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# PROCEDURAL GUIDE FOR INTERNATIONAL GAUGING STATIONS

on Boundary Waters between Canada and the United States of America

Department of the Environment  
Inland Waters Directorate  
Water Resources Branch  
Ottawa, Canada

WRB Report IWD-HQ-WRB-PG-85-1

United States Department of the Interior  
Geological Survey  
Reston, Virginia, U.S.A.

U.S. Geological Survey  
Open-File Report 85-329





Cover photo:

Milk River in Writing-on-Stone Provincial Park, Alberta,  
looking towards the Sweet Grass Hills of Montana

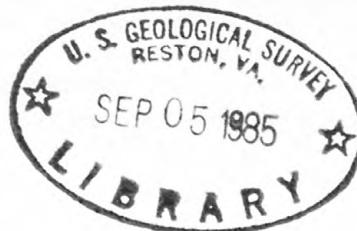
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# PROCEDURAL GUIDE FOR INTERNATIONAL GAUGING STATIONS

on Boundary Waters between Canada and the United States of America

FIRST EDITION  
MARCH 1985

S. Huberman,<sup>1</sup> J.E. Slater<sup>2</sup> and A. Condes<sup>3</sup>



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*Revised*

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*(Disponible en français à Environnement Canada)*



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# PROCEDURAL GUIDE FOR INTERNATIONAL GAUGING STATIONS

on Boundary Waters between Canada and the United States of America

S. Huberman, J.E. Slater and A. Condes

## INTRODUCTION

Since 1909, the United States of America (U.S.A.) and Canada have employed a system of monitoring streamflow and water levels for shared waters based upon professionalism, trust and goodwill.

This document has been prepared in considerable detail for use by managers and field officers at all levels of government in Canada and the United States. Its purpose is to serve as a guide in attaining uniform procedures in the designation and operation of International Gauging Stations. For special situations where these procedures do not apply, specific mention is made in appropriate sections of the guide.

This guide supersedes that of November 4, 1969, and the guide entitled "The Procedural Guide for Operation of International Gauging Stations, St. Mary-Milk Rivers," dated March 12, 1979.

## PART I. DESIGNATION OF INTERNATIONAL GAUGING STATIONS

### A. The International Gauging Station – Definition and Description

The term "International Gauging Station" is applied to any hydrometric discharge and/or stage measurement station which has been officially designated as "international" in one of the ways described in this document. These stations are situated on any boundary water as defined in the Boundary Waters Treaty of 1909 (Appendix 1) or orders thereof, or any body of water crossing the international boundary between Canada and the United States, the purpose of which is to provide data pursuant to an international agreement, understanding or for other mutually agreed purposes.

International Gauging Stations may be operated by water agencies of either country, or jointly. The data must

be collected in a mutually satisfactory manner according to the agreed procedures and be available to users in both countries. A list of stations currently designated as International Gauging Stations is given in Appendix 2.

By established custom, the water data collection agency of the country in which an International Gauging Station is located is responsible for its construction, operation and maintenance. Representatives of the agency of the other country are privileged to inspect and check the operation of the station and the computation of the record to ensure mutual acceptability of the data. Data that are collected at International Gauging Stations and "jointly approved" are published in water supply papers of either or both countries. Operating costs at such stations are usually borne by the country in which the station is located. Each agency bears its own costs of activities related to visits to stations located in the other country. Mutually acceptable cost sharing arrangements are made where necessary.

International Gauging Stations are needed to support the measurement and apportionment of the natural flow of the St. Mary and Milk Rivers required under the Boundary Waters Treaty. Other stations stipulated under orders of the International Joint Commission (IJC) are required to support such orders to provide for control of waters crossing or forming part of the international boundary, and for IJC-related study surveillance, flow regulation or apportionment purposes, or for any other purpose the IJC may require. Appendix 3 is a map showing the location of International Gauging Stations.

International Gauging Stations may be related to international treaties and agreements other than the Boundary Waters Treaty which involve waters crossing or forming part of the international boundary and which specifically stipulate the reaches of streams required to be monitored or special arrangements that need to be made to meet water quantity survey needs. Such stations may also include those located on waters flowing across or forming part of the international boundary for which Canada and the United States have determined that monitoring is required for water management purposes.

As a result of an exchange of notes between the Governments of the United States and Canada, a conference was held in Washington on November 15, 1928, where representatives of the United States Geological Survey (USGS) and the Dominion Water Power and Reclamation Service (the predecessor of the Water Resources Branch [WRB] of the Inland Waters Directorate [IWD]) met concerning coordination of field studies of the two agencies in connection with the utilization of waters flowing across the international boundary to the west of the Lake of the Woods. Arrangements were made for joint reports on rivers and streams in which developments of international interest were in process or prospect and for the selection thereon of gauging stations at locations as close to the international boundary as the physical conditions of each river would permit.

At or about that time the agencies prepared a "proposed Basis of Understanding between Canada and the United States providing for cooperation in the maintenance of gauging stations on streams west of the Great Lakes." This has guided the procedure in the establishment of International Gauging Stations other than in the Milk-St. Mary Rivers.

This guide does not apply to gauging stations used by the IJC's Boards of Control and the power entities in the Great Lakes, connecting channels and St. Lawrence River. In issuing the Order of Approval for the construction and operation of the St. Lawrence Seaway and Power Project, the IJC required the applicants to collect and provide the hydrometric data necessary for the operation of the project. Similar requirements were met for projects on both the Niagara River and the St. Marys River. In each case the operation and records of the station are subject to review by the appropriate IJC Board of Control. The stations that are operated for the management of these international waters are listed in Appendix 2 and shown on the map in Appendix 3.

This guide does not apply to water quality sampling operations at International Gauging Stations.

#### **B. Procedures for Designating an "International Gauging Station"**

Procedures for approving the recommended designation of International Gauging Stations fall into two main broad categories (see Appendix 4 for procedural flowcharts):

- (1) Approval in support of IJC activities and
- (2) Bilateral diplomatic approval.

The first procedure relates to stations needed to monitor the diversion of waters required for apportionment purposes in the St. Mary and Milk Rivers, and to approval in support of IJC Boards or Investigations. The second is a bilateral arrangement between the United States and Canada to designate the stations on the recommendation of their respective water monitoring agencies.

##### *B.1. Approval in Support of IJC Activities*

- (a) By Approval of the International Joint Commission in the St. Mary and Milk River Basins

Article VI of the Boundary Waters Treaty of 1909 requires that the measurement and apportionment of the waters of the St. Mary and Milk Rivers be made under the direction of the International Joint Commission. Article VII of the Commission's order of October 4, 1921 (Appendix 5), designates that certain gauging stations shall be established and maintained. The IJC also reserves the right to designate gauging stations at other points that the Commission may from time to time approve. The basis for the designation of an International Gauging Station under this activity is the need to compute the natural flow of the Milk and St. Mary Rivers, and tributaries such as the Eastern (Saskatchewan) Tributaries and to monitor the equitable apportionment of the waters between the two countries as defined in the 1921 order.

Recommendation for designation is made jointly by field representatives of the Water Resources Division of the United States Geological Survey (USGS), and the Water Resources Branch (WRB) of the Inland Waters Directorate, to the Accredited Officers, the Chief Hydrologist, USGS, and the Regional Director, Western and Northern Region of the Inland Waters Directorate (IWD). If agreed, the recommendation is transmitted to the Director General (IWD), who with the Chief Hydrologist (USGS) subsequently refers the recommendation to the IJC. Although the Commission has the authority under the 1921 Order to grant final approval, the recommendation for "international" designation is usually forwarded by the IJC to the Canadian Department of External Affairs and the United States Department of State. An exchange of diplomatic notes between these two departments signifies concurrence with the recommendation and approval of the proposed international designation. The International Gauging Station may then be operated and maintained by the two principal water agencies (WRB and USGS) on a joint basis according to Part II of this guide.

The operational cost of each agency's input is normally borne by that agency and the capital cost of major maintenance or improvement by the country in which the

gauging station is located. International Gauging Stations are located on both sides of the boundary, and there is an equitable sharing of the costs associated with apportionment. Ad hoc arrangements are also made by the field representatives in cases where one country or the other is in a better position logically or financially to carry out essential activities.

(b) Approval in Support of IJC Boards or Investigations

The need to monitor a specific location for water quantity information may arise as a result of public concern over an international issue or a requirement identified by working groups or committees created to support orders or investigations of the IJC (see Appendix 6 for list of Boards and References). At the working level, the chief responsible officers delegated to represent Canada and the U.S.A. on these IJC bodies jointly determine the need to acquire the desired information. If the IJC agrees to support the identified need for the information, the Canadian and United States Sections may request the respective agencies in each country, the Canadian Department of the Environment (DOE) and the United States Department of the Interior, to provide the data for the specified location.

In Canada, the request is channelled through the office of the Director General, IWD, and in the U.S.A., it is transmitted to the Chief Hydrologist, USGS, who then request through their respective organizations, the Regional Director, IWD, and Regional Chief, WRB, and the Regional Hydrologist and the District Chief, USGS, advice on the feasibility of providing the information. The latter officials jointly advise on the most practical and economical method of satisfying the request. If it is deemed that a gauging station be established that satisfies the "international" designation, it should be so recommended by the Regional Director to the Director General, IWD, in Canada and by the Regional Hydrologist to the Chief Hydrologist, USGS, respectively.

Where the Regional Director (and/or Regional Chief) in Canada and the Regional Hydrologist (and/or District Chief), U.S.A., have direct involvement on the International Boards, Committees, or Task Forces of the IJC, the desirability of establishing an International Gauging Station is usually identified at this working level. In this instance, the Regional Director in Canada and the Regional Hydrologist in the United States may recommend to the Director General, IWD, and Chief Hydrologist, USGS, respectively, that the International Gauging Station be established, or that an existing station be designated "international."

The IWD and USGS may each apply to their respective Canadian and United States Sections of the IJC, or may

join in agreeing on a joint document recommending the establishment of the desired station as "international." Upon approval of this recommendation by the IJC, the Canadian Section forwards the request, including supportive documentation, to the Canadian Department of External Affairs. The United States Section of the IJC forwards the request together with supportive documentation to the United States Department of State. An exchange of communications between these two departments qualifies the stations as "international" for operation and maintenance by the principal water agencies of both countries according to Part II of this guide. Copies of relevant correspondence including the numbered diplomatic notes are provided to the WRB Regional Chief and the USGS District Chief at the operational level to be kept as a pertinent reference on the station file of the International Gauging Station.

(c) Support of IJC Activities on the Great Lakes, Connecting Channels and the St. Lawrence River, and the Management of International Waters

In Canada, monitoring of water levels of the Great Lakes, connecting channels and the St. Lawrence River is the responsibility of the Water Resources Branch, DOE, and the Canadian Hydrographic Service (CHS) of the Department of Fisheries and Oceans. Interdepartmental arrangements exist whereby WRB operates and maintains the gauges, CHS prepares the data, and WRB publishes the data. In the United States, the National Oceanographic Service (NOS) of the National Oceanographic and Atmospheric Administration (NOAA) has this responsibility for the Great Lakes water level gauging stations. Where these stations are required to support IJC activities the approval of the Commission is required to designate them as International Gauging Stations. If the stations are not related directly to IJC activities but are required to support international water investigations, the designation of such stations as International Gauging Stations requires the approval of the Director General (IWD) and the Chief Hydrologist (USGS) and an exchange of diplomatic notes between the two countries following the procedures outlined in 1(b) above. The IJC should be informed of all such actions taken.

Gauging stations on the Great Lakes that serve national navigation and water management needs are not now governed by this guide.

The International Joint Commission is involved with the regulation of water levels and flows of water on the boundary or crossing it. When directed by governments, the IJC will from time to time respond to the need for monitoring boundary waters by creating various boards of control, regulation study boards and advisory boards. These

boards may require that water levels and flows be monitored at specific locations (Appendix 3).

On the Great Lakes, the International Joint Commission, in the course of discharging its duties with respect to References from the governments under the Boundary Waters Treaty of 1909, has created several international control and study Boards which collect and coordinate basic technical data from each country (Appendix 6).

The first operational board, the International Lake Superior Board of Control, was created to formulate rules for the operation of the Compensating Works and the power canals at the head of the St. Marys Rapids for the regulation of Lake Superior. To perform these tasks, the Board had to compile mutually acceptable data for Lake Superior water levels, and water levels and flows of the St. Marys River. Subsequently, the International Joint Commission changed the objective of regulation and redefined the duties of the Board. As a result, the International Lake Superior Board of Control became concerned with a wider range of basic data, including water level and flow information for Lakes Michigan-Huron, St. Clair and Erie and their Connecting Channels.

The Commission's International Niagara Board of Control was established to supervise the operation of the structure which controls the Chippawa-Grass Island Pool in the Niagara River and the ice boom in Lake Erie, at the entrance to the river. The Board specifies the data to be collected and coordinated for these operations.

Similarly, the International St. Lawrence River Board of Control, created as a result of the St. Lawrence Seaway and Power Project, supervises the collection and coordination of water levels on Lake Ontario and flows and levels on the international section of the St. Lawrence River.

Other Boards of the IJC that have compiled and coordinated data necessary to complete their studies are the International Great Lakes Levels Board, International Great Lakes Diversions and Consumptive Uses Study Board, International Lake Erie Regulation Study Board and the present Board, the International Great Lakes Technical Information Network Board.

Activities of the operational Boards that report to the International Joint Commission involve special and unique arrangements in each case with several federal, state and provincial departments and representative water agencies of both countries, which include the Water Planning and Management Branch (IWD) in Canada and the United States Army Corps of Engineers. Private and public sector power entities are directed in particular by the IJC to be respon-

sible for the data used by the Boards in conducting their appropriate activities. Monitoring and field survey support is provided when required, by the U.S. Army Corps of Engineers, and the Water Survey of Canada Division of WRB, to assist in the calibration, inspection and verification of the rating of control structures, power houses and dams.

In all such cases, the special arrangements in support of IJC Boards and Activities on the Great Lakes, connecting channels and the St. Lawrence River are not governed by the procedures outlined in this procedural guide.

## *B.2. Bilateral Diplomatic Approval*

Where there is a requirement to acquire information from a specific location on or close to the international boundary and the two principal water data collection agencies have agreed upon the need to designate or establish an International Gauging Station, the Director General, IWD, and the Chief Hydrologist, USGS, may, on the advice of the IWD Regional Director and the USGS Regional Hydrologist, respectively, recommend the establishment of such a station to their respective governments.

If the station is wholly or predominantly located in Canada, the Director General, IWD, will request that the Department of External Affairs initiate communication with the U.S. Department of State to formalize the arrangement. If the station is wholly or predominantly located in the U.S.A., the Chief Hydrologist, USGS, will request that Department of State initiate the diplomatic exchange of notes with the Canadian Department of External Affairs for the same purpose.

Although not a requirement, the respective water data collection agencies are requested to inform the Canadian and United States Sections of the International Joint Commission of the recommendation being proposed. The IJC will thus be in a knowledgeable position to endorse the recommended International Gauging Station designation if so requested by the two governments. Appendix 7 provides examples of typical correspondence related to the designation of International Gauging Stations.

Upon completion of the diplomatic process, the "International Gauging Station" is operated jointly by Canada and the United States in conformance with procedures outlined in Part II of this guide.

## **C. Suspension of International Gauging Stations**

The suspension of an International Gauging Station involves the temporary discontinuance of all international activities at that site by the water agencies of both coun-

tries, in accordance with procedures outlined in Part II of this guide.

The station, however, may be continued in operation by the agency of the country in which it is located, and upon mutual consent, it may be reactivated at some future date to full operation according to established international procedures.

A recommendation to suspend operation of a station may be initiated jointly by the WRB Regional Chief, and the USGS District Chief and if approved, will be transmitted onward by the Regional Director, IWD, and Regional Hydrologist, USGS. The decision to discontinue the operation of the station temporarily may be taken jointly by the Director General, IWD, and the Chief Hydrologist, USGS.

