



Review of the
LAKE ONTARIO -
ST. LAWRENCE RIVER
ORDER OF APPROVAL

Your guide to the IJC's

Proposed new Order of Approval and Plan 2007

[FOR REGULATION OF LAKE ONTARIO AND THE ST. LAWRENCE RIVER
THROUGH THE MOSES-SAUNDERS DAM AT CORNWALL-MASSENA]



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Dear Lake Ontario and St. Lawrence River Community,

In 1952, the International Joint Commission (the Commission) issued an Order of Approval for the St. Lawrence River Hydropower Project (the Project), and it issued a Supplementary Order in 1956. In 1963, the Commission approved a plan (Plan 1958D) to regulate water levels and flows from Lake Ontario into the St. Lawrence River. The Commission is now considering a new proposed Order of Approval and a new regulation plan to take into account changing interests (water supply, navigation, hydropower, shoreline property, the environment, and recreational boating), the more extreme wet and dry conditions seen since the 1950s plus those likely to occur in the future, and advances in the science and technology for water management. The Commission expects that this proposed new Order will provide a solid framework for further beneficial changes in regulation in the future.

“BEFORE MAKING ITS FINAL DECISION ON THIS PROPOSED NEW ORDER AND REGULATION PLAN, THE COMMISSION WILL CAREFULLY CONSIDER PUBLIC COMMENTS GENERATED DURING A 90-DAY PUBLIC COMMENT PERIOD AND SEEK THE CONCURRENCE OF THE TWO FEDERAL GOVERNMENTS.”

The Commission’s goal is to sign a new Order by the end of 2008 and implement a new regulation plan shortly thereafter. One element will be the appointment of a new Board, called the International Lake Ontario–St. Lawrence River Board, to oversee implementation of the new Order, to manage the regulation plan, and to coordinate an adaptive management program—a formal process for continually improving management policy and practices by learning from their outcomes.

The Commission’s proposed new Order and regulation plan (Plan 2007) are founded on the five-year binational Lake Ontario – St. Lawrence River Study (May 2006). That Study identified three candidate regulation plans (A+, B+, and D+). The Commission subsequently asked experts associated with the Study to explore whether any of the three candidate plans could provide additional environmental benefits while maintaining as much as possible the level of protection and benefits enjoyed by other interests as provided for by the current Order. This new work resulted in two additional plans: a D+ variant, called Plan 2007, and a B+ variant.

We believe that Plan 2007 and the related proposed new Order is the best option that can be developed at this time, given the requirements of the Boundary Waters Treaty and the goals set by the two federal governments when the Project was developed in the 1950s (see Order of Approval). The proposed new Order explicitly recognizes the additional interests of recreational boating and the environment, brings into one place related authorities such as those for placing and removing ice booms, and provides for adaptive management. Relative to the current plan, Plan 2007 is an improvement with respect to environmental and overall economic benefits, and takes a more balanced

approach to all interests. The Commission is also proposing changes in how the proposed new Order and plan would be implemented, including how the Board will be structured, when the Board may direct outflows that differ from those determined by Plan 2007, and how the Board and Commission would consider new information through an adaptive management program.

The Commission has a strong interest in providing additional environmental benefits at the level provided in B+ based plans; however, the Commission finds it impossible to do so at this time without unduly reducing the benefits and protections currently accorded to other interests. Post-Study work suggests that it may be possible to further develop Plan B+ such that greater environmental benefits may be achieved while addressing the B+ related negative impacts to other interests through mitigation measures, the development and implementation of which are primarily the responsibility of the governments of the United States, Canada, New York, Ontario, and Quebec.

The Commission sees the eventual adoption of a regulation plan with greater environmental benefits, coupled with implemented mitigation, as highly desirable. Flexibility is built into the proposed new Order to allow for a future shift from Plan 2007 to a plan with additional environmental benefits, such as a B+ based plan, when implemented mitigation may provide for such a transition. In the future, the Commission could adopt a new regulation plan without revising the Order. Change could occur whenever sufficient mitigation measures are in place and monitoring confirms they are working satisfactorily.

The Commission is presenting Plan 2007 and the related proposed new Order for public review now, rather than staying with the current plan and Order and waiting for suitable mitigation measures to be implemented that would address the adverse impacts of a plan that provides greater environmental benefits. This is because the Commission believes that Plan 2007 would be an improvement over the current plan, and because it is unclear when suitable mitigation measures could be developed and implemented. The proposed new Order specifies that the Commission will review in two years the extent to which mitigation measures have been put in place and the

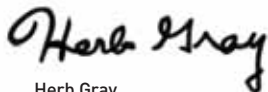
Commission will implement a variant of Plan B+ if it determines that the plan and mitigation together satisfy the requirements of the Order. The Order also provides for further reviews later.

The Commission is proposing an adaptive management program to be the key vehicle for confirming that expected benefits are realized, for assessing changing risks to various interests through monitoring, for reporting on the effects of implemented mitigation measures, and for making needed improvements. The governments of Canada and the United States have indicated their strong support for adaptive management and will actively participate in the further development of an adaptive management plan for implementation.

The attached report provides more detailed information on the Commission's proposals. The Commission will host a series of information sessions in April and May 2008 to help members of the public better understand the proposed approach and its effects. The Commission also invites public comment on the proposed new Order, on Plan 2007, and on related documents. Comments can be provided in writing by July 11, 2008 or in person at one of 10 public hearings to be held around the basin during June 2008 (see attached list for specific times and locations.) For more information about the public comment process, please contact the Commission's public information officers at (202) 736-9024 or (613) 947-1420, or visit the Commission's website at www.ijc.org.

We look forward to hearing from you.

