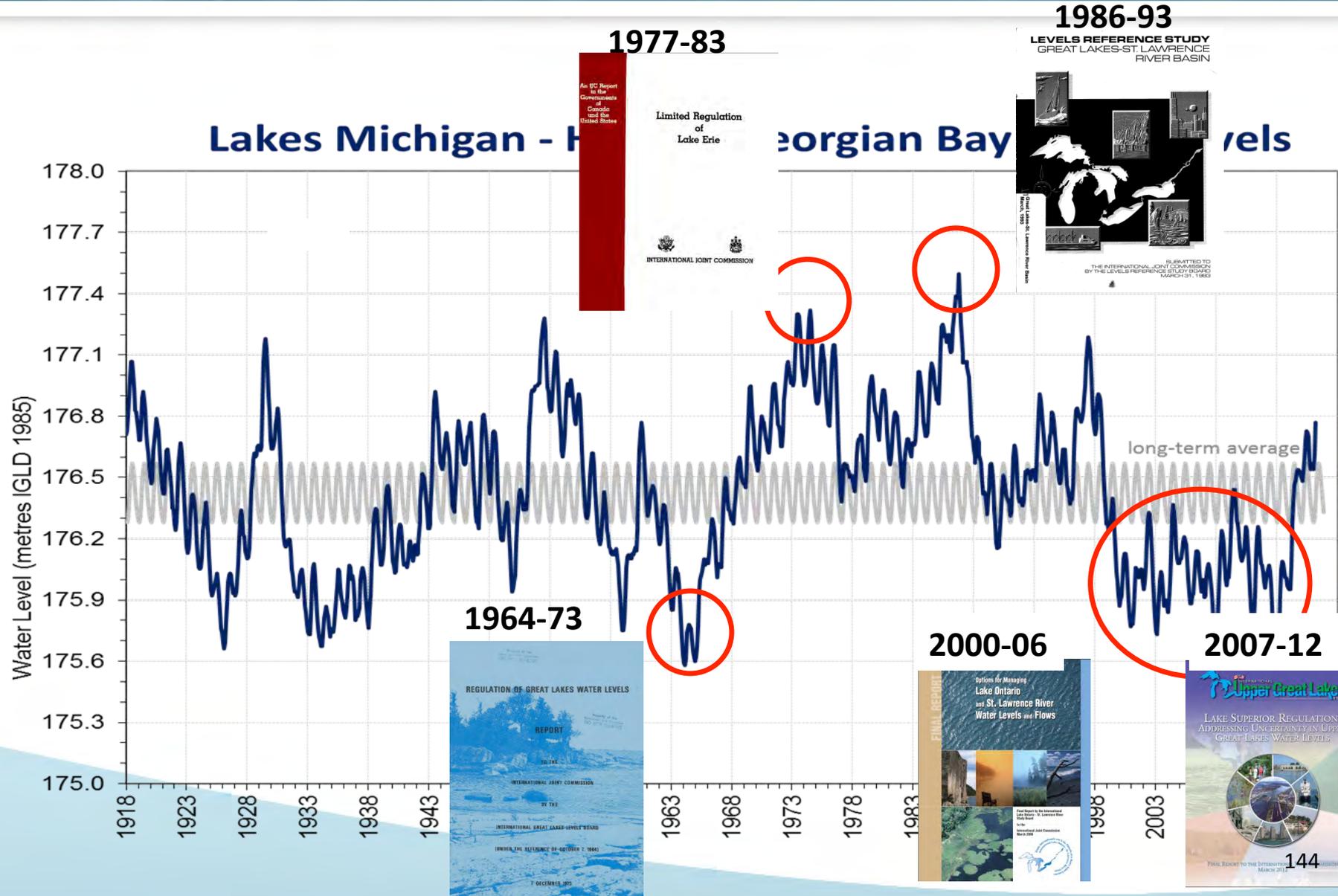
# Can we mitigate the impacts of future extreme water levels?