If the station is located in the St. Mary and Milk River basins, the recommendation to suspend operation is to be made by the Accredited Officers, namely the Regional Director, Western and Northern Region, in Canada and the Chief Hydrologist, USGS, in the United States.

If the station was established in support of any IJC activity, concurrence of the IJC must be sought before reaching a decision. If the station is not in this category, the Director General, IWD, and the Chief Hydrologist, USGS, will inform the IJC of the action taken. The IWD Regional Director and USGS Regional Hydrologist will then request that the WRB Regional Chief and the USGS District Chief take the appropriate action required to suspend international activities at the station.

In preparing for the suspension of an International Gauging Station, some considerations to be addressed are whether the station will continue to be operated by the operating agency in either country and whether the data will continue to be published in much the same manner as a regular hydrometric station not designated under the international label. Such decisions become very important should the need arise to reactivate the station at this same location in the future.

When the decision is taken to renew international activities at a suspended International Gauging Station site, the historical record collected unilaterally by one agency may be examined and approved by the agency of the other country. The continuous record may then be recognized as the total uninterrupted historical record of the International Gauging Station.

An exchange of letters between the Chief Hydrologist, USGS, and the Director General, Inland Waters Directorate,

is required to legitimize the return to international arrangements at the site.

When international activities are suspended or reactivated at an International Gauging Station, an appropriate notation thereof should be inscribed in the surface water reports of both countries.

#### **D. Discontinuance of International Gauging Stations**

When the joint collection of data from an International Gauging Station is no longer required, the responsible officers may agree mutually to request termination of the international status of the station.

The recommendation for discontinuing a station may be made jointly by the WRB Regional Chief and the USGS District Chief and if so accepted, will be transmitted onward by the Regional Director, IWD, and the Regional Hydrologist, USGS. If they concur, the Director General, IWD, and Chief Hydrologist, USGS, shall recommend to the Department of External Affairs and the Department of State, respectively, that the station be discontinued and request that these two departments exchange diplomatic communications to discontinue formally the designation of the station as an International Gauging Station.

If the station was established in support of an IJC activity, concurrence of the IJC is required. If not, the IJC should still be informed of the decision taken.

After these actions have been taken, the operating agency in the country where the station is located may continue to operate the station as a regular station. The operating agency may then request the other monitoring agency to forward any original documents relating to the discontinued International Gauging Station for inclusion in its station file.

Appropriate notations regarding the discontinuance of an International Gauging Station should be published in surface water reports of both countries.

#### **E. International Support Gauging Stations**

Hydrometric stations are sometimes established in support of IJC or Boundary Waters Treaty-related purposes. These and other operating stations may provide the data that will assist in making apportionment calculations, or for any other supportive purpose in relation to existing International Gauging Stations. Some prefer to call these support stations "semi-international gauging stations." These support stations play a vital role in the provision of desirable

data, in particular with respect to studies or applications for apportionment, regulatory works and for monitoring future potential application. Regardless of their supportive international significance, if these stations have not been designated as International Gauging Stations, there is no absolute requirement on either side to follow the procedural guide that governs inspection visits or approval and publication of data or any other aspect of the official international designation. The responsible parties at the working level, however, may make informal local arrangements regarding inspection visits, and the collection, use and publication of the data.

## **PART II. OPERATION OF INTERNATIONAL GAUGING STATIONS**

### **A. Responsibility for Ownership, Operation and Maintenance**

The location of a station on waters crossing or forming part of the international boundary, from a technical point of view, will be governed, among other factors, by the geography of the terrain, availability of a stable control and ease of access for efficient operation of the station. The gauging station site may be located in either Canada or the United States. There are instances, however, where cableway towers required for streamflow measurements are located on each side of the border, with station equipment on both sides.

As a general rule, the location of the gauging station shelter that houses the water level recorder will determine whether the station will be operated by the Canadian or the United States agency. Normally, the operating agency will be the one in whose country the principal gauging structure is located. The gauging station, complete with recording and auxiliary equipment, is supplied, built, owned and maintained by the host country. The operating agency of the host country is also responsible for the payment of land leases and gauging station attendants. Arrangements for leasing of the property on which the cableway tower is erected or where other parts of the station are situated are the responsibility of the water agency of the country in which the structures are located.

Where facilities of an International Gauging Station are located on both sides of the boundary, property rights in both countries must be respected. Public liability is the responsibility of the agency in charge of the physical structures of the gauging station. In the case of cableways, the responsibility for public liability lies with the country on whose territory the supporting tower has been erected. With

regard to employee liability, each country is responsible for its personnel.

There are occasions where recording gauges or auxiliary station equipment is installed for the sake of expediency by one water agency in the other country's gauging station shelter or at the gauging station site. Such equipment remains the property of the water agency of the country which supplied it. Field officers of either country may make use of such equipment in the operation and maintenance of the International Gauging Station.

District or Regional Chiefs are responsible for the installation, operation and maintenance of International Gauging Stations in their respective jurisdictions. The standards of operation for each country are given in Appendices 8 and 9. These standards apply to both field and office procedures. Should a representative of the appropriate District or Regional Office of the other country visit a station and find that it requires minor adjustments or repairs that can be made during the visit, the representative should make the repairs and report the actions taken to the appropriate office later. Major structural repairs or basic recording system changes shall not be carried out until consultation has taken place with the responsible operating agency. Emergency repairs, however, may be made to maintain the continuity of record at the station. A report on such repairs shall be made as quickly as possible to the responsible operating agency.

### **B. Scheduling of Proposed Visits**

Wherever possible, representatives of the appropriate District or Regional Office of the other country should visit International Gauging Stations several times annually. Where the respective District or Regional Chiefs consider it feasible, the establishment of schedules of proposed visits for each water-year or calendar-year is a useful practice and may offer some economies in operation by eliminating duplication of visits at short intervals. Where possible, the appropriate officers of both agencies should arrange for a minimum of three visits annually to each International Gauging Station by field officers from the agency of the other country.

### **C. Field Surveys Authorized During Gauging Station Visits**

The field work performed by a field officer at an International Gauging Station may follow the prescribed routine procedure customarily used in the country of the visiting officer. Level checks should normally be carried out as part of a regular station inspection or as agreed upon by the two agencies. Streamflow measurements should be

made on each visit by field officers of either agency unless conditions or other commitments preclude such measurements.

Arrangements are usually made between offices of the District Chief and the Regional Chief regarding details of field survey work to be performed at International Gauging Stations. Some of the routine operations performed at such stations follow:

- (a) Level checks for manual gauges (non-recording) and recording gauges
- (b) Verification of analog recorders
- (c) Routine procedural checks for servo-manometers, digital punched paper tape recorders, and telemetry equipment
- (d) Discharge measurements
- (e) Water quality sampling and sediment data measurements
- (f) Water and air temperature observations
- (g) Routine maintenance checks including minor repairs and adjustments to recording devices
- (h) Replacement of faulty recorders or system component parts.

In the inspection and verification of gauging stations equipped with manual devices and instrumentation as mentioned above, it is customary for the attending field officer to follow the field procedures and to use the forms commonly prescribed by the water agency of the country of the visiting officer.

Where International Gauging Stations are equipped with specialized equipment such as data collection platforms (DCPs), data telemetry systems, data loggers, encoders and similar measurement equipment, consultation should be established between field offices regarding procedures to be followed for inspection, maintenance and repairs of the sophisticated equipment.

Field officers assigned to visit International Gauging Stations are assumed to be qualified at a level of knowledge and capability equally acceptable to the field offices of both countries. Level check and flow measurement data resulting from official station visits can therefore be used as part of the official file record of the station of the host country and in the compilation of data for publication purposes.

#### **D. Measurement Systems**

Canada has in recent years converted to the use of the (metric) International System of Units (SI units) measure-

ment system in hydrometric surveys. Field officers may carry out field inspections of instruments, level checks and flow measurements using the measuring equipment and units appropriate to common usage in each country. The original field notes should not be altered, and should therefore be presented in the units used for recording observations by the officer of the represented country. International System of Units conversion factors (Appendix 10) may be used to present the results of station visits in the units of measurement appropriate to the country in whose territory and responsible jurisdiction the International Gauging Station is located. Conversion factors may also be used to change from one system of units to the other by converting basic station survey parameters such as benchmark elevations into the common usage system of the country of the attending field officer. Where conversions are not practical, such as observations of feed pressure on a servo-manometer pressure regulator, the observations may be recorded in the units shown on the recording instrument.

### **E. Reporting Systems**

Mutually acceptable arrangements can be made between District and Regional Offices regarding procedures for the transmittal of the results of gauging station visits. However, some basic concepts are suggested for guidance.

#### *E.1. Distribution of Checked Original Notes*

The checked original notes for any level check or flow measurement at an International Gauging Station shall be forwarded to the District or Regional Office responsible for the computation of the station record. When the original notes are to be sent to an office in the other country, copies of the level notes or front sheet and the discharge measurement notes shall be retained in the District or Regional Office of the field officer who performed the level check and/or flow measurement. Information and data on photocopied material may be used officially for the station file and for computation purposes by the office responsible for the station. Original discharge measurement notes are to be retained indefinitely. Field data contained on microfilm or microfiche as part of District and Regional Office files are equally acceptable as official station data. If either country institutes a policy of microfilming measurement notes and destroying originals, all discharge measurement data should be returned to the other country.

#### *E.2. Use of Forms and Formats in Canada and U.S.A.*

During the course of field inspections, the forms used to collect observed data or for inspection of station equipment may differ from those used in the country of the station's principal operator. These forms, nevertheless, may

be used, and the original or copies thereof may be used as a part of the official record of the gauging station. Distribution of original inspection notes for different types of gauges and retransmission devices shall be those in common usage in the country of the visiting field officer.

The original field notes of the field officer may make use of the SI or imperial (inch-pound) units according to the custom in each country. The country hosting the International Gauging Station may convert results to the unit measurement system in use in that country. Final compilation sheets used for listing daily values for publication purposes should be those of the country responsible for operating a particular International Gauging Station.

#### F. Initial Computation of Records

In general, it is desirable that each District or Regional Office complete the initial office computation of the records for each International Gauging Station in its District or Region in accordance with the standard procedure established for its regular stations, making appropriate use of the data provided by the other office involved in the field activities at the station. Where this procedure may not be convenient, the appropriate officers are free to make mutually acceptable adjustments.

Original office computations may be made utilizing comparison data available from hydrologically compatible stations located on either side of the border. The exchange of such supportive data may be arranged between the two offices concerned.

#### G. Joint Review and Approval of Records

After completion of the initial computations, joint review and approval of records shall be made by the two appropriate field representatives which are the District and Regional Chiefs or by their designated field officers. There are definite advantages to having this joint review made by visits of field officers of one District or Regional Office to the other and by alternating these visits annually between the two offices. When such visits are not feasible, the joint review can be handled by correspondence.

Personnel of the office verifying the initial data computations of the originating office are entitled to verify all steps in the computation procedure including comparison with hydrologically compatible stations on either side of the border. Given the different computational methodology of both countries, mutual agreement must be reached on calculated figures and estimated discharge figures for the winter ice-period or other backwater periods, as well as for the final listing of data which is to appear in the annual sur-

face water data publications. Original computations should be maintained in the units of the measuring system in common usage in each country. After completion of the joint review of records either by visit or by correspondence, the District and Regional Chiefs, or their designated field officers, shall give their joint approval to the record computations and affix their signatures to the final listing of the data to be published.

#### H. Exchange of Records for Publication

Following the joint review and approval, copies of the agreed records for an International Gauging Station will be provided to the appropriate District or Regional Office in the other country for inclusion in its manuscript for publication.

Regional Offices in Canada will provide these records on a preliminary basis where necessary to meet USGS publication deadlines. Such data should be jointly approved when required by the other party for publication. Similarly, District Offices in the United States will provide these records where necessary to meet publication deadlines resulting from the Canadian publication format of presenting data on a calendar-year basis as opposed to the water-year format used for publication purposes by the USGS. In Canada, May 1 is the national deadline for submitting data of the previous calendar year to headquarters for publication.

#### I. Publication of Furnished Records

Originally, records furnished by the principal operator of an International Gauging Station were to be published in each country exactly as jointly approved. However, with changing technology and computerized publication procedures, the following are some of the factors which may affect and preclude the publication of identical figures in the other country:

	U.S.A.	Canada
Publication format	Water year	Calendar year
Maxima and minima	Water year	Calendar year
Yearly mean	Water year	Calendar year
Measurement system	Imperial units (inch-pound units)	SI units
Significant figures	U.S. rules	Canadian rules
Publication figures	U.S. computer systems procedure	Canadian computer systems procedure

Surface Water Data publications in Canada carry the following notation:

*International Gauging Stations — on waters adjacent to the international boundary, certain gauging stations*

*have been designated as "International" and records are approved jointly. Differences between figures published herein and corresponding figures in United States Water Supply Papers are due to variations in automated data processing techniques.*

United States Water Data Reports publish the annual mean for both the calendar year and the water-year for all United States stations.

Taking all these factors into consideration, records of daily discharge, summary tables, and the manuscript provided by the District Office of one agency may be edited for publication according to the automated data processing standards of the agency publishing them.

Publications in both Canada and the United States list factors of conversion from imperial (inch-pound) units to (metric) SI units.

Conversion factors may be applied to final figures to convert from SI units to imperial (inch-pound) units (or vice versa) in arriving at mutually acceptable figures for publication purposes. The listing of station results in computerized format may be published in surface water reports according to accepted rules of significant figures, format and similar publication requirements of each country. Figures shown in either system of units must be comparable with the use of the SI units system conversion factors.

#### **J. Storage and Retrieval of Computerized Data**

Of the many ways of storing computerized data, magnetic tape is the most compatible medium for facilitating a free exchange of information between countries. Data, both current and historical, which are stored on magnetic tape, may be processed according to the standards of computer procedures of either country. Historical data used for international project studies should be retrieved from the archives of the source country having primary responsibility for operating the International Gauging Station.

#### **K. Review and Revision of Historical Records**

Officials of either or both countries may wish to conduct a systematic review and subsequent revision of historical data. Whereas the review may be performed solely by either representative office with the data it has on hand, it would be most desirable if such a review of historical data were conducted with the knowledge and participation of both countries. It would seem logical that the primary operator of the International Gauging Station who is the keeper of the majority of original records in the host

country should be the one to conduct the review with the participatory knowledge and assistance of the Regional or District Office in the other country. Where the foregoing is not practical, mutually satisfactory arrangements can be made by the consenting representative officers.

The following procedures may be used as a guide for reviewing historical data of International Gauging Stations:

- (a) Data should be reviewed by the agency of the country holding the primary responsibility for operating the station.
- (b) The review by the host country will cover only the original calculations. Some of the discharge and level checks may have been made by the other country. These should be treated as if they had been made by the host country.
- (c) Where some of the calculated data may have originated with the other country, the latter will, in joint venture, review the data for which it was originally responsible.
- (d) The review of data shall follow the procedures, rules and regulations of the country originating the data and conducting the review.
- (e) The data will be reviewed in the units of the original computations. In the event that a station in Canada has been converted to metric units during the review period, the Review Report will be separated to show the distinction, if necessary.

The magnetic tape files in Canada have been converted to SI units, but copies of the original data in imperial (inch-pound) units are available on tape as well as on microfiche for review purposes. The programs for retrieving data produce listings in cubic metres per second ( $m^3/s$ ) and hydrograph plots in cubic metres per second or litres per second per square kilometre ( $L/s/km^2$ ). However, options are available so that historical data can still be retrieved in imperial units.

No doubt there will always be some confusion when reviewing the data that were originally computed in imperial units, and it may be necessary to do a certain amount of conversion during the review. Annual hydrographs with measurements plotted in imperial units present no problems, but on the stage-discharge sheets it may be necessary to convert some recent curves or high water measurements to imperial units to get a total picture of the curves. Revisions should be computed in the units of the original

computations, but the revised figures which will appear in the reports may be converted to SI units.