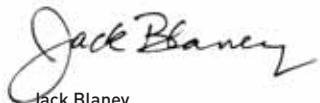
Sincerely,



Herb Gray
Chair, Canadian Section



Irene B. Brooks
Acting Chair, United States Section



Jack Blaney
Commissioner



Allen I. Olson
Commissioner

Plan 2007

Overview

The International Joint Commission (the Commission) is changing the rule set or “plan” for managing water flows and levels of Lake Ontario and the St. Lawrence River. The Commission approved the current plan, called Plan 1958D, over 40 years ago. It was designed based on the water supplies to Lake Ontario that were recorded from 1860 to 1954. The Commission’s International St. Lawrence River Board of Control (Board of Control)—the body responsible for implementing the plan—has often deviated from Plan 1958D, in part because water supplies in the last 40 years have been both wetter and drier than Plan 1958D was designed to handle. The Commission found that the proposed new regulation rule set, called Plan 2007, performs effectively when tested with historic water supply sequences up to the year 2000, with a much greater variety of stochastic supplies, and

with climate change scenarios. Stochastic supplies are a statistically simulated series of years, using a sample of actual historic years as the raw data, to test different regulation plans by simulating conditions such as droughts and floods.

The Commission based the new regulation plan on work done by the Commission’s former International Lake Ontario–St. Lawrence River Study Board. The Study Board report, issued in May 2006, presented three options for a new regulation plan, each of which outperforms Plan 1958D in a number of significant aspects and provides benefits beyond those provided by Plan 1958D. These optional plans, called A+, B+, and D+, each struck a different compromise between interests and elements of the system such as performance for the environment, Montreal flooding, shipping concerns, recreational boating, and protection

The experts found that the most significant challenge to developing a better plan was balancing the trade-offs between environmental benefits and coastal protection on Lake Ontario, while providing no less protection on the lower St. Lawrence River downstream from the Moses–Saunders Dam.

for those who live along the coast of Lake Ontario. Public reaction to the three options was polarized.

In considering the Study Board options along with related public comments, the Commission asked experts who had contributed to the Study to continue improving the optional plans to see if a better regulation plan could be developed. The objective was to find a plan that would preserve as many positive benefits of the proposed plan options as possible, while reducing the weak points. Any solution had to be consistent with the requirements of the Boundary Waters Treaty (see Order of Approval).

The experts were able to find a plan with some additional improvements over the Study's three plan options. They were not able to gain the same level of environmental benefits as the Study's best regulation plan option for the environment, B+, without unacceptable negative effects on other interests that are a consequence of B+ based plans. However, there may be future opportunities to move to a more environmentally beneficial plan, such as a B+ based plan, if mitigation measures are implemented to effectively address the harmful effects to some interests that are specifically associated with B+ based plans. Plan 2007 will outperform the current operating rules in almost every sector, with significant increases in hydropower production, greater wetland plant diversity along the shores of Lake Ontario, fewer delays due to unacceptably strong currents for ships in the St. Lawrence Seaway, and more reliable shipping depths for Montreal Harbour. The plan also reduces damages to properties along the shores of Lake Ontario. Recreational boaters below the dam will benefit from this plan, but boaters using the facilities with the shallowest water depths on Lake Ontario will have draft problems more often than they do now. This is in part an inevitable consequence of keeping Lake Ontario lower occasionally to restore coastal wetlands, and in part it is due to lower spring, winter, and fall

levels that help protect Lake Ontario shoreline property when there is a higher risk of damaging storms.

Plan 2007, like the Study Board's three options, is designed to address a far greater range of climatic supplies than does Plan 1958D. These supplies include 495 stochastically generated centuries of climate supply sequences, including drier and wetter conditions than have been recorded historically, as well as four climate change scenarios developed from global climate models.

An important element of the Commission's approach to regulation is the treatment of "deviations," which are occasions when managed flows are allowed to vary from what would be required under the plan. Deviations from the plan's rules will still be allowed for short-term contingencies on the St. Lawrence River. For example, deviations might be allowed in order to address winter ice formation and emergencies, to avoid flooding during the Ottawa River spring flooding (freshet), to allow safe passage for ships legitimately expecting deeper water, and to facilitate haul-out of recreational boats in the fall.

Short-term deviations are those that usually last no longer than a week or two at most. These will continue to be allowed since they have negligible effects on plan benefits. Furthermore, after a deviation, water flows must be adjusted by the Board of Control to recover to the planned flow levels. Deviations to control Lake Ontario levels will rarely if ever be needed since the new plan has been tested with the 50,000-years of stochastic sequences. However, when the Board of Control's successor under Plan 2007 (the International Lake Ontario–St. Lawrence River Board) finds that the three-month forecast indicates a significant probability of a high level exceeded 1% of the time, or a low level exceeded all but 1% of the time, the successor Board, upon submission of a system analysis to the Commission, may request permission to deviate for one month at a time.

Table 1: Environmental Performance Indicators

Plan 2007 produces solid results across almost all indicators, including species at risk.

1.00 = Plan 1958D with deviations as modelled. 0.10 PLUS or MINUS from 1.00 is considered significant (Using Historical Supply Series 1900-2000).

