

IJC Updates on its Flooding and Water Quality References



VT EPSCoR BREE PTAC Meeting
24 May 2018

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IJC Topics to be Covered

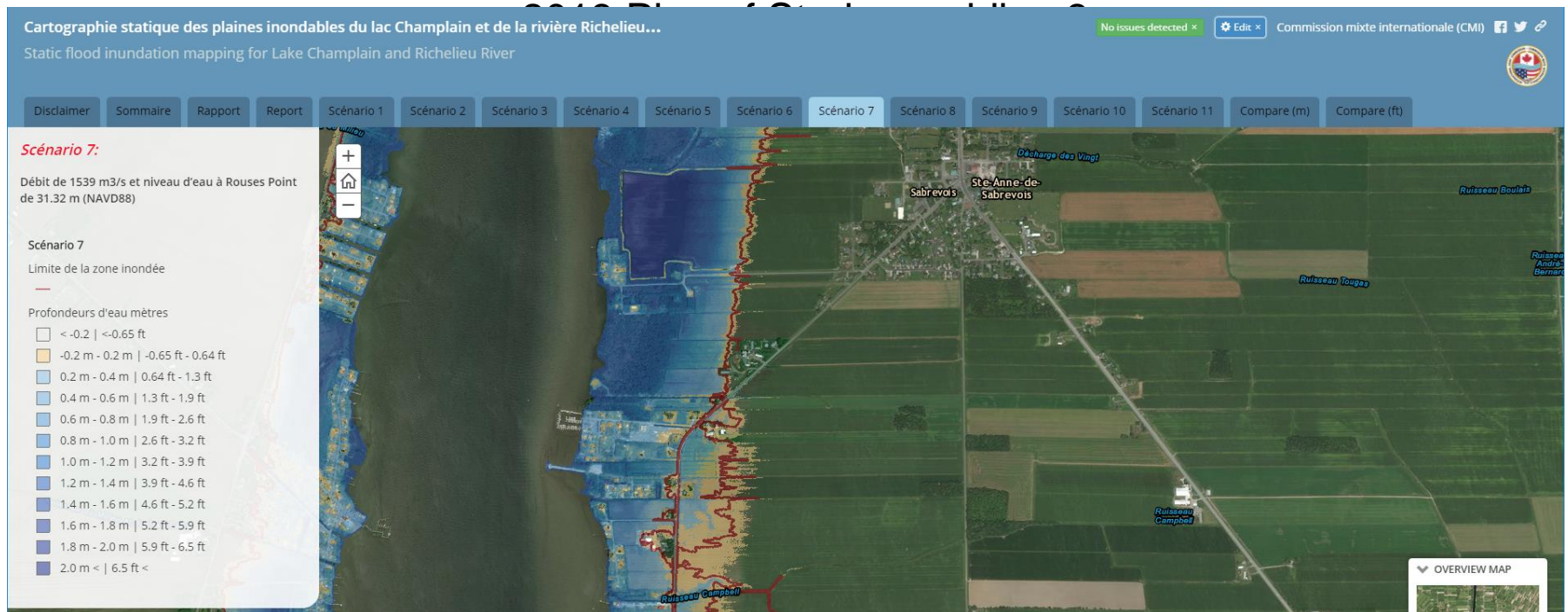
- * Lake Champlain-Richelieu River flooding reference
- * Missisquoi Bay-Lake Champlain and Lake Memphremagog water quality reference
- * A potential role for the VT EPSCoR BREE PTAC in hosting an experts workshop on the Missisquoi-Champlain portion of the reference

Lake Champlain-Richelieu River Flooding Reference



- 4,000 homes damaged
- ± \$90 million in damages
 - 79% in QC
 - 11% in NY and VT
- > 30 Municipalities directly affected
- Long history of IJC involvement

Lake Champlain-Richelieu River Flooding Reference



Lake Champlain-Richelieu River Flooding Reference

- * September 2016 – Reference to IJC
 - * To complete Option B of the 2013 Plan of Study
 - * To explore causes, impacts, and risks
 - * Investigate possible solutions to flooding in the LCRR
 - * To create an operational flood forecasting and mapping tools.
- * 2016 IJC Directive to the ***International Lake Champlain – Richelieu River Study Board***
- * Final reports with recommendations are due to the governments of Canada and the United States in 2021

Lake Champlain-Richelieu River Flooding Reference



1. Evaluating the causes and impacts of past floods, especially the event of 2011,
2. Assessing the possibilities offered by floodplain best management practices,
3. Evaluating possible adaptation strategies based on expected future variability regarding water supplies,
4. Developing and making recommendations for implementing, as appropriate, an operational, real-time flood forecasting and flood inundation mapping system for the Lake Champlain-Richelieu River watershed,
5. Conducting an in-depth study of current social and political perception on structural and other mitigation measures to support and confirm the desirability of potential structural mitigation solutions,