- (f) When data are revised, the revisions will be edited for publication according to the review standards of the agency publishing them. Similarly, the data stored on magnetic tape may be processed according to the standards of either country. The revised data may be converted to the other agency's measuring system for purposes of publication.
- (g) After completion of the review, joint approval of the Review Report is to be made by the District and Regional Chiefs or their representatives. Their signatures will appear on the cover sheet of the Review Report. In Canada, there is a requirement for the signed approval of the Review Report by the Head of the Data Control Section, WRB, Ottawa, prior to making any changes to previously published data.
- (h) Arrangements for the publication of revised data or appropriate reference thereto in data publications can be made through mutual agreement of the representative offices in accordance with standard procedures of each country.

### PART III. OTHER CONSIDERATIONS IN THE OPERATION OF INTERNATIONAL GAUGING STATIONS

#### A. Legal Status of Microfilm (Microfiche) Records

#### A.1. Status in Canada

There is no legal barrier to using microfilm, and there is no legal objection to transferring original documents by means of microfilmed records. Details are given in the "Report on the Transfer of Hydrometric Data to Quebec" by the Data Control Section, WRB, Ottawa, dated March 31, 1970.

Further details are given in the Canadian General Standards Board (formerly Canadian Government Specifications Board) publication "Microfilm as Documentary Evidence," National Standard of Canada CAN2-72.11-79.

#### A.2. *Status in U.S.A.*

The United States Geological Survey in 1983 requested a Solicitor's opinion on the acceptability of microfilmed hydrologic data in court litigation. The opinion stated that the microfilmed data would be acceptable. The United

States Geological Survey is planning to microfilm its archived basic hydrologic data.

#### B. Certification of Records

### B.1. *Certification in Canada*

Occasionally, the Water Survey of Canada (WRB) is required to provide certified copies of records for filing as evidence in Courts of Law. Legal advice received indicates that Regional Chiefs of the Water Resources Branch are custodians of the records and should be responsible for the certification of these records.

The signing certificate should read as follows:

I, \_\_\_\_\_ of \_\_\_\_\_,  
Regional Chief City  
the Province of \_\_\_\_\_, officer of the  
Department of the Environment of the Government of  
Canada, officially entrusted with keeping and guarding  
Hydrometric Records, do hereby certify these Hydrometric  
Records to be a true copy of official and public documents  
pertaining to the said Department of the Environment which  
I am in my custody at \_\_\_\_\_.

**Office Address**

Date

Signature

This signing certificate is to form a contiguous part of the data sheet which includes the station name.

A copy of the Request made of the Regional Office, the letter of reply, and of the records supplied should be forwarded to the Chief of the Water Survey of Canada (WRB) at Ottawa for information in each case.

## B.2. Certification in U.S.A.

The Geological Survey uses Form 9-790, which requires Director's approval, for certification. The certification may read as follows:

Pursuant to the act approved August 24, 1912, as amended (37 Stat. 497, 5 U.S.C., sec. 488), I hereby certify that the annexed materials are true and accurate copies of (published, unpublished) official records on file at the Geological Survey office in City, State, consisting of ((1) original computations of gage heights and discharges, (2) rating tables, (3) level measurements, and (4) original computer printouts of daily discharges) for Geological Survey stream-gaging station on the (stream name and location), at stream identification number (number).

I further certify that the data used to generate these computer printouts are part of the official files of the U.S. Geological Survey.

IN TESTIMONY WHEREOF, I have hereunto subscribed by name and caused the seal of the Geological Survey, Department of the Interior, to be affixed, the day and year first about written.

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Director

#### C. Border Crossing Permits

From time to time, the enactment of strict immigration regulations at ports of entry at the International Boundary may cause problems and delays when qualified field officers, in the exercise of their duty, are attempting to cross the frontier into the other country to visit an International Gauging Station.

To expedite border crossing by field officers of the USGS, Government of Canada officials issue bearer letters which are presented to Canadian Immigration officers at ports of entry. Canadian immigration officers are instructed to recognize these letters of introduction as border crossing permits allowing temporary entry into Canada for the purpose of conducting field and inspection trips to International Gauging Stations in the context of the Boundary Waters Treaty of 1909.

Each November, the Regional Hydrologist of the USGS writes to the Director General, Inland Waters Directorate, indicating those field officers requiring border crossing permits for the coming calendar year. Correspondence relating to these permits including a sample is attached for reference purposes as Appendix 11.

#### D. Determination and Reporting Drainage Area Upstream from International Gauging Stations

Drainage areas upstream from International Gauging Stations can be determined using the standard procedure normally used for such purposes at regular gauging stations in Canada and the United States. Where these procedures conflict, satisfactory agreement with respect to the accepted methodology of drainage area determination may be nego-

tiated between the affected District and Regional Chiefs or their authorized representatives.

For the Great Lakes, the drainage area upstream from International Gauging Stations and other stations required to support international water investigations has been determined and coordinated in the past by the Coordinating Committee on Great Lakes Basic Hydraulic and Hydrologic Data.

If the drainage area is wholly in Canada, Canadian maps and area determination procedures are used. If wholly in the United States, U.S. maps and procedures are used.

Where drainage areas are located partly in each country, the use of accepted maps and procedures is to be coordinated and agreed upon by the respective District and Regional Offices.

The delineation of the drainage area of the station shall be acceptable to representatives of both countries. Units of measurement can be in either of the two existing measurement unit systems. However, it would perhaps be preferable to use imperial (inch-pound) units where SI unit scaled maps are not available in the United States to determine the total drainage area upstream from the International Gauging Station. Conversion to metric units requires the use of SI conversion factors.

In the event that a gauging station is in support of IJC Boards, Orders, or Studies, the final figure for the drainage area of the International Gauging Station should be acceptable to all involved parties.

#### E. Bench Marks and Reference Datums

The installation of bench marks at an International Gauging Station should follow the standard construction and marking procedure of the country of the station's principal operator.

In Canada, the national reference datum is the Geodetic Survey of Canada Datum (year of adjustment).

In the U.S.A., the national reference datum is the National Geodetic Vertical Datum of 1929.

The reference datum on the Great Lakes is IGLD (1959) (International Great Lakes Datum), which is proposed for revision to around the year 1980.

At each International Gauging Station, the principal permanent bench mark should be tied to the national network datum where possible or a well-documented local datum such as IGLD.

Wherever feasible, reference lines should be established between the principal permanent bench mark at an International Gauging Station and the closest national reference datum bench mark on the other side of the international boundary. This procedure will enable the establishment of a relationship between the two national reference datums at the boundary in the vicinity of the International Gauging Station. Establishment of the relationship may prove useful in joint studies using the data collected at that station.

#### **F. Review and Updating of Procedural Guide**

This Procedural Guide for International Gauging Stations may be amended as required by appropriate signing officers for the U.S.A. and Canada. However, because rapidly changing technology quickly affects the state of the art used in the collection, compilation and publication of water quantity data, this procedural guide should be reviewed for possible revision at a minimum interval of five years.

APPENDIX 1  
Rules of Procedure  
and Text of the  
Boundary Waters Treaty

APPENDIX 1

Rules of Procedure of the International  
Joint Commission and Text of the  
Boundary Waters Treaty 1909



# International Joint Commission

UNITED STATES AND CANADA

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## RULES OF PROCEDURE AND TEXT OF TREATY

OTTAWA, CANADA—WASHINGTON, D.C.  
APRIL, 1980.

TREATY OF JANUARY 11, 1909, BETWEEN UNITED STATES AND  
GREAT BRITAIN

Signed at Washington.....January 11, 1909  
Ratification advised by the Senate.....March 3, 1909  
Ratified by Great Britain.....March 31, 1910  
Ratified by the President .....April 1, 1910  
Ratifications exchanged at Washington.....May 5, 1910  
Proclaimed.....May 13, 1910

INTERNATIONAL JOINT COMMISSION.

Members appointed on part of United States.....March 9, 1911  
Members appointed on part of Canada.....November 10, 1911  
Meeting of Commission for organization under Article XII of the  
treaty, at Washington.....January 10, 1912  
Adoption and publication of Rules of Procedure in accordance  
with Article XII.....February 2, 1912  
Revised December 2, 1964

# RULES OF PROCEDURE OF THE INTERNATIONAL JOINT COMMISSION

The International Joint Commission, by virtue of the provisions of Article XII of the Treaty between the United States of America and His Majesty the King, dated the 11th day of January, 1909, hereby revokes the Rules of Procedure which it adopted on the 2nd day of February, 1912, as subsequently amended, and, in their place and stead, adopts the following Rules of Procedure:

## PART I—GENERAL

### DEFINITIONS

- 1.(1) In the construction of these rules, unless the context otherwise requires, words importing the singular number shall include the plural and words importing the plural number shall include the singular, and:
  - (2) "applicant" means the Government or person on whose behalf an application is presented to the Commission in accordance with Rule 12;
  - (3) "Government" means the Government of Canada or the Government of the United States of America;
  - (4) "person" includes Province, State, department or agency of a Province or State, municipality, individual, partnership, corporation and association, but does not include the Government of Canada or the Government of the United States of America;
  - (5) "oath" includes affirmation;
  - (6) "reference" means the document by which a question or matter of difference is referred to the Commission pursuant to Article IX of the Treaty;
  - (7) "the Treaty" means the Treaty between the United States of America and His Majesty the King, dated the 11th day of January, 1909;
  - (8) "Canadian section" consists of the commissioners appointed by Her Majesty on the recommendation of the Governor in Council of Canada;
  - (9) "United States section" consists of the commissioners appointed by the President of the United States.

### CHAIRMEN

- 2.(1) The commissioners of the United States section of the Commission shall appoint one of their number as chairman, to be known as the Chairman of the United States Section of the International Joint Commission, and he shall act as chairman at all meetings of the Commission held in the United States and in respect to all matters required to be done in the United States by the chairman of the Commission.
- (2) The commissioners of the Canadian section of the Commission shall appoint one of their number as chairman, to be known as the Chairman of the Canadian Section of the International Joint Commission, and he shall act as

chairman at all meetings of the Commission held in Canada and in respect to all matters required to be done in Canada by the chairman of the Commission.

(3) In case it shall be impracticable for the chairman of either section to act in any matter, the commissioner of such section who is senior in order of appointment shall act in his stead.

#### PERMANENT OFFICES

3. The permanent offices of the Commission shall be at Washington, in the District of Columbia, and at Ottawa, in the Province of Ontario, and, subject to the directions of the respective chairmen acting for their respective sections, the secretaries of the United States and Canadian sections of the Commission shall have full charge and control of said offices, respectively.

#### DUTIES OF SECRETARIES

4.(1) The secretaries shall act as joint secretaries at all meetings and hearings of the Commission. The secretary of the section of the Commission of the country in which a meeting or hearing is held shall prepare a record thereof and each secretary shall preserve an authentic copy of the same in the permanent offices of the Commission.

(2) Each secretary shall receive and file all applications, references and other papers properly presented to the Commission in any proceeding instituted before it and shall number in numerical order all such applications and references; the number given to an application or reference shall be the primary file number for all papers relating to such application or reference.

(3) Each secretary shall forward to the other for filing in the office of the other copies of all official letters, documents, records or other papers received by him or filed in his office, pertaining to any proceeding before the Commission, to the end that there shall be on file in each office either the original or a copy of all official letters and other papers, relating to the said proceeding.

(4) Each secretary shall also forward to the other for filing in the office of the other copies of any letters, documents or other papers received by him or filed in his office which are deemed by him to be of interest to the Commission.

#### MEETINGS

5.(1) Subject at all times to special call or direction by the two Governments, meetings of the Commission shall be held at such times and places in the United States and Canada as the Commission or the Chairmen may determine and in any event shall be held each year at Washington in April and at Ottawa in October, beginning ordinarily on the first Tuesday of the said months.

(2) If the Commission determines that a meeting shall be open to the public, it shall give such advance notices to this effect as it considers appropriate in the circumstances.

#### SERVICE OF DOCUMENTS

6.(1) Where the secretary is required by these rules to give notice to any person, this shall be done by delivering or mailing such notice to the person at the address for service that the said person has furnished to the Commission, or if no such address has been furnished, at the dwelling house or usual place of abode or usual place of business of such person.

(2) Where the secretary is required by these rules to give notice to a Government, this shall be done by delivering or mailing such notice to the

Secretary of State for External Affairs of Canada or to the Secretary of State of the United States of America, as the case may be.

(3) Service of any document pursuant to Rule 22 shall be by delivering a copy thereof to the person named therein, or by leaving the same at the dwelling house or usual place of abode or usual place of business of such person. The person serving the notice or request shall furnish an affidavit to the secretary stating the time and place of such service.

#### CONDUCT OF HEARINGS

7. Hearings may be conducted, testimony received and arguments thereon heard by the whole Commission or by one or more Commissioners from each section of the Commission, designated for that purpose by the respective sections or the Chairmen thereof.

#### DECISION BY THE WHOLE COMMISSION

8. The whole Commission shall consider and determine any matter or question which the Treaty or any other treaty or international agreement, either in terms or by implication, requires or makes it the duty of the Commission to determine. For the purposes of this rule and Rule 7, "the whole Commission" means all of the commissioners appointed pursuant to Article VII of the Treaty whose terms of office have not expired and who are not prevented by serious illness or other circumstances beyond their control from carrying out their functions as commissioners. In no event shall a decision be made without the concurrence of at least four commissioners.

#### SUSPENSION OR AMENDMENT OF RULES

9. The Commission may suspend, repeal, or amend all or any of the Rules of Procedure at any time, with the concurrence of at least four commissioners. Both Governments shall be informed forthwith of any such action.

#### GENERAL RULE

10. The Commission may, at any time, adopt any procedure which it deems expedient and necessary to carry out the true intent and meaning of the Treaty.

#### AVAILABILITY OF RECORDS

11.(1) The following items in the official records of the Commission shall be available for public information at the permanent offices of the Commission:

- Applications
- References
- Public Notices
- Press Releases
- Statements in Response
- Statements in Reply
- Records of hearings, including exhibits filed
- Briefs and formal Statements submitted at hearings or at other times

(2) Decisions rendered and orders issued by the Commission and formal opinions of any of the Commissioners with relation thereto, shall be available similarly for public information after duplicate originals of the decisions or orders have been transmitted to and filed with the Governments pursuant to Article XI of the Treaty.

(3) Copies of reports submitted to one or both of the Governments pursuant to the Treaty shall be available similarly for public information only with the consent of the Government or Governments to whom the reports are addressed.

(4) Reports, letters, memoranda and other communications addressed to the Commission, by boards or committees created by or at the request of the Commission, are privileged and shall become available for public information only in accordance with a decision of the Commission to that effect.

(5) Except as provided in the preceding paragraphs of this rule, records of deliberations, and documents, letters, memoranda and communications of every nature and kind in the official records of the Commission, whether addressed to or by the Commission, commissioners, secretaries, advisers or any of them, are privileged and shall become available for public information only in accordance with a decision of the Commission to that effect.

(6) A copy of any document, report, record or other paper which under this rule is available for public information may be furnished to any person upon payment of any cost involved in its reproduction.

## PART II-APPLICATIONS

### PRESENTATION TO COMMISSION

12.(1) Where one or the other of the Governments on its own initiative seeks the approval of the Commission for the use, obstruction or diversion of waters with respect to which under Articles III or IV of the Treaty the approval of the Commission is required, it shall present to the Commission an application setting forth as fully as may be necessary for the information of the Commission the facts upon which the application is based and the nature of the order of approval desired.

(2) Where a person seeks the approval of the Commission for the use, obstruction or diversion of waters with respect to which under Articles III or IV of the Treaty the approval of the Commission is required, he shall prepare an application to the Commission and forward it to the Government within whose jurisdiction such use, obstruction or diversion is to be made, with the request that the said application be transmitted to the Commission. If such Government transmits the application to the Commission with a request that it take appropriate action thereon, the same shall be filed by the Commission in the same manner as an application presented in accordance with paragraph (1) of this rule. Transmittal of the application to the Commission shall not be construed as authorization by the Government of the use, obstruction or diversion proposed by the applicant. All applications by persons shall conform, as to their contents, to the requirements of paragraph (1) of this rule.