	A+	B+	D+	2007
LAKE ONTARIO				
Wetland Meadow Marsh Community	1.02	1.44	1.17	1.22
Low Vegetation 18C - spawning habitat supply	0.89	0.95	0.94	0.93
High Vegetation 24C - spawning habitat supply	1.05	1.00	1.01	1.01
Low Vegetation 24C - spawning habitat supply	1.00	1.02	1.00	1.01
Northern Pike - YOUNG OF YEAR recruitment	1.02	1.00	1.05	1.02
Largemouth Bass - YOUNG OF YEAR recruitment	0.94	0.98	0.97	0.98
Least Bittern - reproductive index	0.88	1.04	0.96	0.93
Virginia Rail - reproductive index	0.96	1.11	0.99	0.96
Black Tern - reproductive index	1.03	1.12	1.01	0.97
Yellow Rail - preferred breeding habitat	0.96	1.01	0.98	0.99
King Rail - preferred breeding habitat	1.05	1.10	1.03	1.04
ABOVE THE DAM				
Low Vegetation 18C - spawning habitat supply	1.01	1.01	1.01	1.01
High Vegetation 24C - spawning habitat supply	1.03	1.01	1.02	1.02
Low Vegetation 24C - spawning habitat supply	1.01	1.01	1.01	1.01
Northern Pike - YOUNG OF YEAR recruitment	1.05	1.03	1.01	1.00
Largemouth Bass - YOUNG OF YEAR recruitment	0.99	1.00	1.00	1.00
Northern Pike - YOUNG OF YEAR net productivity ¹	N/A	N/A	N/A	N/A
Virginia Rail - reproductive index	1.16	1.27	1.31	1.31
Muskrat - house density in drowned river mouth wetlands	1.42	4.39	1.75	2.04
BELOW THE DAM				
Golden Shiner - suitable feeding habitat area	1.00	1.00	1.00	0.97
Wetlands fish - abundance index	0.87	0.90	0.84	0.81
Migratory wildfowl - habitat area	1.03	1.03	0.97	1.00
Least Bittern - reproductive index	1.03	1.06	1.00	1.00
Virginia Rail - reproductive index	0.94	0.97	1.06	1.06
Migratory wildfowl - productivity	1.06	1.00	1.00	1.00
Black Tern - reproductive index	0.84	0.77	1.00	1.03
Northern Pike - reproductive area	0.97	0.94	0.94	0.90
Frog sp. - reproductive habitat surface area	0.87	0.87	1.03	1.00
Eastern Sand Darter - reproductive area	1.10	1.03	1.13	1.13
Spiny Softshell Turtle - reproductive habitat surface area	1.03	1.06	1.03	1.06
Bridle Shiner - reproductive habitat surface area	1.00	0.97	1.00	1.03
Muskrat - surviving houses	1.04	0.88	0.96	0.96
PERCENTAGE 'GOOD' SCORES FOR EACH PLAN				
	6%	19%	13%	13%

After the release of the Study Board's Final Report, the Study experts who developed the charts reviewed them and made a number of small adjustments to correct some minor errors and reduce duplication.

 = Worse than Plan 1958D with Deviations

 = Better than Plan 1958D with Deviations

¹ — The Northern Pike indicator for the upper river was found to be incorrectly functioning following publication of the Study Report. Experts involved in producing the report charts conducted a subsequent review for accuracy and corrected figures are presented.

Table 2: Economic Performance Indicators

Plan 2007 produces positive or neutral results economically across nearly all interests and regions as compared to Plan 1958D with deviations.

Average Annual Net Discounted Benefits (Stochastic Series¹). All values are millions of U.S. dollars per year.

	A+	B+	D+	2007	
COASTAL	-\$0.04	-\$2.75	-\$0.15	\$0.15	Plan 2007 produces generally better results across all coastal interests by reducing high levels during the winter and spring storm season.
Lake Ontario	\$0.46	-\$2.52	-\$0.23	\$0.06	
Shore Protection Maintenance	\$0.57	-\$2.16	-\$0.17	\$0.03	
Erosion to Unprotected Developed Parcels	-\$0.23	-\$0.17	\$0.02	\$0.01	
Flooding	\$0.12	-\$0.20	-\$0.08	\$0.02	
Upper St. Lawrence River	\$0.01	-\$0.01	-\$0.01	\$0.00	
Flooding	\$0.01	-\$0.01	-\$0.01	\$0.00	
St. Lawrence	-\$0.51	-\$0.22	\$0.09	\$0.09	
Flooding	-\$0.51	-\$0.22	\$0.09	\$0.09	
Shore Protection Maintenance ²	N/A	N/A	N/A	N/A	
COMMERCIAL NAVIGATION	\$0.47	\$2.13	\$1.54	\$1.69	While Plan B+ produces strong results for the Seaway and good results elsewhere, Plan 2007 avoids the losses that characterize other plans.
Lake Ontario	-\$0.03	-\$0.01	-\$0.01	\$0.00	
Seaway	\$0.57	\$2.16	\$1.56	\$1.71	
Montreal down	-\$0.07	-\$0.02	-\$0.02	-\$0.01	
HYDROPOWER	\$2.74	\$6.09	\$1.63	\$2.37	Although Plan B+ does well for Hydropower, Plan 2007 holds its own while maintaining benefits for other interests.
NYPA - OPG	\$2.18	\$3.86	\$0.48	\$0.77	
Hydro Quebec ³	\$0.55	\$2.22	\$1.16	\$1.60	
RECREATIONAL BOATING	\$3.81	-\$0.74	\$1.42	\$1.32	Plan 2007 mostly produces good outcomes for boating, but smaller marinas on Lake Ontario find the low levels produced in some years may reduce current benefits of regulation.
Above Dam	\$1.20	-\$1.42	-\$0.36	-\$0.15	
Lake Ontario	\$0.70	-\$1.18	-\$0.44	-\$0.27	
Alex Bay	\$0.47	-\$0.29	\$0.03	\$0.06	
Ogdensburg	\$0.01	\$0.00	\$0.01	\$0.01	
Lake St. Lawrence	\$0.01	\$0.05	\$0.05	\$0.05	
Below Dam	\$2.61	\$0.68	\$1.78	\$1.47	
Lac St. Louis	\$1.39	\$0.49	\$0.89	\$0.74	
Montreal	\$0.93	\$0.19	\$0.68	\$0.55	
Lac St. Pierre	\$0.29	\$0.00	\$0.21	\$0.18	
TOTAL	\$6.68	\$4.72	\$4.43	\$5.53	

After the release of the Study Board's Final Report, the Study experts who developed the charts reviewed them and made a number of small adjustments to correct some minor errors and reduce duplication.

