



## ORDERS OF APPROVAL FOR REGULATION OF LAKE ONTARIO

IN THE MATTER OF THE APPLICATIONS OF THE GOVERNMENT OF CANADA AND THE GOVERNMENTS OF THE UNITED STATES OF AMERICA FOR AN ORDER OF APPROVAL OF THE CONSTITUTION OF CERTAIN WORKS FOR DEVELOPMENT OF POWER IN THE INTERNATIONAL RAPIDS SECTION OF THE ST. LAWRENCE RIVER.

NOTE:

1. *The amendments of July 2, 1956 are in Light Italic type.*
2. All elevations have been converted to International Great Lakes Datum (1985) and the metric system of measurement.

### ORDERS OF APPROVAL

October 29, 1952, as amended by a supplementary

#### **Order dated July 2, 1956**

WHEREAS the Government of Canada and the Government of the United States of America under date of 30 June, 1952, have submitted Applications to the International Joint Commission (hereinafter referred to as the "Commission") for its approval of the construction, jointly by entities to be designated by the respective Governments, of certain works for the development of power in the International Rapids Section of the St. Lawrence River, these being boundary waters within the meaning of the Preliminary Article of the Boundary Waters Treaty of 11 January, 1909 (hereinafter referred to as the "Treaty"), and of the construction, maintenance and operation of such works subject to and under conditions specified in the Applications, and have requested that the Applications be considered by the Commission as in the nature of a joint application; and

WHEREAS pursuant to the aforementioned request of the two Governments, the Commission is considering the two Applications as in the nature of a joint application; and

WHEREAS notices that the Applications have been filed were published in accordance with the Rules of Procedure of the Commission; and

WHEREAS Statements in Response to the Applications and Statements in Reply thereto by both Applicants were filed in accordance with the Rules of the Commission; and



WHEREAS pursuant to published notices, hearings were held by the Commission at Toronto, Ontario, on 23 July, 1952; at Ogdensburg, New York, on 24 July, 1952; at Cornwall, Ontario, on 25 July, 1952; at Albany, New York, on 3 September, 1952; at Montreal, Quebec, on 8 September 1952; and at Washington, D.C. on 20 October, 1952; and

WHEREAS by reason of the said notices of the said applications and hearings, all persons interested were afforded convenient opportunities of presenting evidence to and being heard before the Commission; and

WHEREAS pursuant to the said Applications, the hearings before, the evidence given, and material filed with the Commission is satisfied that the proposed works and use of the waters of the International Rapids Section comply with the principles by which the Commission is governed as adopted by the High Contracting Parties in Article VIII of the Treaty; and

WHEREAS the Commission has been informed that the Government of Canada has designated The Hydro-Electric Power Commission of Ontario as the entity to construct, maintain and operate the proposed works in Canada; and

*WHEREAS the Commission has been informed that the President of the United States of America by Executive Order No. 10.500, dated 4 November 1953, designated the Power Authority of the State of New York as the United States entity to construct, maintain and operate the proposed works in the United States; and*

WHEREAS the program of construction of the works, as proposed by the Applicants, includes the removal of Gut Dam from the International Rapids Section and the Government of Canada has informed the Commission that it is its intention to take steps for the early removal of Gut Dam as soon as the construction of the proposed works is approved and as soon as river conditions and the protection of down river and interests that will be affected during its removal will permit, thereby advancing the time of removal of Gut Dam; and

WHEREAS the Commission finds that suitable and adequate provision is made by the laws in Canada and by the Constitution and laws in the United States for the protection and indemnity of all interests on either side of the International Boundary which may be injured by reason of the construction, maintenance and operation of the works; and

WHEREAS the Commission finds that it has jurisdiction to hear and dispose of the Applications by approval thereof in the manner and subject to the conditions hereinafter set out; and