Lake Champlain-Richelieu River Flooding Reference

5. Performing a quantitative and qualitative assessment of potential flood management and mitigation measures (i.e., **non-structural and/or moderate structural works**) and their impacts on important resources of the system: (the wetland and fauna, recreational, domestic, industrial and municipal uses of water, shoreline and floodplain built environment and agriculture), and
 - * Nature-based solutions: wetland and floodplain restoration, and urban and agricultural BMPs
6. Developing resource response models that include basic indicators for water resources response to water levels fluctuations, with special attention on the data inventory and identification of thresholds. Climatic projections, wind wave and ice models, additional new data for the evolution of watershed physiographic characteristics over time and a complete digital terrain model should be produced to allow the planning, evaluation and ranking of potential flood mitigation solutions, using a shared-vision approach (decision-support tool).

Lake Champlain-Richelieu River Flooding Reference

The Board and the Groups

- ❖ Study Board
- ❖ **Hydrology, Hydraulics and Mapping Technical Working Group**
- ❖ **Resource Response Technical Working Group**
- ❖ **Social, Political and Economic Advisory Group**
- ❖ **Flood Management and Mitigation Measures Technical Working Group**
- ❖ Public Advisory Group
- ❖ Communications Working Group
- ❖ Independent Review Group

Lake Champlain-Richelieu River Flooding Reference

❖ **Hydrology, Hydraulics and Mapping Technical Working Group**

- ❖ Hydrodynamics modelling of the lake and the river to estimate net-basin supplies, water levels and flow rates
- ❖ Flood forecasting system

❖ **Resource Response Technical Working Group**

- ❖ Development of Performance Indicators (PIs) for aspects of the natural and human environments
- ❖ Evaluation of PIs through use of an Integrated-Social-Economic-Environmental (ISEE) modelling framework (based on an IERM)
- ❖ Role of nature-based solutions in the mitigation of floods

❖ **Social, Political and Economic Advisory Group**

- ❖ Development of PIs to quantify impacts of proposed measures on social and economic aspects of the system
- ❖ Determine the acceptability of proposed measures by federal, provincial/state and local governments

❖ **Flood Management and Mitigation Measures Technical Working Group**

- ❖ Develop and employ a Collaborative Decision Support Tool (Shared Vision Model) to rank and prioritize measures

Lake Champlain-Richelieu River Flooding Reference

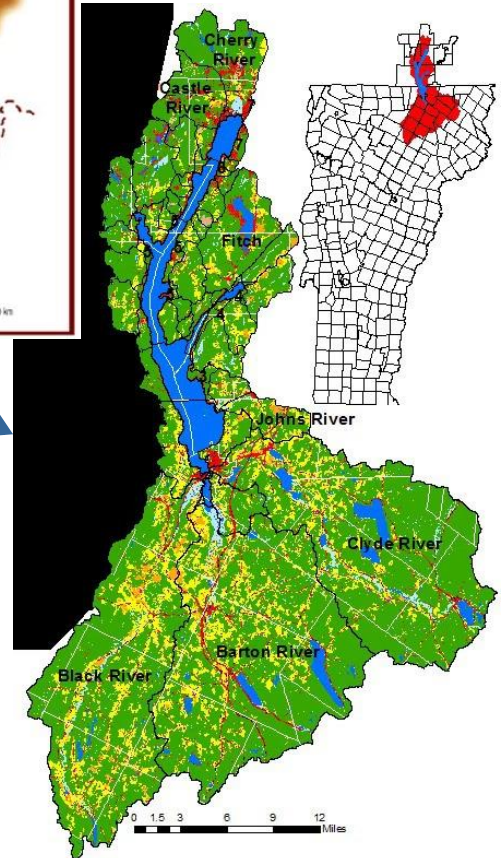
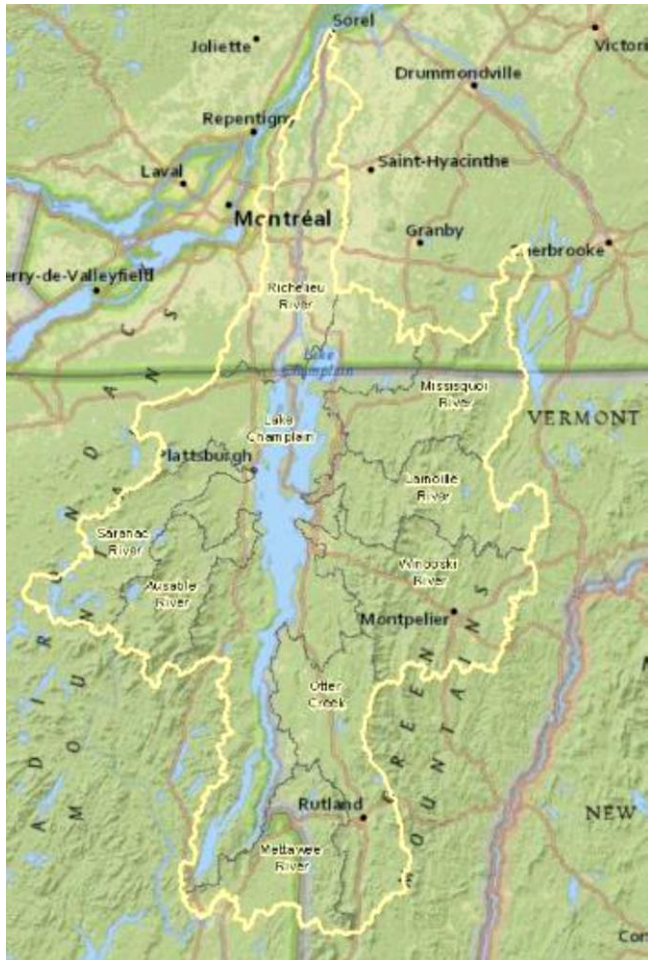
Activities to date