(3) Where the Commission has issued an Order approving a particular use, obstruction or diversion, in which it has specifically retained jurisdiction over the subject matter of an application and has reserved the right to make further orders relating thereto, any Government or person entitled to request the issuance of such further order may present to the Commission a request, setting forth the facts upon which it is based and the nature of the further order desired. On receipt of the request, the Commission shall proceed in accordance with the terms of the Order in which the Commission specifically retained jurisdiction. In each case the secretaries shall notify both Governments and invite their comments before the request is complied with.

## COPIES REQUIRED

13.(1) Subject to paragraph (3) of this rule, two duplicate originals and fifty copies of the application and of any supplemental application, statement in response, supplemental statement in response, statement in reply and supplemental statement in reply shall be delivered to either secretary. On receipt of such documents, the secretary shall forthwith send one duplicate original and twenty-five copies to the other secretary.

(2) Subject to paragraph (3) of this rule, two copies of such drawings, profiles, plans of survey, maps and specifications as may be necessary to illustrate clearly the matter of the application shall be delivered to either secretary and he shall send one copy forthwith to the other secretary.

(3) Notwithstanding paragraphs (1) and (2) of this rule, such additional copies of the documents mentioned therein as may be requested by the Commission shall be provided forthwith.

## AUTHORIZATION BY GOVERNMENT

14.(1) Where the use, obstruction or diversion of waters for which the Commission's approval is sought has been authorized by or on behalf of a Government or by or on behalf of a State or Province or other competent authority, two copies of such authorization and of any plans approved incidental thereto shall accompany the application when it is presented to the Commission in accordance with Rule 12.

(2) Where such a use, obstruction or diversion of waters is authorized by or on behalf of a Government or by or on behalf of a State or Province or other competent authority after an application has been presented to the Commission in accordance with Rule 12, the applicant shall deliver forthwith to the Commission two copies of such authorization and of any plans approved incidental thereto.

## NOTICE OF PUBLICATION

15.(1) As soon as practicable after an application is presented or transmitted in accordance with Rule 12, the secretary of the section of the Commission appointed by the other Government shall send a copy of the application to such Government.

(2) Except as otherwise provided pursuant to Rule 19, the secretaries, as soon as practicable after the application is received, shall cause a notice to be published in the Canada Gazette and the Federal Register and once each week for three successive weeks in two newspapers, published one in each country and circulated in or near the localities which, in the opinion of the Commission, are most likely to be affected by the proposed use, obstruction or diversion. Subject to paragraph (3) of this rule, the notice shall state that the application has been received, the nature and locality of the proposed use, obstruction or diversion, the time within which any person interested may present a statement in response to the Commission and that the Commission will hold a hearing or hearings at which all persons interested are entitled to be heard with respect thereto.

(3) If the Commission so directs, the notice referred to in paragraph (2) of this rule, appropriately modified, may be combined with the notice of hearing referred to in Rule 24 and published accordingly.

## STATEMENT IN RESPONSE

16.(1) Except as otherwise provided pursuant to Rule 19, a Government and any interested person, other than the applicant, may present a statement in response to the Commission within thirty days after the filing of an application. A statement in response shall set forth facts and arguments bearing on the subject matter of the application and tending to oppose or support the application, in whole or in part. If it is desired that conditional approval be granted, the statement in response should set forth the particular condition or conditions desired. An address for service of documents should be included in the statement in response.

(2) When a statement in response has been filed, the secretaries shall send a copy forthwith to the applicant and to each Government except the Government which presented the said statement in response. If so directed by the Commission, the secretaries shall inform those who have presented statements in response, of the nature of the total response.

## STATEMENT IN REPLY

17.(1) Except as otherwise provided pursuant to Rule 19, the applicant and, if he is a person, the Government which transmitted the application on his behalf, one or both may present a statement or statements in reply to the Commission within thirty days after the time provided for presenting statements in response. A statement in reply shall set forth facts and arguments bearing upon the allegations and arguments contained in the statements in response.

(2) When a statement in reply has been filed, the secretary shall send a copy forthwith to each Government except the Government which presented the said statement in reply, and to all persons who presented statements in response.

## SUPPLEMENTAL OR AMENDED APPLICATIONS AND STATEMENTS

18.(1) If it appears to the Commission that either an application, a statement in response or a statement in reply is not sufficiently definite and complete, the Commission may require a more definite and complete application, statement in response or statement in reply, as the case may be, to be presented.

(2) Where substantial justice requires it, the Commission with the concurrence of at least four Commissioners may allow the amendment of any application, statement in response, statement in reply and any document or exhibit which has been presented to the Commission.

## REDUCING OR EXTENDING TIME AND DISPENSING WITH STATEMENTS

19. In any case where the Commission considers that such action would be in the public interest and not prejudicial to the right of interested persons to be heard in accordance with Article XII of the Treaty, the Commission may reduce or extend the time for the presentation of any paper or the doing of any act required by these rules or may dispense with the presentation of statements in response and statements in reply.

## INTERESTED PERSONS AND COUNSEL

20. Governments and persons interested in the subject matter of an application, whether in favour of or opposed to it, are entitled to be heard in person or by counsel at any hearing thereof held by the Commission.

## CONSULTATION

21. The Commission may meet or consult with the applicant, the Governments and other persons or their counsel at any time regarding the plan of hearing, the mode of conducting the inquiry, the admitting or proof of certain facts or for any other purpose.

## ATTENDANCE OF WITNESSES AND PRODUCTION OF DOCUMENTS

22.(1) Requests for the attendance and examination of witnesses and for the production and inspection of books, papers and documents may be issued over the signature of the secretary of the section of the Commission of the country in which the witnesses reside or the books, papers or documents may be, when so authorized by the Chairman of that section.

(2) All applications for subpoena or other process to compel the attendance of witnesses or the production of books, papers and documents before the Commission shall be made to the proper courts of either country, as the case may be, upon the order of the Commission.

## HEARINGS

23.(1) The time and place of the hearing or hearings of an application shall be fixed by the Chairmen of the two sections.

(2) The secretaries shall forthwith give written notice of the time and place of the hearing or hearings to the applicant, the Governments and all persons who have presented statements in response to the Commission. Except as otherwise provided by the Commission, the secretaries shall also cause such notice to be published in the Canada Gazette and the Federal Register and once each week for three successive weeks in two newspapers, published one in each country and circulated in or near the localities which, in the opinion of the Commission, are most likely to be affected by the proposed use, obstruction or diversion of water.

(3) All hearings shall be open to the public.

(4) The applicant, the Governments and persons interested are entitled to present oral and documentary evidence and argument that is relevant and material to any issue that is before the Commission in connection with the application.

(5) The presiding chairman may require that evidence be under oath.

(6) Witnesses may be examined and cross-examined by the Commissioners and by counsel for the applicant, the Governments and the Commission. With the consent of the presiding chairman, counsel for a person other than the applicant may also examine or cross-examine witnesses.

(7) The Commission may require further evidence to be given and may require printed briefs to be submitted at or subsequent to the hearing.

(8) The Commissioners shall be free to determine the probative value of the evidence submitted to it.

(9) A verbatim transcript of the proceedings at the hearing shall be prepared.

(10) The hearing of the application, when once begun, shall proceed at the times and places determined by the Chairmen of the two sections to ensure the greatest practicable continuity and dispatch of proceedings.

## EXPENSES OF PROCEEDINGS

24.(1) The expenses of those participating in any proceeding under Part II of these rules shall be borne by the participants.

(2) The Commission, after due notice to the participant or participants concerned, may require that any unusual cost or expense to the Commission shall be paid by the person on whose behalf or at whose request such unusual cost or expense has been or will be incurred.

## GOVERNMENT BRIEF RE NAVIGABLE WATERS

25. When in the opinion of the Commission it is desirable that a decision should be rendered which affects navigable waters in a manner or to an extent different from that contemplated by the application and plans presented to the Commission, the Commission will, before making a final decision, submit to the Government presenting or transmitting the application a draft of the decision, and such Government may transmit to the Commission a brief or memorandum thereon which will receive due consideration by the Commission before its decision is made final.

## PART III—REFERENCES

## PRESENTATION TO COMMISSION

26.(1) Where a question or matter of difference arising between the two Governments involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other along the common frontier between the United States of America and Canada is to be referred to the Commission under Article IX of the Treaty, the method of bringing such question or matter to the attention of the Commission and invoking its action ordinarily will be as set forth in this rule.

(2) Where both Governments have agreed to refer such a question or matter to the Commission, each Government will present to the Commission, at the permanent office in its country, a reference in similar or identical terms setting forth as fully as may be necessary for the information of the Commission the question or matter which it is to examine into and report upon and any restrictions or exceptions which may be imposed upon the Commission with respect thereto.

(3) Where one of the Governments, on its own initiative, has decided to refer such a question or matter to the Commission, it will present a reference to the Commission at the permanent office in its country. All such references should conform, as to their contents, to the requirements of paragraph (2) of this rule.

(4) Such drawings, plans of survey and maps as may be necessary to illustrate clearly the question or matter referred should accompany the reference when it is presented to the Commission.

## NOTICE AND PUBLICATION

27.(1) The secretary to whom a reference is presented shall receive and file the same and shall send a copy forthwith to the other secretary for filing in the office of the latter. If the reference is presented by one Government only, the other secretary shall send a copy forthwith to his Government.

(2) Subject to any restrictions or exceptions which may be imposed upon the Commission by the terms of the reference, and unless otherwise provided by the Commission, the secretaries, as soon as practicable after the reference is received, shall cause a notice to be published in the Canada Gazette, the Federal Register and in two newspapers, published one in each country and circulated in or near the localities which, in the opinion of the Commission, are most likely to be interested in the subject matter of the reference. The notice shall describe the subject matter of the reference in general terms, invite interested persons to inform the Commission of the nature of their interest and state that the Commission will provide convenient opportunity for interested persons to be heard with respect thereto.

#### ADVISORY BOARDS

28.(1) The Commission may appoint a board or boards, composed of qualified persons, to conduct on its behalf investigations and studies that may be necessary or desirable and to report to the Commission regarding any questions or matters involved in the subject matter of the reference.

(2) Such board ordinarily will have an equal number of members from each country.

(3) The Commission ordinarily will make copies of the main or final report of such board or a digest thereof available for examination by the Governments and interested persons prior to holding the final hearing or hearings referred to in Rule 29.

#### HEARINGS

29.(1) A hearing or hearings may be held whenever in the opinion of the Commission such action would be helpful to the Commission in complying with the terms of a reference. Subject to any restrictions or exceptions which may be imposed by the terms of the reference, a final hearing or hearings shall be held before the Commission reports to Governments in accordance with the terms of the reference.

(2) The time, place and purpose of the hearing or hearings on a reference shall be fixed by the Chairmen of the two sections.

(3) The secretaries shall forthwith give written notice of the time, place and purpose of the hearing or hearings to each Government and to persons who have advised the Commission of their interest. Unless otherwise directed by the Commission, the secretaries shall also cause such notice to be published in the Canada Gazette, the Federal Register and once each week for three successive weeks in two newspapers, published one in each country and circulated in or near the localities which, in the opinion of the Commission, are most likely to be interested in the subject matter of the reference.

(4) All hearings shall be open to the public, unless otherwise determined by the Commission.

(5) At a hearing, the Governments and persons interested are entitled to present, in person or by counsel, oral and documentary evidence and argument that is relevant and material to any matter that is within the published purpose of the hearing.

(6) The presiding chairman may require that evidence be under oath.

(7) Witnesses may be examined and cross-examined by the Commissioners and by counsel for the Governments and the Commission. With the consent of the presiding chairman, counsel for any interested person may also examine or cross-examine witnesses.

(8) The Commission may require further evidence to be given and may require printed briefs to be submitted at or subsequent to the hearing.

(9) A verbatim transcript of the proceedings at the hearing shall be prepared.

PROCEEDINGS UNDER ARTICLE X

30. When a question or matter of difference arising between the two Governments involving the rights, obligations or interests of either in relation to the other or to their respective inhabitants has been or is to be referred to the Commission for decision under Article X of the Treaty, the Commission, after consultation with the said Governments, will adopt such rules of procedures as may be appropriate to the question or matter referred or to be referred.

Adopted: December 2, 1964.

TREATY  
BETWEEN THE UNITED STATES AND GREAT BRITAIN  
RELATING TO BOUNDARY WATERS, AND QUESTIONS  
ARISING BETWEEN THE UNITED STATES AND CANADA.

The United States of America and His Majesty the King of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, Emperor of India, being equally desirous to prevent disputes regarding the use of boundary waters and to settle all questions which are now pending between the United States and the Dominion of Canada involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along their common frontier, and to make provision for the adjustment and settlement of all such questions as may hereafter arise, have resolved to conclude a treaty in furtherance of these ends, and for that purpose have appointed as their respective plenipotentiaries:

The President of the United States of America, Elihu Root, Secretary of State of the United States; and

His Britannic Majesty, the Right Honourable James Bryce, O.M., his Ambassador Extraordinary and Plenipotentiary at Washington;

Who, after having communicated to one another their full powers, found in good and due form, have agreed upon the following articles:

PRELIMINARY ARTICLE

For the purposes of this treaty boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.

ARTICLE I

The High Contracting Parties agree that the navigation of all navigable boundary waters shall forever continue free and open for the purposes of commerce to the inhabitants and to the ships, vessels, and boats of both countries equally, subject, however, to any laws and regulations of either country, within its own territory, not inconsistent with such privilege of free navigation and applying equally and without discrimination to the inhabitants, ships, vessels, and boats of both countries.

It is further agreed that so long as this treaty shall remain in force, this same right of navigation shall extend to the waters of Lake Michigan and to all canals connecting boundary waters, and now existing or which may hereafter be constructed on either side of the line. Either of the High Contracting Parties may adopt rules and regulations governing the use of such canals within its own territory and may charge tolls for the use thereof, but all such rules and regulations and all tolls charged shall apply alike to the subjects or citizens of the High Contracting Parties and the ships, vessels, and boats of both of the High Contracting Parties, and they shall be placed on terms of equality in the use thereof.

## ARTICLE II

Each of the High Contracting Parties reserves to itself or to the several State Governments on the one side and the Dominion or Provincial Governments on the other as the case may be, subject to any treaty provisions now existing with respect thereto, the exclusive jurisdiction and control over the use and diversion, whether temporary or permanent, of all waters on its own side of the line which in their natural channels would flow across the boundary or into boundary waters; but it is agreed that any interference with or diversion from their natural channel of such waters on either side of the boundary, resulting in any injury on the other side of the boundary, shall give rise to the same rights and entitle the injured parties to the same legal remedies as if such injury took place in the country where such diversion or interference occurs; but this provision shall not apply to cases already existing or to cases expressly covered by special agreement between the parties hereto.

It is understood, however, that neither of the High Contracting Parties intends by the foregoing provision to surrender any right, which it may have, to object to any interference with or diversions of waters on the other side of the boundary the effect of which would be productive of material injury to the navigation interests on its own side of the boundary.

## ARTICLE III

It is agreed that, in addition to the uses, obstructions, and diversions heretofore permitted or hereafter provided for by special agreement between the Parties hereto, no further or other uses or obstructions or diversions, whether temporary or permanent, of boundary waters on either side of the line, affecting the natural level or flow of boundary waters on the other side of the line shall be made except by authority of the United States or the Dominion of Canada within their respective jurisdictions and with the approval, as hereinafter provided, of a joint commission, to be known as the International Joint Commission.

The foregoing provisions are not intended to limit or interfere with the existing rights of the Government of the United States on the one side and the Government of the Dominion of Canada on the other, to undertake and carry on governmental works in boundary waters for the deepening of channels, the construction of breakwaters, the improvement of harbours, and other governmental works for the benefit of commerce and navigation, provided that such works are wholly on its own side of the line and do not materially affect the level or flow of the boundary waters on the other, nor are such provisions intended to interfere with the ordinary use of such waters for domestic and sanitary purposes.