*WHEREAS the Commission by Order dated 29 October 1952 (Docket 68), approved the construction, maintenance and operation of the works; and Appendix A to the said Order describes the features of the works so approved and provides the channel enlargements will be undertaken in specified areas; and*

*WHEREAS condition (i) of said Order provides that, upon completion of the works, 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 (b), (c) and (d) thereof, and subject to possible modifications and changes to be recommended subsequently by the International St. Lawrence River Board of Control, in accordance with Method of Regulation No. 5 as prepared by the General Engineering Branch, Department of Transport, Canada, dated Ottawa, September 1940; and*

*WHEREAS, by the said Order of 29 October 1952, the Commission specifically retained jurisdiction to make such further Order or Orders relating to the subject matter of the Applications of the United States of America and Canada (Docket 68) as may be necessary in the judgment of the Commission; and*

*WHEREAS the Commission, as a result of its investigations under the Reference from the Government of Canada and the United States of America, dated 25 June 1952, regarding the levels of Lake Ontario (Docket 67), has determined that it would not be practicable to base the regulation of flows from Lake Ontario on the said Method of Regulation No. 5; and*

*WHEREAS, pursuant to published notices, hearings were held by the Commission at Detroit, Michigan, on 4 June 1953, Rochester, New York on 17 November 1953 and 12 April 1955, Hamilton, Ontario on 18 November 1953, and Toronto, Ontario, 18 November 1953, and Toronto, Ontario on 14 April 1955 at which all persons interested were afforded convenient opportunity of presenting evidence to and being heard before the Commission; and at the said hearings held at Toronto and Rochester in April 1955 all interested persons were given convenient opportunity to express their views upon the criteria and range of stage which had been tentatively proposed by the Commission; and*

*WHEREAS the Commission on 9 May 1955, by letters addressed to the Secretary of State for External Affairs of Canada and the Secretary of State of the United States of America, respectively, recommended adoption by the two Governments of the following:*

- (i) A range of mean monthly elevations for Lake Ontario of 74.15 m (243.3 feet) navigation season to 75.37 m (247.3 feet) as nearly as may be; and*
- (ii) Criteria for a method of regulation of outflows and levels of Lake Ontario applicable to the works in the International Rapids Section of the St. Lawrence River; and*



- (iii) *Plan of Regulation No. 12-A-9, subject to minor adjustments that may result from further detailed study and evaluation by the Commission;*

*WHEREAS, by letters dated 3 December 1955, the Secretary of State for External Affairs of Canada and the Under Secretary of State of the United States of America advised the Commission that the Government of Canada and the Government of the United States of America, respectively, approved the range of mean monthly elevations for Lake Ontario and the criteria recommended in the Commission's said letters of 9 May, 1955; and also approved Plan of Regulation No. 12-A-9 for the purpose of calculating critical profiles and the design of channel excavations in the International Rapids Section of the St. Lawrence River; and*

*WHEREAS, in the said letters dated 3 December 1955, the two governments urged the Commission to continue its studies with a view to perfecting a plan of regulation so as best to meet the requirements of all interests both upstream and downstream, within the range of elevations and criteria therein approved; and*

*WHEREBY, by letter dated 3 December 1955, the Secretary of State for External Affairs, on behalf of the Government of Canada, has informed the Commission of the arrangements that have been made for the redesign of a portion of the St. Lawrence Seaway Canal in the vicinity of Montreal, between Lake St. Louis and the Laprairie Basin; and*

*WHEREBY condition (i) of the said Order of Approval dated 29 October 1952 makes the provision for adjustments and progressive improvements in the plan of regulation, subject to requirements and procedures specified therein:*

NOW, THEREFORE, IT IS ORDERED that the construction, maintenance and operation jointly by The Hydro-Electric Power Commission of Ontario and the Power Authority of the State of New York of certain works (hereinafter called "the works) in accordance with the "Controlled Single Stage Project (238-242)", which was part of the joint report dated 3 January, 1941, of the Canadian Temporary Great Lakes-St. Lawrence Basin Committee and the United States St. Lawrence Advisory Committee, containing the features described in Appendix "A" to this Order and shown in Appendix "B" to this Order, be and the same are hereby approved subject to the conditions enumerated below, namely,

- (a) All interests on either side of the International Boundary which are injured by reason of the construction, maintenance and operation of the works shall be given suitable and adequate protection and indemnity in accordance with the laws in Canada or the Constitution and laws in the



United States respectively, and in accordance with the requirements of Article VII of the Treaty.