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October 24, 2020  
Erika Klyszejko, IJC Engineering Advisor



# What have we learned?





# What we know from past studies- Limits of regulation

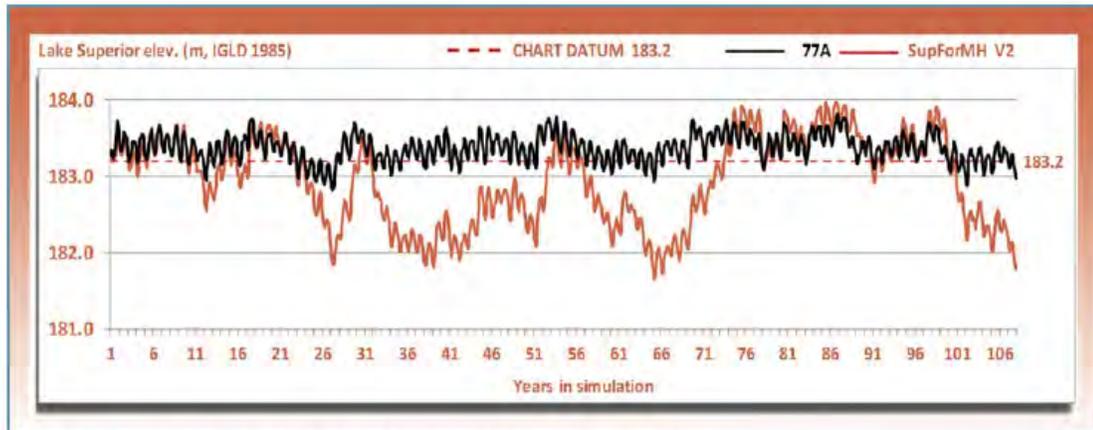


Figure 6-3 Comparison of Lake Superior Levels under Fencepost Plan 2  
Historical NBS with 1977A (black) and the Fencepost Plan (brown)