## ARTICLE IV

The High Contracting Parties agree that, except in cases provided for by special agreement between them, they will not permit the construction or maintenance on their respective sides of the boundary of any remedial or protective works or any dams or other obstructions in waters flowing from boundary waters or in waters at a lower level than the boundary in rivers flowing across the boundary, the effect of which is to raise the natural level of waters on the other side of the boundary unless the construction or maintenance thereof is approved by the aforesaid International Joint Commission.

It is further agreed that the waters herein defined as boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other.

## ARTICLE V

The High Contracting Parties agree that it is expedient to limit the diversion of waters from the Niagara River so that the level of Lake Erie and the flow of the stream shall not be appreciably affected. It is the desire of both Parties to accomplish this object with the least possible injury to investments which have already been made in the construction of power plants on the United States side of the river under grants of authority from the State of New York, and on the Canadian side of the river under licences authorized by the Dominion of Canada and the Province of Ontario.

So long as this treaty shall remain in force, no diversion of the waters of the Niagara River above the Falls from the natural course and stream thereof shall be permitted except for the purposes and to the extent hereinafter provided.

The United States may authorize and permit the diversion within the State of New York of the waters of said river above the Falls of Niagara, for power purposes, not exceeding in the aggregate a daily diversion at the rate of twenty thousand cubic feet of water per second.

The United Kingdom, by the Dominion of Canada, or the Province of Ontario, may authorize and permit the diversion within the Province of Ontario of the waters of said river above the Falls of Niagara, for power purposes, not exceeding in the aggregate a daily diversion at the rate of thirty-six thousand cubic feet of water per second.

The prohibitions of this article shall not apply to the diversion of water for sanitary or domestic purposes, or for the service of canals for the purposes of navigation.

NOTE: The third, fourth and fifth paragraphs of Article V were terminated by the Canada-United States Treaty of February 27, 1950 concerning the diversion of the Niagara River.

## ARTICLE VI

The High Contracting Parties agree that the St. Mary and Milk Rivers and their tributaries (in the State of Montana and the Provinces of Alberta and Saskatchewan) are to be treated as one stream for the purposes of irrigation and power, and the waters thereof shall be apportioned equally between the two countries, but in making such equal apportionment more than half may be taken from one river and less than half from the other by either country so as to afford a more beneficial use to each. It is further agreed that in the division of such waters during the irrigation season, between the 1st of April and 31st of October, inclusive, annually, the United States is entitled to a prior appropriation of 500 cubic feet per second of the waters of the Milk River, or so much of such amount as constitutes three-fourths of its natural flow, and that Canada is entitled to a prior appropriation of 500 cubic feet per second of the flow of St. Mary River, or so much of such amount as constitutes three-fourths of its natural flow.

The channel of the Milk River in Canada may be used at the convenience of the United States for the conveyance, while passing through Canadian territory, of waters diverted from the St. Mary River. The provisions of Article II of this treaty shall apply to any injury resulting to property in Canada from the conveyance of such waters through the Milk River.

The measurement and apportionment of the water to be used by each country shall from time to time be made jointly by the properly constituted reclamation officers of the United States and the properly constituted irrigation officers of His Majesty under the direction of the International Joint Commission.

## ARTICLE VII

The High Contracting Parties agree to establish and maintain an International Joint Commission of the United States and Canada composed of six commissioners, three on the part of the United States appointed by the President thereof, and three on the part of the United Kingdom appointed by His Majesty on the recommendation of the Governor in Council of the Dominion of Canada.

## ARTICLE VIII

This International Joint Commission shall have jurisdiction over and shall pass upon all cases involving the use or obstruction or diversion of the waters with respect to which under Articles III and IV of this Treaty the approval of this Commission is required, and in passing upon such cases the Commission shall be governed by the following rules or principles which are adopted by the High Contracting Parties for this purpose:

The High Contracting Parties shall have, each on its own side of the boundary, equal and similar rights in the use of the waters hereinbefore defined as boundary waters.

The following order of precedence shall be observed among the various uses enumerated hereinafter for these waters, and no use shall be permitted which tends materially to conflict with or restrain any other use which is given preference over it in this order of precedence:

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

The foregoing provisions shall not apply to or disturb any existing uses of boundary waters on either side of the boundary.

The requirement for an equal division may in the discretion of the Commission be suspended in cases of temporary diversions along boundary waters at points where such equal division can not be made advantageously on account of local conditions, and where such diversion does not diminish elsewhere the amount available for use on the other side.

The Commission in its discretion may make its approval in any case conditional upon the construction of remedial or protective works to compensate so far as possible for the particular use or diversion proposed, and in such cases may require that suitable and adequate provision, approved by the Commission, be made for the protection and indemnity against injury of any interests on either side of the boundary.

In cases involving the elevation of the natural level of waters on either side of the line as a result of the construction or maintenance on the other side of remedial or protective works or dams or other obstructions in boundary waters or in waters flowing therefrom or in waters below the boundary in rivers flowing across the boundary, the Commission shall require, as a condition of its approval thereof, that suitable and adequate provision, approved by it, be made for the protection and indemnity of all interests on the other side of the line which may be injured thereby.

The majority of the Commissioners shall have power to render a decision. In case the Commission is evenly divided upon any question or matter presented to it for decision, separate reports shall be made by the Commissioners on each side to their own Government. The High Contracting Parties shall thereupon endeavour to agree upon an adjustment of the question or matter of difference, and if an agreement is reached between them, it shall be reduced

to writing in the form of a protocol, and shall be communicated to the Commissioners, who shall take such further proceedings as may be necessary to carry out such agreement.

#### ARTICLE IX

The High Contracting Parties further agree that any other questions or matters of difference arising between them involving the rights, obligations, or interests of either in relation to the other or to the inhabitants of the other, along the common frontier between the United States and the Dominion of Canada, shall be referred from time to time to the International Joint Commission for examination and report, whenever either the Government of the United States or the Government of the Dominion of Canada shall request that such questions or matters of difference be so referred.

The International Joint Commission is authorized in each case so referred to examine into and report upon the facts and circumstances of the particular questions and matters referred, together with such conclusions and recommendations as may be appropriate, subject, however, to any restrictions or exceptions which may be imposed with respect thereto by the terms of the reference.

Such reports of the Commission shall not be regarded as decisions of the questions or matters so submitted either on the facts or the law, and shall in no way have the character of an arbitral award.

The Commission shall make a joint report to both Governments in all cases in which all or a majority of the Commissioners agree, and in case of disagreement the minority may make a joint report to both Governments, or separate reports to their respective Governments.

In case the Commission is evenly divided upon any question or matter referred to it for report, separate reports shall be made by the Commissioners on each side to their own Government.

#### ARTICLE X

Any questions or matters of difference arising between the High Contracting Parties involving the rights, obligations, or interests of the United States or of the Dominion of Canada either in relation to each other or to their respective inhabitants, may be referred for decision to the International Joint Commission by the consent of the two Parties, it being understood that on the part of the United States any such action will be by and with the advice and consent of the Senate, and on the part of His Majesty's Government with the consent of the Governor General in Council. In each case so referred, the said Commission is authorized to examine into and report upon the facts and circumstances of the particular questions any matters referred, together with such conclusions and recommendations as may be appropriate, subject, however, to any restrictions or exceptions which may be imposed with respect thereto by the terms of the reference.

A majority of the said Commission shall have power to render a decision or finding upon any of the questions or matters so referred.

If the said Commission is equally divided or otherwise unable to render a decision or finding as to any questions or matters so referred, it shall be the duty of the Commissioners to make a joint report to both Governments, or separate reports to their respective Governments, showing the different conclusions arrived at with regard to the matters or questions so referred, which questions or matters shall thereupon be referred for decision by the High Contracting Parties to an umpire chosen in accordance with the procedure prescribed in the fourth, fifth and sixth paragraphs of Article XLV of the Hague Convention for the pacific settlement of international disputes, dated

October 18, 1907. Such umpire shall have power to render a final decision with respect to those matters and questions so referred on which the Commission failed to agree.

#### ARTICLE XI

A duplicate original of all decisions rendered and joint reports made by the Commission shall be transmitted to and filed with the Secretary of State of the United States and the Governor General of the Dominion of Canada, and to them shall be addressed all communications of the Commission.

#### ARTICLE XII

The International Joint Commission shall meet and organize at Washington promptly after the members thereof are appointed, and when organized the Commission may fix such times and places for its meetings as may be necessary, subject at all times to special call or direction by the two Governments. Each Commissioner upon the first joint meeting of the Commission after his appointment, shall, before proceeding with the work of the Commission, make and subscribe a solemn declaration in writing that he will faithfully and impartially perform the duties imposed upon him under this treaty, and such declaration shall be entered on the records of the proceedings of the Commission.

The United States and Canadian sections of the Commission may each appoint a secretary, and these shall act as joint secretaries of the Commission at its joint sessions, and the Commission may employ engineers and clerical assistants from time to time as it may deem advisable. The salaries and personal expenses of the Commission and of the secretaries shall be paid by their respective Governments, and all reasonable and necessary joint expenses of the Commission, incurred by it, shall be paid in equal moieties by the High Contracting Parties.

The Commission shall have power to administer oaths to witnesses, and to take evidence on oath whenever deemed necessary in any proceeding, or inquiry, or matter within its jurisdiction under this treaty, and all parties interested therein shall be given convenient opportunity to be heard, and the High Contracting Parties agree to adopt such legislation as may be appropriate and necessary to give the Commission the powers above mentioned on each side of the boundary, and to provide for the issue of subpoenas and for compelling the attendance of witnesses in proceedings before the Commission. The Commission may adopt such rules of procedure as shall be in accordance with justice and equity, and may make such examination in person and through agents or employees as may be deemed advisable.

#### ARTICLE XIII

In all cases where special agreements between the High Contracting Parties hereto are referred to in the foregoing articles, such agreements are understood and intended to include not only direct agreements between the High Contracting Parties, but also any mutual arrangement between the United States and the Dominion of Canada expressed by concurrent or reciprocal legislation on the part of Congress and the Parliament of the Dominion.

#### ARTICLE XIV

The present treaty shall be ratified by the President of the United States of America, by and with the advice and consent of the Senate thereof, and by His Britannic Majesty. The ratifications shall be exchanged at Washington as soon as possible and the treaty shall take effect on the date of the exchange.

of its ratifications. It shall remain in force for five years, dating from the day of exchange of ratifications, and thereafter until terminated by twelve months' written notice given by either High Contracting Party to the other.

In faith whereof the respective plenipotentiaries have signed this treaty in duplicate and have hereunto affixed their seals.

Done at Washington the 11th day of January, in the year of our Lord one thousand nine hundred and nine.

(Signed) ELIHU ROOT [SEAL]

(Signed) JAMES BRYCE [SEAL]

AND WHEREAS the Senate of the United States by their resolution of March 3, 1909, (two-thirds of the Senators present concurring therein) did advise and consent to the ratification of the said Treaty with the following understanding, to wit:

"Resolved further, as a part of this ratification, That the United States approves this treaty with the understanding that nothing in this treaty shall be construed as affecting, or changing, any existing territorial or riparian rights in the water, or rights of the owners of lands under water, on either side of the international boundary at the rapids of the St. Mary's river at Sault Ste. Marie, in the use of the waters flowing over such lands, subject to the requirements of navigation in boundary waters and of navigation canals, and without prejudice to the existing right of the United States and Canada, each to use the waters of the St. Mary's river, within its own territory, and further, that nothing in this treaty shall be construed to interfere with the drainage of wet swamp and overflowed lands into streams flowing into boundary waters, and that this interpretation will be mentioned in the ratification of this treaty as conveying the true meaning of the treaty, and will, in effect, form part of the treaty;"

AND WHEREAS the said understanding has been accepted by the Government of Great Britain, and the ratifications of the two Governments of the said treaty were exchanged in the City of Washington, on the 5th day of May, one thousand nine hundred and ten;

Now, THEREFORE, be it known that I, William Howard Taft, President of the United States of America, have caused the said treaty and the said understanding, as forming a part thereof, to be made public, to the end that the same and every article and clause thereof may be observed and fulfilled with good faith by the United States and the citizens thereof.

In testimony whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the City of Washington this thirteenth day of May in the year of our Lord one thousand nine hundred and ten,  
[SEAL] and of the Independence of the United States of America the one hundred and thirty-fourth.

Wm H Taft

By the President:

P C Knox

*Secretary of State.*

## PROTOCOL OF EXCHANGE.

On proceeding to the exchange of the ratifications of the treaty signed at Washington on January 11, 1909, between the United States and Great Britain, relating to boundary waters and questions arising along the boundary between the United States and the Dominion of Canada, the undersigned plenipotentiaries, duly authorized thereto by their respective Governments, hereby declare that nothing in this treaty shall be construed as affecting, or changing, any existing territorial, or riparian rights in the water, or rights of the owners of lands under water, on either side of the international boundary at the rapids of the St. Mary's River at Sault Ste. Marie, in the use of the waters flowing over such lands, subject to the requirements of navigation in boundary waters and of navigation canals, and without prejudice to the existing right of the United States and Canada, each to use the waters of the St. Mary's River, within its own territory; and further, that nothing in this treaty shall be construed to interfere with the drainage of wet, swamp, and overflowed lands into streams flowing into boundary waters, and also that this declaration shall be deemed to have equal force and effect as the treaty itself and to form an integral part thereto.

The exchange of ratifications then took place in the usual form.

In witness whereof, they have signed the present Protocol of Exchange and have affixed their seals thereto.

DONE at Washington this 5th day of May, one thousand nine hundred and ten.

PHILANDER C KNOX

[SEAL]

JAMES BRYCE

[SEAL]

LAWS OF THE DOMINION OF CANADA

LEGISLATION ENACTED BY THE PARLIAMENT OF THE DOMINION  
FOR THE PURPOSE OF CARRYING INTO EFFECT THE PROVISIONS  
OF THE TREATY OF JANUARY 11, 1909, CREATING THE INTER-  
NATIONAL JOINT COMMISSION.

[1-2 George V.]

CHAP. 28—AN ACT Relating to the establishment and expenses of the International Joint Commission under the waterways treaty of January the eleventh, nineteen hundred and nine.

[Assented to 19 May, 1911.]

[Amended 1914 Ch 5. 4-5 Geo V.]

[Amended 1952 Ch 43. 1 Elizabeth II.]

[Amended 1963 Ch 41. 12 Elizabeth II.]

His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

1. The treaty relating to the boundary waters and to questions arising along the boundary between Canada and the United States made between His Majesty and the said United States, signed at Washington the eleventh day of January, one thousand nine hundred and nine, and the protocol of the fifth day of May, one thousand nine hundred and ten, in the schedule to this act, are hereby confirmed and sanctioned.

2. The laws of Canada and of the several Provinces thereof are hereby amended and altered so as to permit, authorize, and sanction the performance of the obligations undertaken by His Majesty in and under the said treaty; and so as to sanction, confer, and impose the various rights, duties and disabilities intended by the said treaty to be conferred or imposed or to exist within Canada.

3. Any interference with or diversion from their natural channel of any waters in Canada, which in their natural channels would flow across the boundary between Canada and the United States or into boundary waters (as defined in the said treaty) resulting in any injury on the United States side of the boundary, shall give the same rights and entitle the injured parties to the same legal remedies as if such injury took place in that part of Canada where such diversion or interference occurs; but this section shall not apply to cases existing on the eleventh day of January, one thousand nine hundred and nine, or to cases expressly covered by special agreement between His Majesty and the Government of the United States.

4. The exchequer court of Canada shall have jurisdiction at the suit of any injured party or person claiming under this act in all cases in which it is sought to enforce or determine as against any person any right or obligation arising or claimed under or by virtue of this act.