1—A statistically simulated series of years, using a sample of actual historic years as the raw data, to test different regulation plans by simulating conditions such as droughts and floods.

2—The lower river Shore Protection and Maintenance indicator was not calculated for the full stochastic series by the lower river coastal model.

3—An error was found in the A+ number for Hydro Quebec subsequent to the Study Board report, and has been corrected by experts involved in producing the report charts.

Differences in water levels produced by Plan 2007 and Plan 1958D, as it has been applied in recent years with deviations will be subtle because both plans address the same concerns (to assess the differences, the Study developed a model for Plan 1958D with deviations called “Plan 1958DD”). For example, both plans avoid high Lake Ontario water levels if at all possible since high levels generally result in shore damage (flooding and erosion). However, Plan 2007 is better able than Plan 1958D with deviations to reduce shore damage because it takes into account a Study Board finding that the critical periods for damage from high water levels are during the spring and fall, when storms are most likely to occur, generating waves and surges. Plan 2007 reduces damages by setting lower fall and spring water levels during these critical periods. To achieve this, there is a necessary trade-off of occasionally allowing slightly higher water levels (five inches or less) on the lake during the less critical summer period. As a result, because of the seasonal timing, Lake Ontario shore damages are actually lower under Plan 2007 than under Plan 1958D with deviations. The trade-off of slightly higher summer levels also helps recreational boaters, commercial navigation, and hydropower interests by providing more water when it is needed most.

There will be some differences between Plan 2007 and Plan 1958D with deviations. One of the most significant is that once every 20–30 years, when Lake Ontario is experiencing low water levels, Plan 2007 will keep summer levels lower than they would have been under Plan 1958D with deviations. The lower levels are closer to the water levels that would have occurred naturally (without water level regulation) under low supply conditions. Compared to Plan 1958D as implemented, Plan 2007 moves closer to simulating natural control of cattail populations by drying out their habitats, which occurred prior to water regulation, and provides opportunities for

the establishment of more diverse flora and fauna. The Study Board identified wetlands resilience and diversity, which are significantly impacted by Lake Ontario water level management, as one of the most critical and basic indicators of the environmental health of Lake Ontario. In addition, meadow marsh area is the primary indicator of the regulation plan’s impact on the environment. Plan 2007 improves meadow marsh area and conditions largely due to these low water periods.

Plan 2007 performs a little better than other plans at maintaining adequate water levels in Montreal Harbour during dry times.

A summary of the effects of Plan 2007, as measured by the environmental and economic performance indicators developed by the Lake Ontario–St. Lawrence River Study Board, is provided in Tables 1 and 2.

What You Need to Know:

Highlights of the Proposed new Order of Approval

The International Joint Commission (the Commission) is seeking comment on a proposed new Order of Approval for the regulation of water levels and flows in Lake Ontario and the St. Lawrence River through the Moses-Saunders dam at Cornwall, Ontario, and Massena, New York.

The Commission proposes to implement a new Order after considering public comments and making any changes to the draft Order that may be needed. The proposed new Order would replace the 1956 Order of Approval that is currently in force.

- | | |
|--|--|
| <p>1 Complies with the rules and principles in Article VIII of the Boundary Waters Treaty of 1909, specifically the order of precedence of uses under the Treaty, which is:</p> | <p>1 Uses for sanitary and domestic purposes;
 2 Uses for navigation and;
 3 Uses for power and irrigation purposes.</p> |
| <p>2 Provides comparable or greater benefits to the interests identified in the 1956 Order, which include:</p> | <ul style="list-style-type: none"> • Sanitary and domestic; • Navigation; • Power; • Irrigation; • Shore property owners. |
| <p>3 Reduces the risks of shoreline flooding and erosion on Lake Ontario by limiting higher water levels on Lake Ontario during storm seasons.</p> | |
| <p>4 Takes account of the environment and recreational boating.</p> | |
| <p>5 Takes account of new information and the wider range of water supplies that has occurred since 1956.</p> | |
| <p>6 Requires the Commission to conduct a review after two years and to implement a regulation plan based on Plan B+ if the Commission determines that measures to mitigate the additional risk to all interests are in place.</p> | |
| <p>7 Establishes an International Lake Ontario–St. Lawrence River Board to:</p> | <ul style="list-style-type: none"> • Manage the regulation plan; • Set up a monitoring and adaptive management committee; • Communicate with the public; and, • Carry out other duties for the Commission. |
| <p>8 Requires the Board to assess system-wide risks in times of extreme high or low water supply conditions. The Board may then seek the Commission’s consent to deviate from the regulation plan flows.</p> | |
| <p>9 States that the Commission will develop a directive to the Board that addresses the need for deviations from plan flows during winter operations, emergencies, flood discharges from the Ottawa River, peaking and ponding, and other special short-term situations.</p> | |

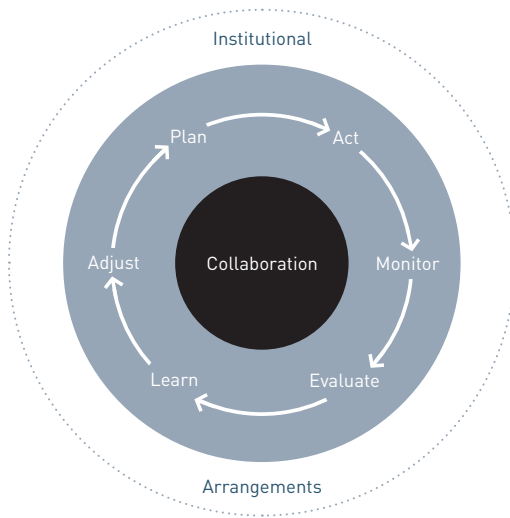
Adaptive Management

Adaptive Management is a formal process for continually improving management policy and practices by learning from their outcomes. Regulators and the public need to know whether modeled benefits and impacts are occurring over time and, if not, what changes or corrections should be made in the long run.