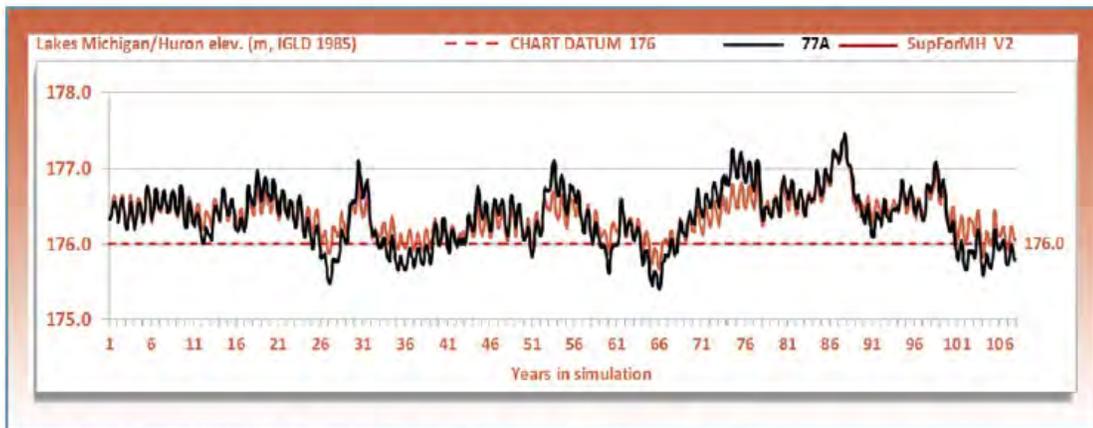


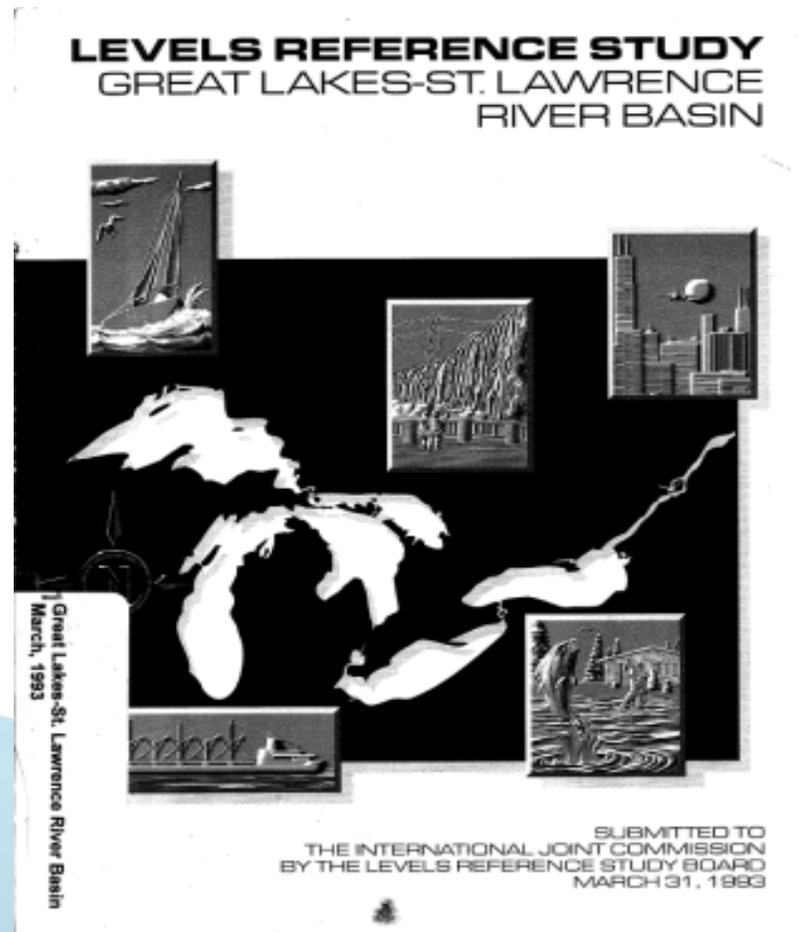
Figure 6-4 Comparison of Lake Michigan-Huron Levels under Fencepost Plan 2  
Historical NBS with 1977A (black) and the Fencepost Plan (brown)

- Extreme events, high or low, can not be avoided.
  - Even if perfect knowledge of future was possible.
- Attempts to alleviate conditions in one area are likely to impact another.



# What we know from past studies- Emergency response measures

- The 1993 Levels Reference Study Report provided elements of an emergency preparedness plan.



- Preparation of such a plan will require cooperation and consultation among federal, provincial, state and local governments.



# What we know from past studies- Land-based solutions / resiliency

- Shoreline land use and management measures are essential to alleviate the impacts of fluctuating water levels.
  - Flexibility is key to effective local solution.



- Education & outreach to manage public expectations.
- Visibility, transparency and accessibility of decision-makers



# Creation of the GLAM Committee

- Established by the IJC in January 2015 for on-going review of lake regulation plans
- Binational Committee comprised of 16 members from federal, state, and provincial agencies



Key questions include:

- How well are the impacts of levels and flows represented by current data and models?
- Are water supply conditions changing?
- Are the physical, chemical, biological, and/or socio-economic conditions changing?
- Can water level management be improved?

*F. Is there consensus on action that could be taken to improve coordination and ensure that we collectively use all available methods to mitigate future extreme high and low water levels?*

- Could the IJC recommendations of 2013 to put in place a Great Lakes Water Levels Advisory Body be revisited and provide guidance on how coordination improvements could be achieved?

Wendy Leger, Canadian Co-Chair  
Great Lakes St. Lawrence River Adaptive Management  
Committee



# 2013 Adaptive Management Task Team Report

Proposed adaptive management approach as a means of addressing extreme water levels because...

- Extreme water levels are a concern
- Conditions are changing
- Complex issues exist
- Collaboration and a long-term vision was needed
- Limited ability to alter lake levels through lake regulation



# Response to Water Level Impacts (2013)

- No one organization or jurisdiction is fully responsible for managing impacts of water levels
- Much fragmentation, duplication and overlap
- Limited effort to coordinate approaches and share successful approaches
- Little focus on long-term implications of climate extremes and planning for uncertain future



# Elements of the Adaptive Management Plan

1. Ongoing review and evaluation of the effectiveness of the Regulation Plans at meeting their intended objectives; and
2. Collaboration on developing and evaluating solutions to problems posed by water level conditions that cannot be solved through lake regulation alone.