- (b) The works shall be so planned, located, constructed, maintained and operated as not to conflict with or restrain uses of the waters of the St. Lawrence River for purposes given preference over uses of water for power purposes by the Treaty, namely, uses for domestic and sanitary purposes and uses for navigation, including the service of canals for the purpose of navigation, and shall be so planned, located, constructed, maintained and operated as to give effect to the provisions of this Order.
- (c) The works shall be constructed, maintained and operated in such manner as to safeguard the rights and lawful interests of other engaged or to be engaged in the development of power in the St. Lawrence River below the International Rapids Section.
- (d) The works shall be so designed, constructed, maintained and operated as to safeguard so far as possible the rights of all interests affected by the levels of the St. Lawrence River upstream from the Iroquois regulatory structure and by the levels of Lake Ontario and the lower Niagara River; and any change in levels resulting from the works which injuriously affects such rights shall be subject to the requirements of paragraph (a) relating to protection and indemnification.
- (e) The hydro-electric plants approved by this Order shall not be subjected to operating rules and procedures more rigorous than are necessary to comply with the provisions of the foregoing paragraphs (b), (c) and (d).
- (f) Before the Hydro-Electric Power Commission Ontario commences the construction of any part of the works, it shall submit to the Government of Canada, and before the *Power Authority of the State of New York* commences the construction of any part of the works, it shall submit to the Government of the United States, for approval in writing, detailed plans and specifications of that part of the works located in their respective countries and details of the program of construction thereof of such details of such plans and specifications or programs of construction relating thereto as the respective governments may require. If after any plan, specification or program has been so approved. The Hydro-Electric Power Commission of Ontario or the *Power Authority of the State of New York* wishes to make any change therein, it shall, before adopting such change, submit the changed plan, specification or program for approval in a like manner.



- (g) In accordance with the Applications, the establishment by the Governments of Canada and the United States of a Joint board of Engineers to be known as the St. Lawrence River Joint board of Engineers (hereinafter referred to as the "Joint Board of Engineers") consisting of an equal number of representatives of Canada and the United States to be designated by the respective Governments, is approved. The duties of the Joint Board of Engineers shall be to review and coordinate, and, if both Governments so authorized, approve the plans and specifications of the works and the programs of construction thereof submitted for the approval of the respective Governments as specified above, and to assure the construction of the works in accordance therewith as approved. The Joint Board of Engineers shall consult with and keep the board of Control, hereinafter referred to, currently informed on all matters pertaining to the water levels of Lake Ontario and the International Rapids Section and the regulation of the discharge of water from Lake Ontario and the flow of water through the International Rapids Section, and shall give full consideration to any advice or recommendations received from the Board of Control with respect thereto.
- (h) A Board of Control to be known as the International St. Lawrence River Board of Control (hereinafter referred to as the "Board of Control") consisting of an equal number of representatives of Canada and of the United States, shall be established by this Commission. The duties of the Board of Control shall be to give effect to the instructions of the Commission as issued from time to time with respect to this Order. During construction of the works the duties of the Board of Control shall be to keep itself currently informed of the plans of the Joint Board of Engineers insofar as these plans relate to water levels and the regulation of the discharge of water from Lake Ontario and the flow of water through the International Rapids Section, and to consult with and advise the Joint Board of Engineers thereon. Upon completion of the works, the duties of the Board of Control shall be to ensure that the provisions of this 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 as herein set out are complied with, and the Hydro-electric Power Commission of Ontario and the *Power Authority of the State of New York* shall duly observe any direction given them by the Board of Control for the purpose of ensuring such compliance. The Board of Control shall report to the Commission at such times as the Commission may determine. In the event of any disagreement amongst the members of the Board of Control which they are unable to resolve the matter shall be referred by them to the Commission for decision. The Board of Control may, at any time, make representations to the Commission in regard to any matter



affecting or arising out of the terms of this Order with respect to water levels and the regulation of the said discharge and flow.