5. The International Joint Commission, when appointed and constituted pursuant to the said treaty shall have power, when holding joint sessions in

Canada, to take evidence on oath and to compel the attendance of witnesses by application to a judge of a superior court of the Province within which such session is held, and such judge is hereby authorized and directed to make all orders and issue all processes necessary and appropriate to that end.

6. (1) The members of the Canadian Section of the Commission shall be paid such salaries as are fixed by the Governor in Council, but the salary of the Chairman shall not exceed twenty thousand dollars per annum and the salary of each of the other members shall not exceed twelve thousand dollars per annum.

(2) A Secretary of the Canadian section of the Commission and such other officers, clerks and employees as are required for the purposes of this Act may be employed under the provisions of the Civil Service Act.

7. All expenses incurred in carrying out the provisions of this Act and the said Treaty shall be paid out of money appropriated by Parliament for the purpose.

8. This Act shall be administered by the Secretary of State for External Affairs.

APPENDIX 2

International Gauging Stations in U.S.A. and in Canada



## ACTIVE INTERNATIONAL GAUGING STATIONS

APPENDIX 2  
DECEMBER 1984

U.S. STA. NO.	CANADA STA. NO.	STATION NAME	PROVINCE/ STATE			LATS	LONGS	CANADA NOTE NO. OR REFERENCE	DATE	U.S.A. NOTE NO. OR REFERENCE		DATE
			STATE	LATS	LONGS					DATE	OR REFERENCE	
01021000	01AR005	St. Croix River at Baring	NB/ME*	450812	0671905	letter	June 24, 1959	letter	May 29, 1959			
01018500	01AR004	St. Croix River at Vanceboro	NB/ME*	453408	0672547	letter	Nov. 14, 1957	letter	Oct. 21, 1957			
01013500	01AE001	Fish River near Fort Kent	NB/ME*	471414	0683456		(in process)		(in process)			
01014000	01AD002	Saint John River below Fish River, at Fort Kent	NB/ME*	471527	0683535	295	Oct. 19, 1951	174	Jan. 23, 1952			
01011500	01AD003	St. Francis River at outlet of Glasier Lake	*NB/ME	471225	0685725	295	Oct. 19, 1951	174	Jan. 23, 1952			
01129300	020E018	Hall (Rivière) Près D'East Hereford	*PQ/NH	450241	0712954	217	June 28, 1949	311	Dec. 29, 1949			
	020E012	Memphremagog (Lac) à Magog	*PQ/VT	451601	0720938							
04010500	02AA001	Pigeon River at Middle Falls, near Grand Portage	ON/MN*	480044	0893658	10	Feb. 15, 1935	436	April 1, 1935			
05127500	05PA012	Basswood River near Winton	ON/MN*	480457	0913909	10	Feb. 15, 1935	436	April 1, 1935			
05128000	05PA006	Namakan River at outlet of Lac La Croix	*ON/MN	482114	0921301	10	Feb. 15, 1935	436	April 1, 1935			
05129400	05PB007	Rainy Lake near Fort Frances	*ON/MN	483830	0932000	10	Feb. 15, 1935	436	April 1, 1935			
05133500	05PC018	Rainy River at Manitou Rapids	ON/MN*	483804	0935447	10	Feb. 15, 1935	436	April 1, 1935			
05140520	05PD001	Lake of the Woods at Warroad	ON/MN*	485415	0951857	letter(?)	June 2, 1978	letter(?)	May 10, 1978			
05112000	050D030	Roseau River below State Ditch 51, near Caribou	MB/MN*	485854	0962746		Nov. 28, 1928					
05102500	050C001	Red River of the North at Emerson	*MB/ND	490030	0971240	10	Feb. 15, 1935	436	April 1, 1935			

## ACTIVE INTERNATIONAL GAUGING STATIONS

APPENDIX 2  
DECEMBER 1984

U.S. STA. NO.	CANADA STA. NO.	STATION NAME	PROVINCE/ STATE			LATS	LONGS	CANADA NOTE NO. OR REFERENCE	U.S.A. NOTE NO. OR REFERENCE			DATE	
05100000	050C004	Pembina River at Neche	MB/ND*	485920	0973305	253	July 25,	1949	177	July 12,	1949		
05099300	050B007	Pembina River near Windygates	*MB/ND	490153	0981640	67	Feb. 6,	1962		April 5,	1962		
05099150	050B021	Mowbray Creek near Mowbray	*MB/ND	490000	0982715	294	June 22,	1979		June 27,	1979		
05099100	050B016	Snowflake Creek near Snowflake	*MB/ND	490117	0983613	67	Feb. 6,	1962		April 5,	1962		
05098800	050B031	Cypress Creek near Sarles	MB/ND*	485635	0985705						1961		
05098700	050A005	Hidden Island Coulee near Hansboro	MB/ND*	485710	0992535						1961		
05124000	05NF012	Souris River near Westhope	MB/ND*	485947	1005729	10	Feb. 15,	1935	436	April 1,	1935		
05114000	05ND007	Souris River near Sherwood	SK/ND*	485924	1015728	10	Feb. 15,	1935	436	April 1,	1935		
05113800	05NB021	Short Creek near Roche Percee	*SK/ND	490142	1025100	letter	April 28,	1960	letter	May 11,	1960		
05113600	05NB027	Long Creek near Noonan	SK/ND*	485952	1030434	letter	April 28,	1960	letter	May 11,	1960		
05113360	05NA003	Long Creek at Western Crossing of International Boundary	*SK/ND	490001	1032108	letter	April 28,	1960	letter	May 11,	1960		
06181995	11AF005	Beaver Creek at International Boundary	SK/MT*	485959	1050206	letter	April 28,	1977	pending				
06178500	11AE003	East Poplar River at International Boundary	SK/MT*	485958	1052432	56	May 26,	1930	788	July 25,	1930		
06178000	11AE008	Poplar River at International Boundary	SK/MT*	485925	1054146	56	May 26,	1930	788	July 25,	1930		
06164000	11AC041	Frenchman River at International Boundary	*SK/MT	490000	1071806	IJC ORDER	Oct. 4,	1921	IJC ORDER	Oct. 4,	1921		
06162500	11AC054	Newton Lake Main Canal near Val Marie	*SK/MT	491818	1074805	IJC APPROVED	Oct.		1946	IJC		Oct.	1946
06163000	11AC056	Newton Lake near Val Marie	*SK/MT	491812	1074820	IJC APPROVED	Oct.		1946	IJC		Oct.	1946
06163050	11AC062	Frenchman River below Newton Lake, near Val Marie	*SK/MT	491807	1074820	IJC APPROVED	Oct.		1946	IJC APPROVED		Oct.	1946
06161300	11AC066	Huff Lake Pumping Canal near Val Marie	*SK/MT	492220	1075305	IJC APPROVED	Aug. 9,	1963	IJC APPROVED	Aug. 9,	1963		

## ACTIVE INTERNATIONAL GAUGING STATIONS

APPENDIX 2  
DECEMBER 1984

U.S. STA. NO.	CANADA STA. NO.	STATION NAME	PROVINCE/ STATE			LATS	LONGS	CANADA NOTE NO. OR REFERENCE	DATE	U.S.A. NOTE NO. OR REFERENCE		DATE
06161500	11AC065	Huff Lake Gravity Canal near Val Marie	*SK/MT	492210	1075306	LETTER	July 16, 1953	LETTER	July 16, 1953			
06162000	11AC063	Huff Lake near Val Marie	*SK/MT	492216	1075307	IJC APPROVED	Oct. 1946	IJC APPROVED	Oct. 1946			
06159500	11AC001	Frenchman River below Eastend Reservoir near Eastend	*SK/MT	493054	1085016	IJC APPROVED		1946	IJC APPROVED	?	1946	
06158500	11AC052	Eastend Canal at Eastend	*SK/MT	493021	1085054	IJC APPROVED		1946	IJC APPROVED	?	1946	
06159000	11AC055	Eastend Reservoir at Eastend	*SK/MT	493026	1085108	IJC APPROVED		1946	IJC APPROVED	?	1946	
06151000	11AB075	Lyons Creek at International Boundary	*SK/MT	490017	1091348	AGREED BY LETTER ?		1927	AGREED BY LETTER ?	?	1927	
06157500	11AC060	Cypress Lake East Outflow Canal near Vidora	*SK/MT	492910	1092110	IJC APPROVED		1946	IJC APPROVED	?	1946	
06156500	11AC064	Belanger Creek Diversion Canal near Vidora	*SK/MT	492939	1092154	IJC APPROVED		1946	IJC APPROVED	?	1946	
06157000	11AC037	Cypress Lake near Vidora	*SK/MT	492851	1092344	IJC APPROVED		1946	IJC APPROVED	?	1946	
06149500	11AB027	Battle Creek at International Boundary	*SK/MT	490007	1092518	IJC ORDER	Oct. 4, 1921	IJC ORDER	Oct. 4, 1921			
06149300	11AB044	McKinnon Ditch near Consul	*SK/MT	492000	1092940	IJC APPROVED	Aug. 9, 1963	IJC APPROVED	Aug. 9, 1963			
06149200	11AB058	Richardson Ditch near Consul	*SK/MT	492150	1093212	IJC APPROVED	Aug. 9, 1963	IJC APPROVED	Aug. 9, 1963			
06149400	11AB018	Nashlyn Canal near Consul	*SK/MT	491357	1093327	IJC APPROVED	Aug. 9, 1963	IJC APPROVED	Aug. 9, 1963			
06149000	11AB077	Cypress Lake West Outflow Canal near West Plains	*SK/MT	492814	1093518	IJC	July 4, 1946	IJC	Aug. 9, 1963			
06149100	11AB084	Vidora Ditch near Consul	*SK/MT	492727	1093530	APPROVED			APPROVED			
06148700	11AB085	Cypress Lake West Inflow canal drain near Oxarat	*SK/MT	492825	1093638	IJC APPROVED	Aug. 9, 1963	IJC APPROVED	Aug. 9, 1963			

## ACTIVE INTERNATIONAL GAUGING STATIONS

APPENDIX 2  
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U.S. STA. NO.	CANADA STA. NO.	STATION NAME	PROVINCE/ STATE	LATS	LONGS	CANADA NOTE NO. OR REFERENCE	U.S.A. NOTE NO. OR REFERENCE	DATE	
06148500	11AB078	Cypress Lake West Inflow Canal near West Plains	*SK/MT	492818	1093708	IJC APPROVED	July 4, 1946		
06145500	11AB083	Lodge Creek below McRae Creek at International Boundary	*SK/MT	490019	1094302	IJC ORDER	Oct. 4, 1921	IJC ORDER Oct. 4, 1921	
06147950	11AB102	Gaff Ditch near Merryflat	*SK/MT	492605	1095007	IJC APPROVED	April 18, 1972	1972	
06144270	11AB060	Spangler Ditch near Govenlock	*SK/MT	490916	1095458	IJC APPROVED	Nov. 7, 1966	IJC APPROVED Nov. 7, 1966	
06144260	11AB089	Altawan Reservoir near Govenlock	*SK/MT	491000	1095500	IJC APPROVED	Nov. 7, 1966	IJC APPROVED Nov. 7, 1966	
06144395	11AB001	Middle Creek below Middle Creek Reservoir near Govenlock	*SK/MT	492444	1095506			1972	
06144360	11AB080	Middle Creek Reservoir near Battle Creek	*SK/MT	492420	1095901	IJC APPROVED	Nov. 7, 1966	IJC APPROVED Nov. 7, 1966	
06144350	11AB009	Middle Creek near Saskatchewan Boundary	*AB/MT	492530	1100308	IJC APPROVED	Aug. 9, 1963	IJC APPROVED Aug. 9, 1963	
06136000	11AA027	Sage Creek at International Boundary	*AB/MT	490014	1101122	x 295	Oct. 19, 1951	174	May 6, 1952
06135500	11AA026	Sage Creek at Q Ranch, near Wildhorse	*AB/MT	490629	1101323	x 295	Oct. 19, 1951	174	May 6, 1952
06135000	11AA031	Milk River at Eastern Crossing of International Boundary	AB/MT*	485903	1102810	IJC ORDER	Oct. 4, 1921	IJC ORDER Oct. 4, 1921	
06134500	11AA005	Milk River at Milk River	*AB/MT	490837	1120444	Boundary Waters	1909	Boundary Waters 1909	
06133000	11AA025	Milk River at Western Crossing of International Boundary	*AB/MT	490027	1123242	IJC ORDER	Oct. 4, 1921	IJC ORDER Oct. 4, 1921	
06134000	11AA001	North Milk River near International Boundary	*AB/MT	490119	1125816	IJC ORDER	Oct. 4, 1921	IJC ORDER Oct. 4, 1921	

## ACTIVE INTERNATIONAL GAUGING STATIONS

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U.S. STA. NO.	CANADA STA. NO.	STATION NAME	PROVINCE/ STATE	LATS	LONGS	CANADA NOTE NO. OR REFERENCE	DATE	U.S.A. NOTE NO. OR REFERENCE	DATE
06133500	11AA032	North Fork Milk River above St. Mary Canal, near Browning	AB/MT*	485815	1130319	B. Waters Treaty	1909	B. Waters Treaty	1909
06132200	11AA033	South Fork Milk River near Babb	AB/MT*	484514	1131000	IJC APPROVED	Aug. 9, 1963	IJC APPROVED	Aug. 9, 1963
05020500	05AE027	St. Mary River at International Boundary	*AB/MT	490012	1131848	IJC ORDER	Oct. 4, 1921	IJC ORDER	Oct. 4, 1921
05018500	05AE029	St. Mary Canal at St. Mary Crossing, near Babb	AB/MT*	485650	1132228	B. Waters Treaty	1909	B. Waters Treaty	1909
05015500	05AE036	Lake Sherburne at Sherburne	AB/MT*	484942	1133116	IJC letter	Dec. 7, 1945	IJC letter	Dec. 7, 1945
05010700	05AD017	Mountain View Irrigation District Canal	*AB/MT	490600	1134130	316	Dec. 15, 1948	306	Oct. 6, 1984
05011000	05AD005	Belly River near Mountain View	*AB/MT	490600	1134148	316	Dec. 15, 1948	306	Oct. 6, 1948
05013000	05AD003	Waterton River near Waterton Park	*AB/MT	490650	1135020	155	May 6, 1949	159	June 27, 1949
12355000	08NP001	Flathead River at Flathead	*BC/MT	490002	1142835	56	May 26, 1930	788	July 25, 1930
12306500	08NH006	Moyie River at Eastport	BC/ID*	485958	1161043	56	May 26, 1930	788	July 25, 1930
12318500	08NH031	Kootenai River near Copeland	BC/ID*	485418	1162407	56	May 26, 1930	788	July 25, 1930
12322000	08NH021	Kootenai River at Porthill	BC/ID*	490000	1163010	56	May 26, 1930	788	July 25, 1930
12321500	08NH032	Boundary Creek near Porthill	BC/ID*	485950	1163405	56	May 26, 1930	788	July 25, 1930
12322500	08NH067	Kootenay Lake at Kuskonook	*BC/ID	491756	1163931	204	Oct. 15, 1940	219	Dec. 9, 1940
12398600	08NE010	Pend Oreille River at International Boundary	BC/WA*	485956	1172109	56	May 26, 1930	788	July 25, 1930
12399500	08NE058	Columbia River at International Boundary	BC/WA*	490003	1173742	194	Dec. 24, 1938	858	Dec. 24? 1938
12323000	08NE049	Columbia River at Birchbank	*BC/WA	491040	1174259	56	May 26, 1930	788	July 25, 1930