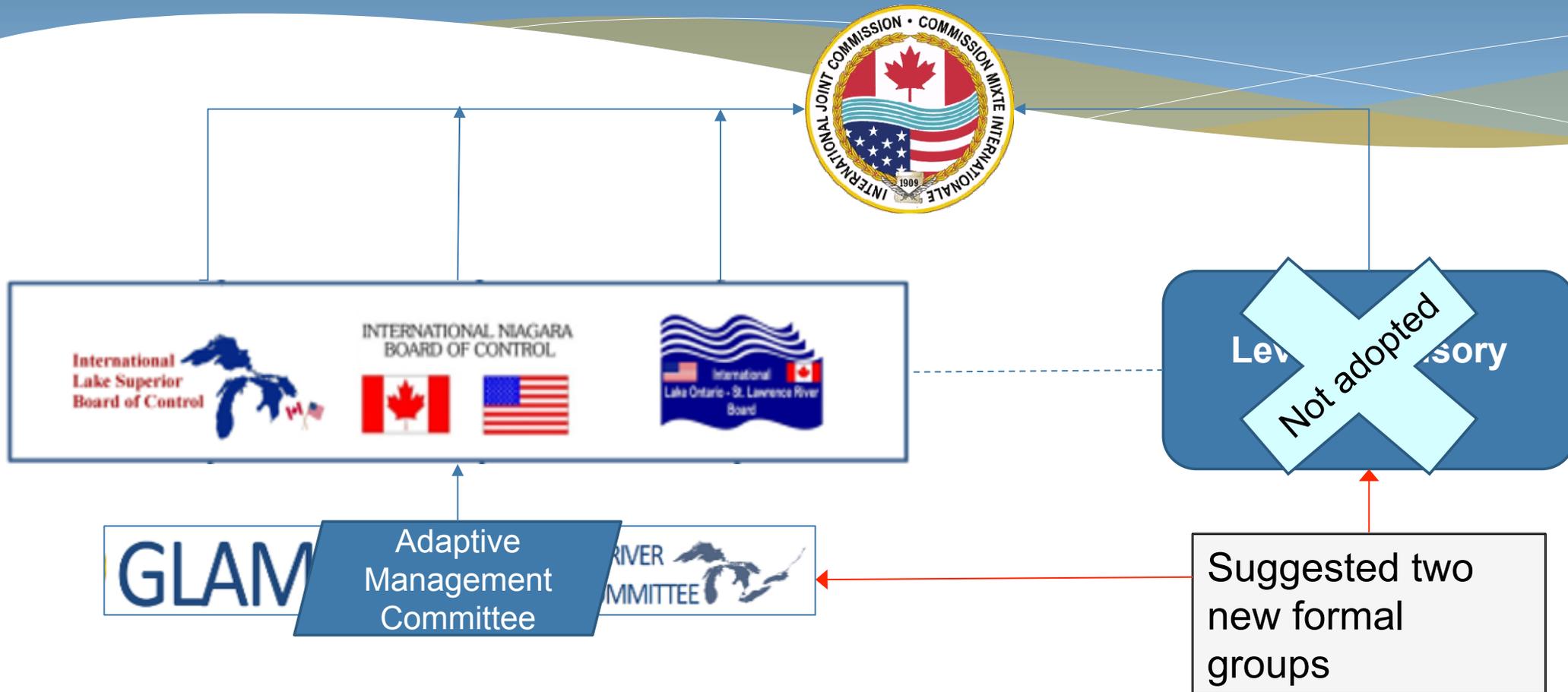
Lake Huron



Lake Michigan



# How was the Plan to be carried out?



# Proposed Levels Advisory Body (2013)



- Engage existing agencies, organizations, institutions and collaboratives in a Network fashion to undertake components of AM Plan
- Identify and leverages support and resources
- Influence priorities and programs within agencies to support AM
- Understand basin-wide linkages
- Seek funding opportunities
- Address other water management and science questions from the governments related to water levels and flows

**Levels Advisory  
Body**



**Adaptive Management Pilots  
(at local and regional scales)**



# Levels Advisory Body

## Proposed Roles and Responsibilities through Networks (2013)

### Advise IJC and Supporting Organizations on:

- On-going coordinated bi-national hydroclimate monitoring and modelling and climate change research
- Coordinated data collection needed to support on-going risk assessment
- The development or updating of system-wide impact models and linkages between water quality and quantity
- Development and evaluation of alternative solutions (beginning at Pilots)
- Advise on coordinated bi-national information management and distribution and coordinated outreach and engagement



Reviews and updates AM Plan



# Pilot Concept (2013)

- Reduce water level vulnerabilities by bringing together:
  - resource management agencies,
  - stakeholders, and
  - other interest participants
- Use existing authorities and resources of agencies within a collaborative process



# General Pilot Framework (2013)

- Build a team
- Identify and understand problems
- Describe baseline conditions
- Build information management system
- Assess current management regime
- Evaluate alternative management approaches
- Select and implement preferred alternatives
- Monitor performance and adapt based on what is learned