- (i) Upon the completion of the works, 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 (b), (c) and (d) hereof; shall be regulated within a range of stage from elevation 74.15 m (243.3 feet) (navigation season) to elevation 75.37 m (247.3 feet), as nearly as may be; and shall be regulated in accordance with the criteria set forth in the Commission's letters of 17 March 1955 to the Governments of Canada and the United States of America and approved by the said governments in their letters of 3 December 1955 and qualified, by the terms of separate letters from the government of Canada and the Government of the United States of America dated 11 April 1956 and 1 May 1956, respectively, to the extent that these letters agree that the criteria are intended to establish standards which would be maintained with the minimum variation. The project works 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 and with supplies of the past as adjusted, as defined in criterion (a) herein. 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:

- (a) *The regulated outflow from Lake Ontario from 1 April to 15 December shall be such as not to reduce the minimum level of Montreal Harbour below that which would have occurred in the past with the supplies to Lake Ontario since 1860 adjusted to a condition assuming a continuous diversion out of the Great Lakes Basin of 3,100 cubic feet per second at Chicago and a continuous diversion into the Great Lakes Basin of 5,000 cubic feet per second from the Albany river Basin (hereinafter called the "supplies of the past as adjusted").*
- (b) *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.*
- (c) *The regulated winter outflows from Lake Ontario during the annual spring break-up in Montreal Harbour and in the river*



*downstream shall not be greater than would have occurred assuming supplies of the past as adjusted.*

- (d) *The regulated outflow from Lake Ontario during the annual flood discharge from the Ottawa River shall not be greater than would have occurred assuming supplies of the past as adjusted.*
- (e) *Consistent with other requirements, the minimum regulated monthly outflow from Lake Ontario shall be such as to secure the maximum dependable flow for power.*
- (f) *Consistent with other requirements, the maximum regulated outflow from Lake Ontario shall be maintained as low as possible to reduce channel excavations to a minimum.*
- (g) *Consistent with other requirements, the levels of Lake Ontario shall be regulated for the benefit of property owners on the shores of Lake Ontario in the United States and Canada so as to reduce the extremes of stage which have been experienced.*
- (h) *The regulated monthly mean level of Lake Ontario shall not exceed elevation 75.37 m (247.3 feet) with the supplies of the past as adjusted.*
- (i) *Under regulation, the frequency of occurrences of monthly mean elevations of approximately 75.07 m (246.3 feet) and higher on Lake Ontario shall be less than would have occurred in the past with the supplies of the past as adjusted and with present channel conditions in the Galops Rapids Section of the St. Lawrence River, ("present channel conditions refers to conditions as of March 1955.)*
- (j) *The regulated level of Lake Ontario on 1 April shall not be lower than elevation 74.15 m (243.3 feet). The regulated monthly mean level of the lake from 1 April to 30 November shall be maintained at or above elevation 74.15 m (243.3 feet).*
- (k) *In the event of supplies in excess of the supplies of the past as adjusted, the works in the International Rapids Section shall be operated to provide all possible relief to the riparian owners upstream and downstream. In the event of supplies less than the supplies of the past as adjusted, the works in the international*



*Rapids Section shall be operated to provide all possible relief to navigation and power interests.*

The flow of water through the International Rapids Section in any period shall equal the discharge of water from Lake Ontario as determined for that period in accordance with a *plan of regulation work which, in the judgment of the Commission, satisfies the afore-mentioned requirements, range of stage and criteria and when applied to the channels as determined in accordance with Appendix A hereto produces no more critical governing velocities than those specified in that appendix, nor more critical governing water surface profiles than those established by Plan of Regulation 12-A-9, when applied to the channels as determined in accordance with Appendix A hereto*, and shall be maintained as uniformly as possible throughout that period.