The success of the adaptive management program recommended by the International Joint Commission (the Commission) will depend largely on funding and on participation from sources other than the Commission. In this regard, the governments of Canada and the United States have indicated their strong support for monitoring and adaptive management as an ongoing activity connected with future water level and flow regulation, and both governments will actively participate in the further development of an adaptive management plan for implementation.

ADAPTIVE MANAGEMENT STRATEGY

This diagram shows key components of the Lake Ontario–St. Lawrence River adaptive management program.



PLAN

The Study examined in detail environmental and economic benefits and impacts of regulation. Subsequent work led to the proposed new Order of Approval and Plan 2007.

ACT/IMPLEMENT

During the period when a new regulation plan is implemented, cause-and-effect relationships associated with water management will be further evaluated within 15-years for key performance indicators.

MONITOR AND EVALUATE

A monitoring, assessment, and model-refinement strategy is included as part of the adaptive management program. It may take decades to demonstrate potential cause-and-effect relationships associated with flow regulation because some impacts take a long time to occur and because some impacts only occur during rare high or low water levels.

COLLABORATIVE GROUP LEARNING

Public involvement would take place annually, and adaptive management workshops would take place every five years associated with refining the adaptive management program. A reevaluation of the regulation plan would take place within 15 years based on science-based information collected over this time period.

ADJUST

After reevaluation, the Commission may amend the regulation plan as it deems appropriate. For example, if the monitoring, assessment, and model refinements show that the response of wetland meadow marsh and lake shoreline maintenance are substantially different from the Study results, the Commission could further refine the models and the appropriate regulation rules to reflect the improved understanding.

The New Board:

Its Structure and How It Will Work

ROLE AND NAME OF THE NEW BOARD

- New name—the International Lake Ontario–St. Lawrence River Board—reflects broader responsibilities and system-wide oversight
- Functions in most respects similar to the current Board of Control
- Has additional responsibilities for monitoring and adaptive management
- Includes a committee for monitoring and adaptive management
- Provides oversight of the Order of Approval and regulation plan for the International Joint Commission
- Manages and coordinates increased communications needs

COMPOSITION OF THE BOARD

- Ten members appointed by the IJC including:
 - i.* Equal numbers from each country coming from federal, state, and provincial agencies, non-governmental organisations or the general public
 - ii.* Two Co-Chairs—one Canadian and one U.S.—appointed from federal government departments and agencies
- Members serve in personal and professional capacities, not as representatives of their organizations or governments
- Public collaboration is a high priority, and the Board may establish an informal group of public advisors
- Support of two Secretaries, one from United States and one from Canada, continues; Secretaries support the Board and participate in the Communications Committee and other committees as requested by the Board

SUPPORT

- Has two Regulation Representatives (Reg Reps) who:
 - i.* Calculate plan flows each week; track water levels, supplies, pre-project flows, and other plan levels; produce forecasts; carry out emergency deviations and short-term deviations in coordination with the Board according to the new Order of Approval
 - ii.* Provide hydrological and technical modeling of regulation plan impacts to support Board's adaptive management function

OPERATIONS ADVISORY GROUP (OAG)

- Advises on actual operating conditions for the hydroelectric dams at Cornwall-Massena and Beauharnois and the Seaway with practical information such as turbine shutdowns, ice problems, navigation problems through weekly calls with Reg Reps
- Includes members from the power entities, the Seaway on both sides, and the Canadian Coast Guard

MONITORING AND ADAPTIVE MANAGEMENT COMMITTEE

- Board structure closely linked to this new committee, which will implement and update the Adaptive Management Action Plan, monitor and analyze key performance indicators, and hold periodic science forums

Deviations:

Fewer and More Transparent

CONSISTENCY OF PLAN FLOWS

- Normal practice will be to use release flows as determined by Plan 2007 in Order to:
 - i.* Achieve expected plan outcomes, including environmental outcomes, and
 - ii.* Provide greater predictability and better balanced benefits for all users.
- The proposed new Order would permit deviations for emergencies, for extremely high or low supplies, and for short time periods when benefits can be created, or system problems solved, with no significant detriments.
- The regulation plan accounts for flow adjustments for ice management and for forecasting error (e.g., the Ottawa River freshet)

EMERGENCY DEVIATIONS

- Although rare, emergency deviations are necessary under extreme conditions such as major power blackouts, major power dam shutdowns, the sinking of ships, or major spills of dangerous substances.
- Reg Reps are authorized to act immediately and report quickly afterwards to the Board and to the International Joint Commission

DISCRETIONARY DEVIATIONS

- Discretionary deviations require an accounting and restoration of discharged water to plan flows usually within one week; two weeks or more are permitted only on rare occasions.
- With Board permission, Reg Reps can also approve other minor within-week deviations for reasons such as hydropower unit maintenance, assisting commercial vessels during periods of unexpected low water levels, and assisting the seasonal recreational boat haul-out.

CRITERION 10 DEVIATIONS

- According to the new Order of Approval in Criterion 10, the Board may request from the Commission authority for deviating one month at a time when it foresees in its three-month forecast a significant probability of either extreme high or low conditions being surpassed only 1% of the time.
- The Board must submit an analysis and reduce negative impacts without serious negative impacts to other parts of the system. The Board may renew this request monthly with renewed analyses.