- * Public meetings: Burlington, VT, St.-Jean-sur-Richelieu, QC, and Plattsburgh, NY (all 2017)
- * Technical workshops: Burlington, VT (2017) and Venise-en-Quebec (2017)
- * Preparation of impact studies
- * Initiatives to reduce risk to each group: economic, social, and environmental
- * Meeting with government departments, agencies and councils

Additional public meetings and expert workshops will be held in the future – locations and dates TBD



Lakes Champlain and Memphremagog Water Quality Reference



Missisquoi Bay-Lake Champlain Portion of the Water Quality Reference

1. Relevant to the reduction of nutrient loading and the causes of harmful algal blooms in Missisquoi Bay and the broader Lake Champlain and Richelieu River, ***gather and review information*** from federal, provincial, state and municipal agencies, academic institutions, and other entities in the region on existing monitoring programs and measures being taken to address the aforementioned water quality concerns.
2. Based on the information collected, provide recommendations on how ***current efforts can be strengthened*** (e.g., summarizing gaps or opportunities, identifying possible approaches to strengthen collaboration, efficiency, or impact).

Missisquoi Bay-Lake Champlain Portion of the Water Quality Reference

Phosphorus TMDLs for Vermont Segments of Lake Champlain

June 17, 2016

U.S. Environmental Protection Agency
Region 1, New England
Boston, MA

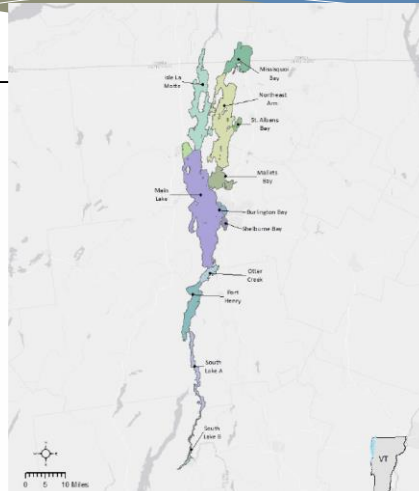


Figure 1: Lake Champlain's
Vermont Phosphorus
TMDL Segments



PLAN DIRECTEUR DE L'EAU
BASSIN VERSANT DE LA BAIE MISSISQUOI

Diagnostic
2015



Missisquoi Bay-Lake Champlain Portion of the Water Quality Reference

Activities to date

- * Work plans were submitted to the governments and posted on the IJC website in February 2018 (http://ijc.org/en_/LCLM and http://ijc.org/fr_/LCLM)
- * Agreements put in place with the Lake Champlain Basin Program (LCBP) and l'Organisme de bassin versant de la baie Missisquoi (OBVBM) to produce technical and policy reports that could serve as the foundations of recommendations sent by the IJC to the governments
- * Discussions initiated with basin organizations and others in the region on creation of informal advisory groups that could interface between the contractual work being carried out under the reference and the IJC team, which will prepare the final reports
- * Experts workshop on draft reports, findings and recommendations

IJC-BREE PTAC Experts Workshop

- * Following completion of reports by the basin organizations, the IJC plans to hold a binational workshop with technical and policy experts in the region
 - * Compilation, analysis and synthesis of the research, policies and programs on nutrient loading and HABs in the basin, including key findings
 - * Preliminary recommendations to reinforce effective government efforts and perhaps to offer a longer term approach or strategy to address the problem
- * Given the composition of the BREE PTAC group, joint sponsorship between it, the LCBP and the IJC may be the most effective option for ensuring that the best recommendations possible are forwarded to governments
- * Ideal time and location: Spring 2019 at UVM?

Thank you!



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