## ACTIVE INTERNATIONAL GAUGING STATIONS

APPENDIX 2  
DECEMBER 1984

U.S. STA. NO.	CANADA		PROVINCE/ STATE	LATS	LONGS	CANADA			U.S.A.		
	STA. NO.	STATION NAME				NOTE NO. OR REFERENCE	DATE	NOTE NO. OR REFERENCE	DATE		
12404500	08NN012	Kettle River near Laurier	BC/WA*	485904	1181255	56	May 26, 1930	788	July 25, 1930		
12401500	08NN013	Kettle River near Ferry	BC/WA*	485853	1184555	56	May 26, 1930	788	July 25, 1930		
12439400	08NM132	Okanagan River at Zosel Millpond, at Oroville	BC/WA*	485555	1192505				IJC Order	Sept. 12, 1946	
12439500	08NM127	Okanagan River at Oroville	BC/WA*	485551	1192509	56	May 26, 1930	788	July 25, 1930		
12439150	08NM131	Okanagan River at Bridge Street at Oroville	BC/WA*	485620	1192536				IJC Order	Sept. 12, 1946	
12439000	08NM073	Osoyoos Lake near Oroville	BC/WA*	485724	1192618	56	May 26, 1930	788	July 25, 1930		
12438700	08NM085	Okanagan River near Oliver	*BC/WA	490653	1193350	56	May 26, 1930	788	July 25, 1930		
12442500	08NL022	Similkameen River near Nighthawk	BC/WA*	485905	1193702	56	May 26, 1930	788	July 25, 1930		
12175000	08PA009	Ross Reservoir near Newhalem	BC/WA*	484358	1210402	x 250	Oct. 22, 1954	55	Oct. 1, 1954		
12170600	08PA004	Skagit River at International Boundary near Hope	*BC/WA	490001	1210415	x 250	Oct. 22, 1954	55	Oct. 1, 1955		
15024800	08CF003	Stikine River near Wrangell, Alaska	BC/AK*	564207	1320828	422	Sept. 8, 1983	none	Sept. 15, 1983		
15388950	09FD001	Porcupine River at Old Crow, Yukon Territory	*YK/AK	673350	1395300	422	Sept. 8, 1983	none	Sept. 15, 1983		
15356000	09ED001	Yukon River at Eagle, Alaska	YK/AK*	644722	1411152	422	Sept. 8, 1983	none	Sept. 15, 1983		

## APPENDIX 2

## ANNEX A

GREAT LAKES, CONNECTING CHANNELS, AND ST. LAWRENCE RIVER  
ACTIVE MONITORING STATIONS IN CANADA

STATION NO.	STATION NAME	LATS	LONGS
<u>ST. LAWRENCE RIVER</u>			
02MC016	Saint Laurent (Fleuve) à Coteau Landing, Québec	451511	0741241
02MC023	St. Lawrence River at Summerstown, Ontario	450335	0743313
02MC022	St. Lawrence River Below Cornwall Canal, Ontario	450055	0744238
02MC002	St. Lawrence River at Cornwall, Ontario	450021	0744743
02MB009	St. Lawrence River at Iroquois Island (Below), Ont.	445012	0751837
02MB008	St. Lawrence River at Iroquois Island (Above), Ont.	444920	0751914
<u>LAKE ONTARIO</u>			
02HM008	Lake Ontario at Kingston, Ontario	441303	0763103
02HD015	Lake Ontario at Cobourg, Ontario	435728	0780954
02HA018	Lake Ontario at Port Weller, Ontario	431412	0791312
02HC048	Lake Ontario at Toronto, Ontario	433838	0792250
<u>NIAGARA RIVER</u>			
02HA003	Niagara River at Queenston, Ontario	430925	0790250
<u>LAKE ERIE</u>			
02HA017	Lake Erie at Port Colborne, Ontario	425226	0791512
02GC027	Lake Erie at Port Stanley, Ontario	423932	0811248
<u>LAKE ST. CLAIR</u>			
02GH005	Lake St. Clair at Belle River, Ontario	421749	0824237
<u>ST. CLAIR RIVER</u>			
02GG010	St. Clair River at Point Edward, Ontario	425927	0822517
02GG011	St. Clair River at Port Lambton, Ontario	423933	0823025

## APPENDIX 2

## ANNEX A

GREAT LAKES, CONNECTING CHANNELS, AND ST. LAWRENCE RIVER  
ACTIVE MONITORING STATIONS IN CANADA

STATION NO.	STATION NAME	LATS	LONGS
<u>LAKE HURON</u>			
02FE012	Lake Huron at Goderich, Ontario	434445	0814344
02CA006	Lake Huron at Thessalon, Ontario	461511	0833307
<u>ST. MARYS RIVER</u>			
02CA005	St. Marys River at Sault Ste. Marie (Below), Ont.	463047	0842041
02BF011	St. Marys River at Sault Ste. Marie (Above), Ont.	463049	0842220
<u>LAKE SUPERIOR</u>			
02BD004	Lake Superior at Michipicoten Harbour, Ontario	475744	0845402
02AB018	Lake Superior at Thunder Bay, Ontario	482434	0891301

NOTE: The stations listed above are those related to activities of the International Joint Commission and to the management of international waters. For a complete listing of all gauging stations in Canada pertaining to the Great Lakes, connecting channels and the St. Lawrence River, please refer to the latest edition of Surface Water Data - Reference Index - CANADA, published by Water Survey of Canada, Water Resources Branch, Inland Waters Directorate, Environment Canada.

## APPENDIX 2

## ANNEX B

GREAT LAKES, CONNECTING CHANNELS, AND ST. LAWRENCE RIVER  
ACTIVE MONITORING STATIONS IN THE U.S.A.

STATION NO.	LOCATION	LATS	LONGS
<u>ST. LAWRENCE RIVER</u>			
1030	Ogdensburg, New York	444210	752940
<u>LAKE ONTARIO</u>			
2030	OSWEGO, NEW YORK	432751	763042
1058	Rochester, New York	431610	773734
<u>LAKE ERIE</u>			
3063	CLEVELAND, OHIO	413227	813808
3085	Toledo, Ohio	414136	832820
<u>DETROIT RIVER</u>			
4020	Gibraltar, Michigan	420530	831110
4030	Wyandotte, Michigan	421212	830850
4036	Fort Wayne, Detroit, Michigan	421753	830534
4049	Windmill Point, Detroit, Michigan	422126	825545
<u>LAKE ST. CLAIR</u>			
4052	ST. CLAIR SHORES, MICHIGAN	422824	825245
<u>ST. CLAIR RIVER</u>			
4070	Algonac, Michigan	423715	823137
4080	St. Clair S.P., St. Clair, Michigan	424845	822809
4084	Marysville, Michigan	425422	822758
4087	Dry Dock, Port Huron, Michigan	425643	822637
4090	Mouth of the Black River, Port Huron, MI	425825	822516
4096	Dunn Paper Company, Port Huron, MI	430012	822520
4098	Fort Gratiot, Port Huron, Michigan	430023	822521

## APPENDIX 2

## ANNEX B

GREAT LAKES, CONNECTING CHANNELS, AND ST. LAWRENCE RIVER  
ACTIVE MONITORING STATIONS IN THE U.S.A.

STATION NO.	LOCATION	LATS	LONGS
<u>LAKE HURON</u>			
5014	HARBOR BEACH, MICHIGAN	435045	823838
5080	Mackinaw City, Michigan	454640	844310
<u>LAKE MICHIGAN</u>			
7023	Ludington, Michigan	435648	862630
7057	Milwaukee, Wisconsin	430005	875313
<u>LAKE SUPERIOR</u>			
9004	POINT IROQUOIS, MICHIGAN	462906	843752
9016	Marquette, Michigan	463229	872326
9064	Duluth, Minnesota	964632	920534

NOTES: Locations above in CAPITAL letters are master gages.

The stations listed above are those related to activities of the International Joint Commission and to the management of international waters. For a complete listing of Great Lakes water level gages in the USA, please refer to the latest edition of Great Lakes Water Levels, U.S. Department of Commerce, National Oceanographic and Atmospheric Administration, National Ocean Survey.

APPENDIX 3

Map of Canada/U.S.A. International Gauging Stations

Please see map in pocket of this report.



APPENDIX 4

Procedural Flowcharts

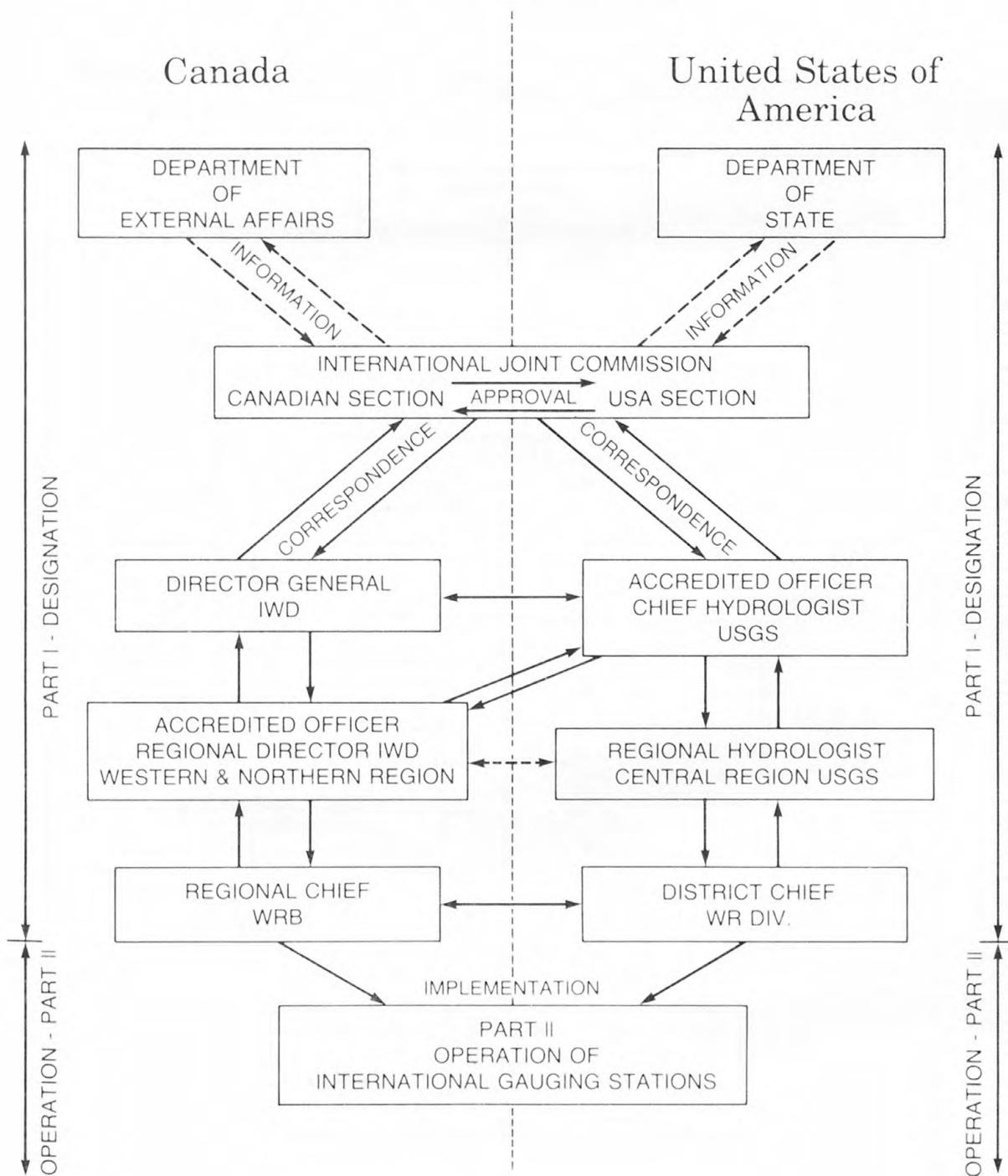


## PROCEDURAL GUIDE FOR INTERNATIONAL GAUGING STATIONS

### B. Procedures for Designating an "International Gauging Station"

#### 1. Approval in support of IJC Activities.

- (a) By Approval of the International Joint Commission  
in the St. Mary and Milk River Basins.