History of the Order

THE BOUNDARY WATERS TREATY OF 1909

- The Boundary Waters Treaty of 1909 requires the federal governments of the United States and Canada to submit an application to the Commission for approval of new projects that affect the natural water level or flow of boundary waters, unless they negotiate a special agreement.
- The Commission ensures that the construction and operation of the project are consistent with the terms of the Treaty when it rules on applications.

THE APPLICATION

- The two governments applied to the Commission in June 1952 to develop the St. Lawrence Hydropower Project.
- The Commission reviewed the application, held public hearings, and issued an Order of Approval for construction of the project in October 1952.

THE REFERENCE

- The two governments asked the Commission in June 1952 asking whether certain water level objectives could be achieved.
- The Commission concluded that the objectives could be achieved and recommended a four-foot target range for Lake Ontario, 11 criteria, and a regulation plan.
- The governments approved the provisions recommended by the Commission, and the Commission held additional public hearings.

1956 ORDER

- The Commission amended its Order of Approval for the St. Lawrence Hydropower Project in July 1956 to incorporate a four-foot target range for Lake Ontario, 11 criteria, and regulation plan.
- The criteria addressed minimum Montreal Harbour levels, winter outflows to permit power generation, outflows during the annual spring break-up in Montreal Harbour and during the annual flood discharge from the Ottawa River, minimum regulated outflows for the maximum dependable flow for power, and upper and lower target levels for property owners on the shores of Lake Ontario.
- Several criteria, including the upper target level, depend on the water supplies to Lake Ontario being within those experienced during the 1860–1954 period of record.

REVIEW OF 1956 ORDER

- The Commission launched formal review of the Order of Approval in December 2000 with the Lake Ontario–St. Lawrence River Study.
- Following the Study, the Commission consulted with the two federal governments because the governments played an integral role in the application and in the development of the regulation criteria.
- The Commission released a proposed new Order of Approval in March 2008 for public comment. It will hold public hearings and will carefully consider all comments before making a decision.
- The Commission will seek the concurrence of the two governments before making a decision.



This is a summary of a background paper. The full text is available at www.ijc.org/LOSdocuments



Text of the Order

PROPOSED NEW ORDER

In the matter of the applications of the government of Canada and the government of the United States of America for an Order of Approval for the construction of certain structures for the development of power in the International Rapids section of the St. Lawrence River.

INTRODUCTION

On October 29, 1952, the International Joint Commission issued an Order of Approval, pursuant to the Boundary Waters Treaty of 1909, to the Government of Canada and the Government of the United States of America for the construction, maintenance and operation of certain structures for the development of power in the International Rapids Section of the St. Lawrence River. A copy of the Commission's Order of Approval of October 29, 1952, as amended on July 2, 1956 (1956 Order) is included as Attachment 1 to this new Order.

The Commission explicitly retained jurisdiction in the 1956 Order to change that Order after giving an appropriate opportunity to all interested parties to make representations to the Commission. Any such changes must comply with the rules or principles set out in Article VIII of the Treaty, which include an Order of precedence among listed interests and require the Commission to ensure that suitable and adequate provision is made for the protection and indemnity of all interests in the other country which may be injured by the project.

The International Joint Commission has now completed a review of the 1956 Order. This review included a five-year study by the Lake Ontario-St. Lawrence River Study Board, public outreach by the Study Board with the assistance of a Public Interest Advisory Group, a review of certain key aspects of the five-year study by the U.S. National Research

Council and the Royal Society of Canada, further studies requested by the Commission, and comments provided to the Commission by governments, interest groups, and members of the general public in written submissions and at public hearings held by the Commission.

Based on this review, the International Joint Commission has made the following Findings and new Order.

THE FINDINGS

The International Joint Commission has jurisdiction to amend the 1956 Order in accordance with the requirements of the Boundary Waters Treaty of 1909 (Treaty).

The Treaty requires that the International Joint Commission observe an Order of precedence among:

- 1 *uses for domestic and sanitary purposes;*
- 2 *uses for navigation, including the service of canals for the purposes of navigation; and*
- 3 *uses for power and irrigation purposes.*

Riparian interests were addressed in the 1956 Order, and the Commission finds that it is now necessary to also make provision for the environment and recreational boating in this new Order.

The Treaty also states that the International Joint Commission shall require that suitable and adequate provision be made for the protection and indemnity of all interests on the other side of the line that may be injured by the project.

The Commission finds that some of the benefits provided to interests identified in the 1956 Order resulted from ad hoc, discretionary decisions. The Commission also finds that regulation under this new Order will provide an overall level of comparable or greater benefits to each of the interests identified in the 1956 Order, and that the benefits can be conveyed with greater security and predictability. In assessing the benefits provided by regulation under this new Order, the Commission finds that the terms, conditions and other requirements of this new Order take into account the high and low water levels since 1954 and other new information not available when the 1956 Order was developed.

The Commission finds that the laws in Canada and the Constitution and laws of the United States of America

together with the provisions of this new Order satisfy the requirements of Article VIII of the Treaty.

The Commission finds that it would be beneficial to all interests in the Lake Ontario - St. Lawrence River System to implement an adaptive management approach to regulation of the System. Socioeconomic and environmental conditions continue to evolve, and as new science-based information becomes available, there will be a need to consider such information for improving system regulation in the future. Monitoring, data collection, and assessment are necessary to validate the models upon which the regulation plan was built, to evaluate the effectiveness of programs designed to reduce the risk of damage or to provide benefits to interests affected by regulation, to analyze the effects of other changes, and to consider possible future improvements in system regulation.

The Commission finds that the risk of shoreline flooding and erosion on Lake Ontario increases under high water conditions during the fall, winter and spring, when seasonal storms can generate significant waves and surges. The shoreline impact can be reduced by better seasonal management of Lake Ontario high water levels and/or through mitigation.