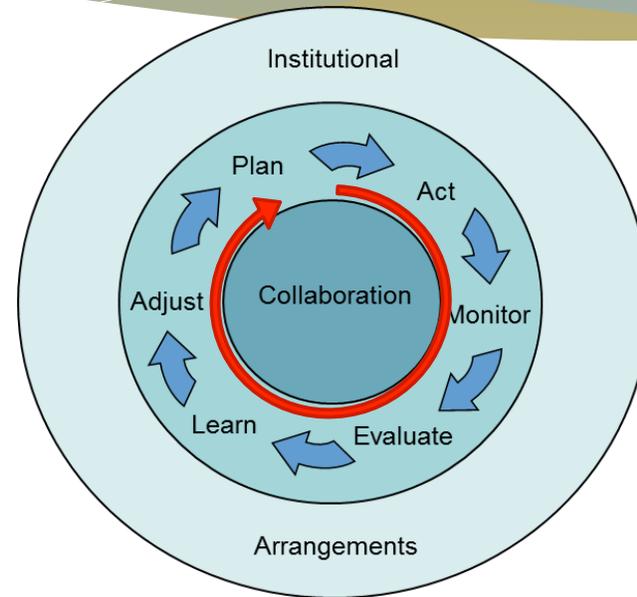


# Adaptive Management

## Adaptive Management (AM)

*AM is an idea almost universally supported in theory*

- **Decision is made** based on best evidence
- **Monitor** key outcomes from the decision
- **Challenge** the decision if the outcomes aren't as expected
  - Make necessary **adjustments**



# Costs of AM Plan (2013)

- Great Lakes Levels Advisory Body
- ~ \$4.5 to 5 million per country over 1-3 years (at least 15% expected through agency support)
- Plus ~\$1.1 M per pilot study



# Why is Adaptive Management so hard?

*A great concept rarely used in practice...*

It requires an on-going commitment

- Too often funding is provided for a few years to support a decision analysis.
- After the decision, funding stops



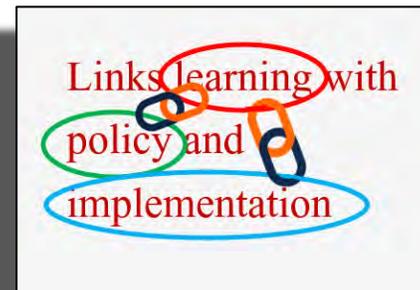
It requires collaboration

- Many programs are managed within silos



It requires predictive modelling to allow outcomes to be tested and measured

- Many decisions are not tied explicitly enough to outcomes to know whether decisions require revisiting.



**F. Is there consensus on action that could be taken to improve coordination and ensure that we collectively use all available methods to mitigate future extreme high and low water levels?**

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Rick Layzell, CEO, Boating Ontario Association



## **G. What are next steps for participating individuals and organizations based on what was learned?**

### **i. Sample Questions from Registrants**

- a. What are the next steps being taken?
- b. What can particular groups do individually and collectively
- c. There is some impatience or skepticism about actions being taken. How do you answer that?

### **ii. There are growing impacts from global warming impacting the sustainability of stakeholders especially those on the water-land interface.**

- a. Are new tools necessary to provide region-wide resilience to water levels fluctuations?
- b. What challenges do you see in this emerging new water levels regime?
- c. How can previous reports be updated to incorporate this new climate regime?

**G. What are next steps for participating individuals and organizations based on what was learned?**

# Open Discussion

# Water Levels 2020 - Marilyn Longlade Capreol



- Early spring of 1949, I was born to Napoleon and Norah Geroux Longlade. My first home was the island behind the Ojibway Island. During the winter months we moved to our mainland location on the shores of Pointe au Baril.
- Summers home was always bustling with Grandparents, aunties, uncles and many cousins. We would hear the song of languages, both Ojibway and French. Hear the fishing stories each day and/or watch Grandma and aunties make their quill boxes.
- Very young we were taught to respect and understand the gifts of water, wind, animals, plants, the sky that holds beautiful stars. Our first knowledge and education were done by our parents, grandparents and community. There are no books to this day for this gift of learning. It was and is strictly learned by the teachings.
- I am very grateful and acknowledge, Mishomis Giiziis (Grandfather Sun) miinwaa (and) Nokomis Dibik Giiziis (Grandmother Moon). They encourage every living being and walk beside all each day.

Water Levels 2020

**Thank you!**

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