Subject to the requirements of conditions (b), (c) and (d) hereof, *and of the range of stage, and criteria, above written*, the Board of Control, after obtaining the approval of the Commission, may temporarily modify or change the restrictions as to discharge of water from Lake Ontario and the flow of water through the International Rapids Section for the purpose of determining what modifications or changes *in the plan of regulation* may be advisable. The Board of Control shall report to the Commission the results of such experiments, together with its recommendations as to any changes or modifications *in the plan of regulation*. *When the plan of regulation has been perfected so as best to meet the requirements of all interests, within the range of stage and criteria above defined, the Commission will recommend to the two Governments that it be made permanent* and, if the two Governments thereafter agrees, such plan of regulation shall be given effect as if contained in this order.

- (j) Subject as hereinafter provided, upon completion of the works, the works shall be operated initially for a test period of ten years, or such shorter period as may be approved by the Commission with the forebay water level at the power houses held at a maximum elevation of 72.36 m (237.4 feet). Subject to the requirements of paragraphs (b), (c), and (d) hereof, the Board of Control, after obtaining the approval of the Commission, may temporarily modify or change the said forebay water level in order to carry out experiments for the purpose of determining whether it is advisable to increase the forebay water level at the power houses to a maximum elevation exceeding 72.36 m (237.4 feet).

If the Board of Control, as a result of these experiments considers that operation during this test period at the maximum elevation exceeding



72.36 m (237.4 feet). would be advisable, and so recommends, the Commission will consider authorizing operation during this test period at a maximum elevation exceeding 72.36 m (237.4 feet). At the end of this test period, the Commission will make such recommendations to the two Governments with respect to a permanent forebay water level as it deems advisable or it may recommend an extension of the test period. Such of these recommendations as the two Governments thereafter agree to adopt shall be given effect as if contained in this Order.

- (k) The Hydro-Electric Power Commission of Ontario and the *Power Authority of the State of New York* shall maintain and supply for the information of the Board of Control accurate records relating to water levels and the discharge of water through the works and the regulation of the flow of water through the International Rapids Section, as the Board of Control may determine to be suitable and necessary, and shall install such gauges, carry out such measurements, and perform such other services as the Board may deem necessary for these purposes.
- (l) The Board of Control shall report to the Commission as of 31 December each year on the effect, if any, of the operation of the down-stream hydro-electric power plants and related structures on the tail-water elevations at the hydro-electric power plants approved by this Order.
- (m) The government of Canada shall proceed forthwith to carry out its expressed intention to remove Gut Dam.

AND IT IS FURTHER ORDERED that the allocation set out in Appendix “C” of the costs of constructing, maintaining and operating the works approved by this Order between The Hydro-Electric Power Commission of Ontario and the *Power Authority of the State of New York* be and the same is hereby approved but such approval shall not preclude the Applicants from submitting to the Commission for approval any variation in the said allocation that may be agreed upon between them as being appropriate or advisable.

AND IT IS FURTHER ORDERED that the Commission retains jurisdiction over the subject matter of these Applications, and 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.



## APPENDIX A

### *FEATURES OF THE WORKS APPROVED BY THIS ORDER:*

#### *(a) Channel Enlargements*

Channel enlargements will be undertaken from above Chimney Point to below Lotus Island, designed to give a maximum mean velocity in any cross-section of the channel which will be used for navigation not exceeding four feet per second at any time, also between Lotus Island and Iroquois Point and from above Point Three Points to below Ogden Island designed to give a maximum mean velocity in any cross-section not exceeding two and one quarter feet per second with the flow and at the stage to be permitted on the first of January of any year, under regulation of outflow and levels of Lake Ontario in accordance with *Plan of Regulation No. 12-A-9, as prepared by the International Lake Ontario Board of Engineers, dated 5 May 1955*. Downstream from the power houses channel enlargements will be carried out for the purpose of reducing the tail water level at the power houses.