THE ORDER

As used in this Order:

"1956 Order" means the Order of Approval issued by the International Joint Commission on October 29, 1952, as amended on July 2, 1956, for the construction, maintenance and operation of certain structures for the development of power in the International Rapids Section of the St. Lawrence River, as set out in Attachment 1 to this Order;

"Supplies of the Past as Adjusted" means the range of supplies for the period 1860 through 1954 adjusted to a condition assuming a continuous diversion out of the Great Lakes Basin of 3100 cubic feet per second (88 cubic meters per second) at Chicago and a continuous diversion into the Great Lakes Basin of 5000 cubic feet per second (142 cubic meters per second) from the Albany River Basin;

"Pre-project condition" means the channel capacity of the St. Lawrence River that determined the outflow from Lake Ontario after the removal of Gut Dam from the Galop Rapids section of the river, but before construction of the project. These are the conditions that existed in March 1955.

"Board" means the International Lake Ontario-St. Lawrence River Board established by this new Order;

"Commission" means the International Joint Commission established by the Boundary Waters Treaty of 1909;

"IGLD 85" means the International Great Lakes Datum, 1985, which is the reference datum for all elevations in this Order; and

"Treaty" means the Boundary Waters Treaty of 1909 between Canada and the United States of America.

The International Joint Commission Orders that the approval given for the construction, maintenance and operation of structures in the 1956 Order, and the approvals given by the former St Lawrence River Joint Board of Engineers on September 1, 1959 and August 4, 1960 for ice booms shall continue in full force and effect subject to the conditions set out below in this new Order. Up to the date of this new Order, the operation and maintenance of the project were subject to the terms and conditions of the 1956 Order. The approvals concerning ice booms are considered to be approvals by the Commission.

The terms and conditions of the 1956 Order are modified by this new Order. The following new terms and conditions of this new Order will apply to the operation and maintenance of the structures starting January 9, 2009:

- A** The structures shall be maintained and operated so as not to tend materially to conflict with or restrain uses for domestic and sanitary purposes and uses for navigation purposes, including the service of canals for the purposes of navigation.
- B** The structures shall be maintained and operated in such manner as to safeguard the rights and lawful interests of others engaged or to be engaged in the development of power in the St. Lawrence River downstream of the International Rapids Section.
- C** The structures shall be so maintained and operated as to safeguard so far as possible the rights of all interests affected by the levels or flows of the St. Lawrence River or by the levels of Lake Ontario and the lower Niagara River downstream of Niagara Falls.

D The hydro-electric plants approved by the 1956 Order shall not be subjected to operating rules and procedures more rigorous than are necessary to comply with the provisions of conditions (a), (b) and (c) of this new Order.

E Before Ontario Power Generation and any successor makes any changes to any part of the structures, it shall submit to the Government of Canada for approval in writing, such detailed plans and specifications and details of the program of construction with respect to the changes as the Government of Canada may require and shall obtain such other approvals as may be required under the Treaty. Likewise, before the Power Authority of the State of New York (also known as "NYPA") and any successor makes any changes to any part of the structures it shall submit to the Government of the United States of America, for approval in writing, such detailed plans and specifications and details of the program of construction with respect to the changes as the Government of the United States of America may require and shall obtain such other approvals as may be required under the Treaty.

F A Board to be known as the International Lake Ontario-St. Lawrence River Board (Board), consisting of an equal number of members from Canada and from the United States of America, shall be established by the Commission. The Board shall include state, provincial and federal members. The duties of the Board shall be to execute the instructions of the Commission as issued from time to time with respect to this new Order and to ensure compliance with the provisions of this new Order relating to water levels and the regulation of the discharge of water from Lake Ontario and the flow of water through the International Rapids Section of the St. Lawrence River. Ontario Power Generation and the Power Authority of the State of New York, and any successor entities, shall duly observe any direction given them by the Board for the purpose of ensuring such compliance. The Board shall also undertake other responsibilities, which at a minimum include establishing a monitoring and adaptive management committee, and developing and implementing

a strategy for public communications. The Commission shall issue a directive to the Board enumerating these other responsibilities. The Board shall report to the Commission at such times as the Commission may determine, but not less than semi-annually. In the event of any disagreement among the members of the Board which they are unable to resolve, the matter shall be referred to the Commission for decision. The Board may, at any time, make representations to the Commission in regard to any matter affecting or arising out of the terms of this new Order with respect to water levels and the regulation of discharges and flows.

G The discharge of water from Lake Ontario and the flow of water through the International Rapids Section shall be regulated to meet the requirements of conditions (a), (b) and (c) of this new Order and shall be regulated in accordance with the criteria set out below.

The structures shall be operated in such a manner as to provide no less protection for navigation and riparian interests downstream than would have occurred under pre-project conditions with Supplies of the Past as Adjusted. The Commission will indicate in an appropriate fashion, as the occasion may require, the inter-relationship of the criteria, the range of elevations and the other requirements. *The criteria are as follows:*

- 1** *Montreal Harbour shall have no less protection than it had under criterion (a) of the 1956 Order.*
- 2** *The regulated winter outflows from Lake Ontario from 15 December to 31 March shall be as large as feasible and shall be maintained so that the difficulties of winter power operation are minimized.*
- 3** *The regulated outflow from Lake Ontario during flood discharges from the Ottawa River shall not be greater than would have occurred under pre-project conditions with Supplies of the Past as Adjusted, assuring no less protection than under the 1956 Order.*
- 4** *The outflow from Lake Ontario shall be regulated so as to provide net benefits and protection to Lake Ontario shore property owners in the United States and Canada comparable to those provided by the 1956 Order, taking into account any mitigation measures.*

- 5 *Consistent with other requirements, the minimum regulated monthly outflow from Lake Ontario shall be such as to secure the maximum dependable flow for power.*
- 6 *Consistent with other requirements, the levels of Lake Ontario shall be regulated for the benefit of property owners on the shore of Lake Ontario in the United States of America and Canada so as to reduce extremes of stage which were experienced prior to the construction and operation of the project.*
- 7 *Consistent with other requirements, flows through the International Rapids Section of the St Lawrence River shall be regulated so as to protect the resiliency of wetlands and biodiversity on Lake Ontario and on the St. Lawrence River.*
- 8 *Consistent with other requirements, the maximum regulated outflow from Lake Ontario shall be maintained as low as possible to maintain safe velocities in the International Section of the St Lawrence River for navigation and minimize spill at the hydropower plants.*
- 9 *Consistent with other requirements, flows through the International Rapids Section of the St Lawrence River shall be regulated so as to benefit recreational boating.*
- 10 *In the event the Board's three month forecast shows a significant probability of the Lake Ontario level going above the 1% exceedance level, or going below the 99% exceedance level, as defined in a table approved by the Commission for this purpose, the Board shall submit an analysis of system-wide risks to the Commission, and may request to undertake deviations from a Commission-approved regulation plan with Commission consent for a period of one month. The Commission may on one or more occasions renew the consent for a period of one month if the Board has on each such occasion provided the forecast, analysis and request set out in the preceding sentence.*

The Commission shall approve a plan of regulation, and associated operational guides, for the discharge of water from Lake Ontario and its flow through the International Rapids Section of the St Lawrence River that satisfies the aforementioned requirements and criteria. The velocities and water surface profiles when applied to the channels (as determined in accordance with the 1956 Order) will

not exceed those provided for in the 1956 Order. The flow of water through the International Rapids Section of the St Lawrence River in any period shall equal the discharge of water from Lake Ontario as determined for that period in accordance with the approved regulation plan. The Commission's directive to the Board shall make provision for deviations from the plan of regulation to address such matters as winter operations, emergencies, flood discharges from the Ottawa River, peaking and ponding, and other special short-term situations.

No later than two years after the effective date of this Order, the Commission will review the extent to which a monitoring program and mitigation measures have been implemented in the Lake Ontario-St. Lawrence River basin and will implement a variant of Plan B+ if it determines that such plan will satisfy all of the conditions, criteria and other requirements of this Order with such mitigation measures in place. The review will be based upon the information that is available at the time of the review. This assessment review may be repeated in subsequent years.

No later than fifteen years after the effective date of this Order, the Commission will conduct a review of the results of regulation under this Order to assess the extent to which the results predicted by the models used to develop the approved regulation plan occurred as expected. The review will be based upon the information available at the time of the review. Information received and validated through this review may provide the basis for possible changes to the regulation of water levels and flows.

The installation, maintenance, operation and removal of the ice booms in the St. Lawrence River by Ontario Power Generation and the Power Authority of the State of New York, and any successor entities, are subject to the following conditions:

- 1 *Any significant modifications in the design or location of the booms shall require the approval of the Commission;*
- 2 *The placement and removal of ice booms shall be timed so as not to interfere with the requirements of navigation; and*
- 3 *The St. Lawrence Seaway Management Corporation and the St. Lawrence Seaway Development Corporation, and any successor entities, shall be kept informed of all such operations.*

- H Ontario Power Generation and the Power Authority of the State of New York, and any successor entities, shall maintain and supply for the information of the Board such accurate records relating to water levels and the discharge of water through the structures and the regulation of the flow of water through the International Rapids Section as the Board may determine to be suitable and necessary. They shall also install and maintain such gauges, carry out such measurements, and perform such other services as the Board may deem necessary for these purposes.

- I The Board shall report to the Commission as of December 31 each year on the effect, if any, of the operation of the downstream hydro-electric power plants and related structures on the tail-water elevations at the hydro-electric power plants approved by the 1956 Order.

AND IT IS FURTHER ORDERED that the Commission retains jurisdiction over the subject matter of the Applications that the Government of Canada and the Government of the United States of America submitted to the International Joint Commission on June 30, 1952 for its approval of the construction of certain structures for the development of power in the International Rapids Section of the St. Lawrence River, and the Commission may, after giving such notice and opportunity to all interested parties to make representations as the Commission deems appropriate, make such further Order or Orders relating thereto as may be necessary in the judgment of the Commission.

Information Sessions and Public Hearings

Belleville, ON

Banquet Centre
1 Alhambra Square
Information Session:
April 21, 2008
Public Hearing:
June 23, 2008

Kingston, ON

City Hall
216 Ontario Street
Information Session:
April 22, 2008
Public Hearing:
June 24, 2008

Alexandria Bay, NY

Bonnie Castle Resort
31 Holland Street
Information Session:
April 23, 2008
Public Hearing:
June 25, 2008

Oswego, NY

American Foundry
246 West Seneca Street
Information Session:
April 24, 2008
Public Hearing:
June 26, 2008

Port Jordan, ON

Best Western
2793 Beacon Boulevard
Information Session:
April 29, 2008
Public Hearing:
June 9, 2008

Olcott, NY

Olcott Fire Company
1691 Lockport Olcott Road
Information Session:
April 30, 2008
Public Hearing:
June 10, 2008

Greece, NY

Town of Greece Community
and Senior Center
3 Vince Tofany Boulevard
Information Session:
May 1, 2008
Public Hearing:
June 11, 2008

Montréal, QC

Botanical Garden
4101 rue Sherbrook Est
Information Session:
May 6, 2008
Public Hearing:
June 17, 2008

Sorel-Tracy, QC

Auberge de la rive
165 chemin Sainte-Anne
Information Session:
May 7, 2008
Public Hearing:
June 18, 2008

Massena, NY

Quality Inn
10 West Orvis Street
Information Session:
May 8, 2008
Public Hearing:
June 19, 2008

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