Final locations and cross-sections of these channel enlargements will be determined from further studies.

*As approved by the Government of Canada and the Government of the United States of America in similar letters dated 3 December 1995, the said Plan of Regulation No. 12-A-9 shall be the basis for calculating critical profiles and designing channel excavations.*

#### *(b) Control Facilities*

Adequate control facilities will be constructed for the regulation of the outflow from Lake Ontario.

#### *(c) Power House Structures*

The powerhouse structures will be constructed in the north channel extending from the lower end of Barnhart Island to the Canadian shore, and so located that one structure will be on each side of the International Boundary.

Each power house structure will include the main generating units to utilize economically the river flows available to it, units to utilize economically the river flows available to it, with provisions for ice handling and discharge sluices.

#### *(d) Dams and Associated Structures*



A control dam will be constructed extending from Iroquois Point on the Canadian side of the river in an easterly direction to the United States mainland above Point Rockway.

A dam will be constructed in the Long Sault Rapids at the head of Barnhart Island

Dykes and associated works will be provided as may be necessary in both the Province of Ontario and the State of New York.

All the works in the pool below the control dam will be designed to provide for full Lake Ontario level.

*(e) Highway Modifications*

In both the Province of Ontario and the State of New York provincial and state highways, and other roads, will be relocated in those portions subject to flooding, and reconstructed to standards at least equal to those now in existence.

*(f) Railway Modifications*

Such railway relocations as may be required as a result of the works herein described will be made in the Province of Ontario and the State of New York to standards at least equal to those now in existence.

*(g) Navigation Facilities*

Provision will be made for the continuance of 14-foot navigation throughout the International Rapids Section during the construction period.

*(h) Flooded Areas*

Lands and building in both the Province of Ontario and the State of New York will be acquired or rehabilitated as required. Inundated wooded areas will be cleared.

## APPENDIX B

*General Plan showing major works of the Great Lakes-St. Lawrence Basin Power Project are not included in the consolidation.*



## APPENDIX C

1. The power development works under this Application are those specified in Section 8 of the Application.
2. Total costs of the works described in Section 8 shall be based on Canadian costs and the United States costs and the total shall be equally divided between the two constructing entities.
3. The costs to be divided should be based on actually experienced and audited expenses.
4. In relation to the three principles above, the three following provisions apply:
  - (a) The amount to be paid to Canada, as specified in the Agreement of December 3, 1951, between Canada and Ontario, in lieu of the construction by the power-developing entities of facilities required for the continuance of 14-foot navigation, shall be excluded from the total cost of the power project to be divided between the Canadian and the United States power-developing entities, in consideration of the fact that actual replacement of 14-foot navigational facilities will be rendered unnecessary by reason of the concurrent construction of the deep waterway in Canada.
  - (b) The Authority to be established pursuant to the provisions of the St. Lawrence Seaway Authority Act, Chapter 24 of the Status of Canada, 1951 (Second Session), shall contribute an agreed sum of money towards the cost of the channel enlargement which the power-developing entities must undertake in the St. Lawrence River, as set out in paragraph 4 of the Annex to the Canada-Ontario Agreement of December 3, 1951, and in section 8 of the application to the International Joint Commission, in consideration of the benefits which will accrue to navigation from such channel enlargement.
  - (c) All costs for construction, maintenance and operation of the project except machinery and equipment in the respective power houses shall be borne equally by the two entities. All costs for construction, maintenance and operation of machinery and equipment in their respective power houses shall be paid by the respective entities and shall be deemed to satisfy the principle of an equal division between the two entities.