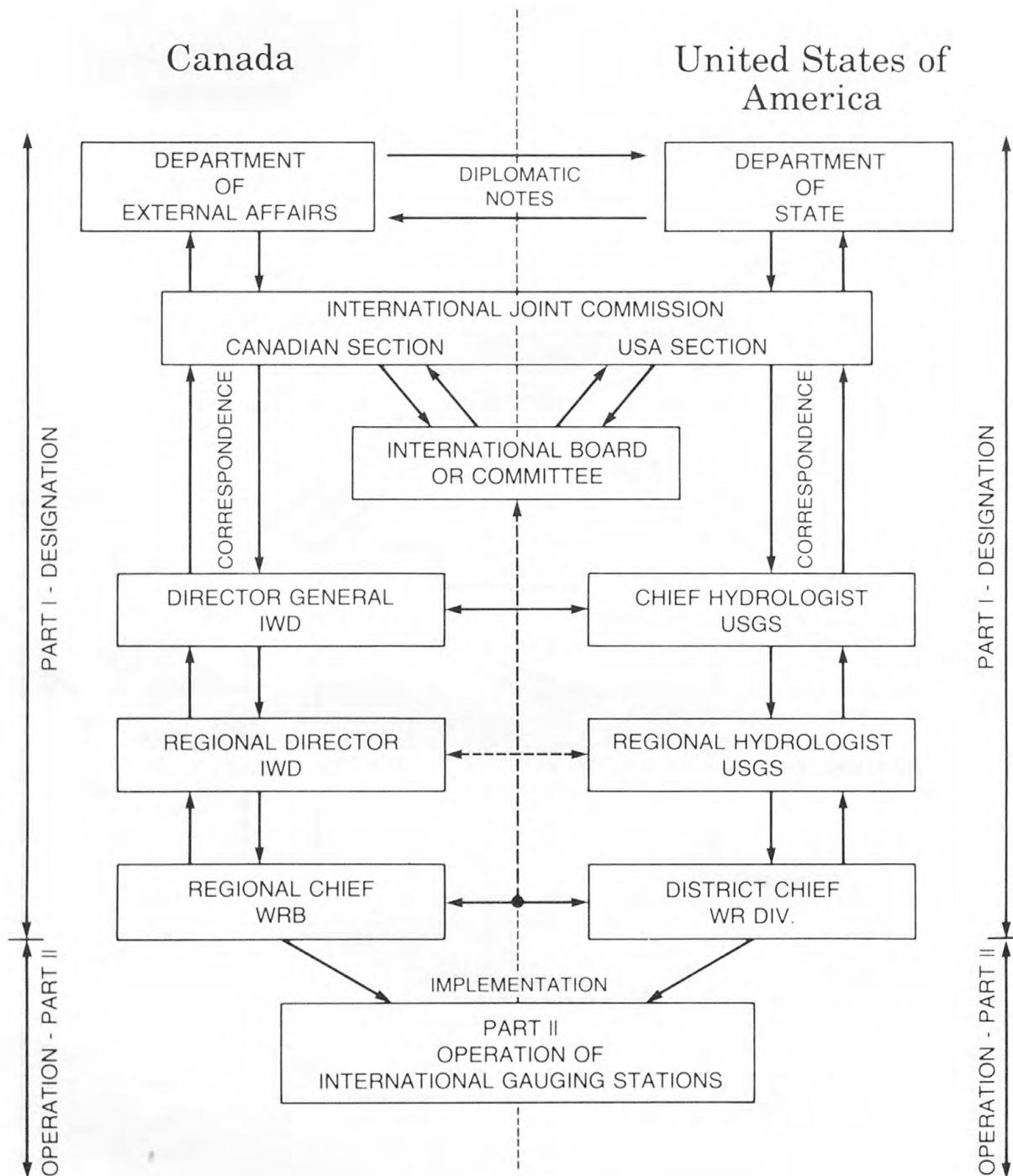


## PROCEDURAL GUIDE FOR INTERNATIONAL GAUGING STATIONS

### B. Procedures for Designating an "International Gauging Station"

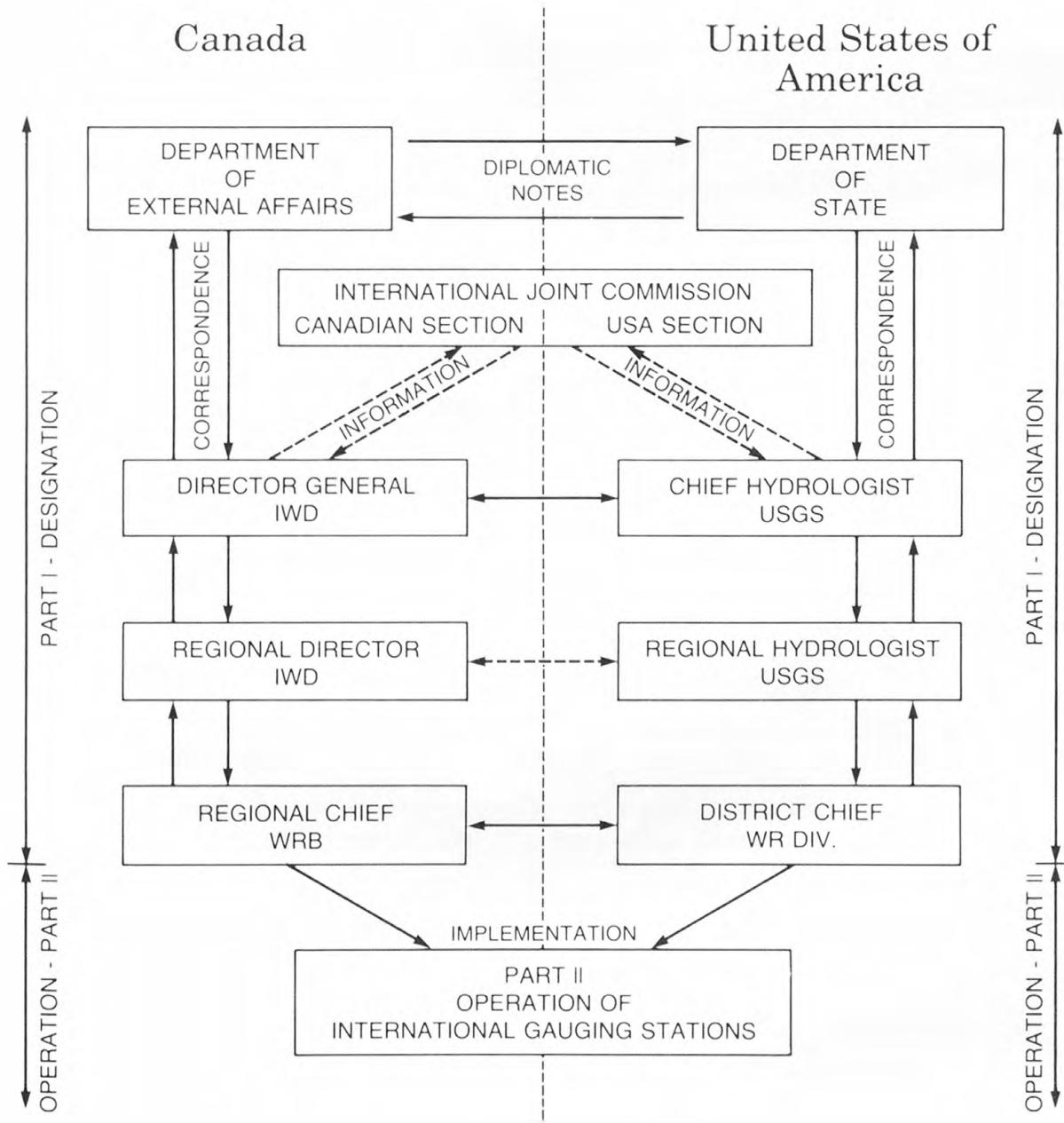
#### 1. Approval in support of IJC Activities.

##### (b) Approval in Support of IJC Boards or Investigations.



## PROCEDURAL GUIDE FOR INTERNATIONAL GAUGING STATIONS

B. Procedures for Designating an "International Gauging Station"  
 2. Bilateral Diplomatic Approval





APPENDIX 5

1921 Order of the International Joint Commission  
Respecting the St. Mary-Milk Rivers



1921 ORDER OF THE INTERNATIONAL JOINT COMMISSION

RESPECTING THE ST. MARY-MILK RIVERS

INTERNATIONAL JOINT COMMISSION

ORDER

In The Matter of the Measurement and Apportionment of the Waters of the St. Mary and Milk Rivers and Their Tributaries in the State of Montana and the Provinces of Alberta and Saskatchewan.

Whereas by Article VI of the Treaty entered into between the United States of America and His Majesty, the King of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas, Emperor of India, signed at Washington on the 11th of January, 1909, it is provided as follows:

The High Contracting Parties agree that the St. Mary and Milk Rivers and their tributaries (in the State of Montana and the Provinces of Alberta and Saskatchewan) are to be treated as one stream for the purposes of irrigation and power, and the waters thereof shall be apportioned equally between the two countries, but in making such equal apportionment more than half may be taken from one river and less than half from the other by either country so as to afford a more beneficial use to each. It is further agreed that in the division of such waters during the irrigation season, between the 1st of April and 31st of October, inclusive, annually, the United States is entitled to a prior appropriation of 500 cubic feet per second of the waters of the Milk River, or so much of such amount as constitutes three-fourths of its natural flow, and that Canada is entitled to a prior appropriation of 500 cubic feet per second of the flow of St. Mary River, or so much of such amount as constitutes three-fourths of its natural flow.

The channel of the Milk River in Canada may be used at the convenience of

the United States for the conveyance, while passing through Canadian territory, of waters diverted from the St. Mary River. The provisions of Article II of this treaty shall apply to any injury resulting to property in Canada from the conveyance of such waters through the Milk River.

The measurement and apportionment of the water to be used by each country shall from time to time be made jointly by the properly constituted reclamation officers of the United States and the properly constituted irrigation officers of His Majesty under the direction of the International Joint Commission.

And whereas the said Reclamation and Irrigation Officers have been unable to agree as to the manner in which the waters mentioned in the said Article VI should be measured and apportioned;

And whereas, before giving directions as to the measurement and apportionment of the said waters, the International Joint Commission deemed it proper to hear such representations and suggestions thereon as the Governments of the United States and Canada, the Provinces of Alberta and Saskatchewan, and the State of Montana, and as corporations and persons interested might see fit to make, and for such purposes sittings of the Commission were held at the following times and places: At the city of St. Paul, in the State of Minnesota, on the 24th, 25th, 26th, 27th, and 28th days of May, 1915; at the city of Detroit, in the State of Michigan, on the 15th, 16th, and 17th days of May, 1917; at the city of Ottawa, in the Province of Ontario, on the 3rd, 4th, and 5th days of May, 1920; at the village of Chinook, in the State of Montana, on the 15th day of September, 1921; and at the city of Lethbridge, in the Province of Alberta, on the 17th day of September, 1921, when counsel and representatives of the said Governments, corporations, and persons appeared and presented their views.

And whereas, pending final decision as to the proper method of measuring and apportioning said waters, interim orders with reference thereto have been made by the International Joint Commission from time to time, the last of such orders bearing the date of 6th day of April, 1921;

And whereas the members of the International Joint Commission have unanimously determined that the said Reclamation and Irrigation Officers should be guided in the measurement and apportionment of said waters by the directions and instructions hereinafter set forth:

IT IS THEREFORE ORDERED AND DIRECTED by the Commission in pursuance of the powers conferred by the said Article VI of the said Treaty that the Reclamation and Irrigation Officers of the United States and Canada shall, until this order is varied, modified, or withdrawn by the Commission, make jointly the measurement and apportionment of the water to be used by the United States and Canada in accordance with the following rules:

#### St. Mary River

- I. (a) During the irrigation season when the natural flow of the St. Mary River at the point where it crosses the international boundary is six hundred and sixty-six (666) cubic feet per second or less Canada shall be entitled to three-fourths and the United States to one-fourth of such flow.
- (b) During the irrigation season when the natural flow of the St. Mary River at the point where it crosses the international boundary is more than six hundred and sixty-six (666) cubic feet per second Canada shall be entitled to a prior appropriation of five hundred (500) cubic feet per second, and the excess over six hundred and sixty-six (666) cubic feet per second shall be divided equally between the two countries.

- (c) During the nonirrigation season the natural flow of the St. Mary River at the point where it crosses the international boundary shall be divided equally between the two countries.

#### Milk River

- II. (a) During the irrigation season when the natural flow of the Milk River at the point where it crosses the international boundary for the last time (commonly and hereafter called the Eastern Crossing) is six hundred and sixty-six (666) cubic feet per second or less, the United States shall be entitled to three-fourths and Canada to one-fourth of such natural flow.
- (b) During the irrigation season when the natural flow of the Milk River at the Eastern Crossing is more than six hundred and sixty-six (666) cubic feet per second the United States shall be entitled to a prior appropriation of five hundred (500) cubic feet per second and the excess over six hundred and sixty-six (666) cubic feet per second shall be divided equally between the two countries.
- (c) During the nonirrigation season the natural flow of the Milk River at the Eastern Crossing shall be divided equally between the two countries.

#### Eastern Tributaries Of Milk River

- III. The natural flow of the eastern (otherwise known as the Saskatchewan or northern) tributaries of the Milk River at the points where they cross the international boundary shall be divided equally between the two countries.

#### Waters Not Naturally Crossing The Boundary

- IV. Each country shall be apportioned such waters of the said rivers and of any tributaries thereof as rise in that country but do not naturally flow across the international boundary.

V. For the purpose of carrying out the apportionment directed in Paragraphs I, II and III hereof the said Reclamation and Irrigation Officers shall jointly take steps -

(a) To ascertain and keep a daily record of the natural flow of the St. Mary River at the international boundary, of the Milk River at the Eastern Crossing, and of the eastern tributaries of the Milk River at the international boundary by measurement in each case:

- (1) At the gauging station at the international boundary;
- (2) At all places where any of the waters which would naturally flow across the international boundary at that particular point are diverted in either country prior to such crossing;
- (3) At all places where any of the waters which would naturally flow across the international boundary at that particular point are stored, or the natural flow thereof increased or decreased prior to such crossing;

(b) To fix the amount of water to which each country is entitled in each case by applying the directions contained in paragraphs 1, 2 and 3 hereof to the total amount of the natural flow so ascertained in each case.

(c) To communicate the amount so fixed to all parties interested, so that the apportionment of the said waters may be fully carried out by both countries in accordance with the said directions.

VI. Each country may receive its share of the said waters as so fixed at such point or points as it may desire. A gauging station shall be established and maintained by the Reclamation or Irrigation Officers of the country in which any diversion, storage, increase, or decrease of the natural flow shall be made at every point where such diversion, storage, increase, or decrease takes place.

VII. International gauging stations shall be maintained at the following points:

St. Mary River near international boundary; the north branch of Milk River near international boundary; the south branch of Milk River near international boundary; Milk River at Eastern Crossing; Lodge Creek, Battle Creek, and Frenchman River, near international boundary; and gauging stations shall be established and maintained at such other points as the Commission may from time to time approve.

VIII. The said Reclamation and Irrigation Officers are hereby further authorized and directed:

- (a) To make such additional measurements and to take such further and other steps as may be necessary or advisable in order to insure the apportionment of the said waters in accordance with the directions herein set forth.
- (b) To operate the irrigation works of either country in such a manner as to facilitate the use by the other country of its share of the said waters and subject hereto to secure to the two countries the greatest beneficial use thereof.
- (c) To report to the Commission the measurements made at all international and other gauging stations established pursuant to this order.

IX. In the event of any disagreement in respect to any matter or thing to be done under this order the said Reclamation and Irrigation Officers shall report to the Commission, setting forth fully the points of difference and the facts relating thereto.

X. The said order of the Commission, dated the 6th day of April 1921, is hereby withdrawn, except with respect to the report to be furnished to the Commission thereunder.

Dated at Ottawa, Canada, this 4th day of October, 1921.

O. Gardner	C.D. Clark	W.H. Hearst
C.A. Magrath	H.A. Powell	M. A. Smith

## APPENDIX 6

### International Boards



## INTERNATIONAL BOARDS

### IJC BOARDS OF CONTROL

St. Lawrence River  
Niagara River  
Lake Superior  
St. Croix River  
Rainy Lake  
Lake of the Woods  
Souris River  
St. Mary-Milk Rivers  
Kootenay Lake  
Columbia River  
Osoyoos River  
Lake Champlain

### IJC POLLUTION ADVISORY BOARDS

St. Croix River Pollution  
Rainy River Pollution  
Red River Pollution  
Air Pollution-Boundary

### IJC GREAT LAKES WATER QUALITY AGREEMENT BOARDS

Great Lakes Water Quality  
Great Lakes Science Advisory

### IJC INVESTIGATIVE - ENGINEERING BOARDS

Lake Champlain-Richelieu River  
Souris-Red Rivers Engineering  
Lake Erie Regulation  
Great Lakes Diversions and  
    Consumptive Uses  
Poplar Water Quality  
Great Lakes Technical Information Network  
Great Lakes Levels Advisory

### OTHER INTERNATIONAL TREATY BOARDS

Lake Memphremagog  
Columbia River Permanent Engineering



## APPENDIX 7

## Correspondence Related to the Designation of International Gauging Stations



The Embassy of Canada presents its compliments to the Department of State and has the honour to refer to Water Survey of Canada gauging station number 09FD001, Porcupine River at Old Crow, the Yukon Territories; United States Geological Survey gauging station number 15024800, Stikine River near Wrangell, Alaska and United States Geological Survey gauging station number 15356000, Yukon River at Eagle, Alaska, which the Water Resources Branch of the Canadian Department of Environment, in conjunction with the United States Geological Survey, has requested be designated international gauging stations.

The designation "international gauging station" is applied to discharge and stage measurement stations on boundary waters or waterways crossing the international boundary between the United States and Canada which are operated under arrangements whereby the records collected are mutually acceptable and available to the governments of the two countries for use in boundary water studies and in the adjustment of boundary water problems'.

As has been the custom in previous cases where a stream gauging station has been given international status, the stream gauging agency of the country in which a station is located shall be responsible for the construction, operation and maintenance, but that representatives of the agency of the other country are privileged to inspect and check the operations and the computation of the record in order that it will be mutually acceptable to both countries. The data record normally is published by each agency in its official annual water data reports.

Accordingly, it is proposed that this note and the Department of State's reply will constitute an official designation of gauging station number 09FD001, Porcupine River at Old Crow, the Yukon Territories, gauging station 15024800, Stikine River near Wrangell, Alaska and gauging station number 15356000, Yukon River at Eagle, Alaska as international gauging stations effective from the date of the Department's reply.

The Embassy of Canada avails itself of this opportunity to renew to the Department of State the assurances of its highest consideration.

September 8, 1983

The Department of State refers to the Note No. 422 of the Embassy of Canada regarding the request of the United States Geological Survey and the Water Resources Branch of the Canadian Department of Environment that Water Survey of Canada gauging station number 09FD001, Porcupine River at Old Crow, the Yukon Territories; United States Geological Survey gauging station number 15024800 Stikine River near Wrangell, Alaska; and United States Geological Survey gauging station number 15356000, Yukon River at Eagle, Alaska, be designated international gauging stations.

Such designation is acceptable to the United States, and the Department concurs in the Embassy's proposal that the Embassy's Note and this Note in reply will constitute an official designation of these three gauging stations as international gauging stations, effective as of the date of this Note, and in accordance with the customary procedures for the operation of such stations as outlined in the Embassy's Note.

Department of State,

Washington, September 15, 1983.



Environment  
Canada      Environnement  
Canada

Environmental  
Conservation      Conservation de  
l'environnement

Ottawa, Ontario  
K1A 0E7

Yours truly      Your reference

October 18, 1982

Our file      Your reference

Mr. H.S. Sterling  
United States Transboundary  
Relations Division  
Bureau of United States Affairs  
Department of External Affairs  
Tower A, 5th Floor  
Lester B. Pearson Building  
125 Sussex Drive  
Ottawa, Ontario  
K1A OG2

Dear Mr. Sterling:

International Gauging Stations between Alaska-Canada

The Inland Waters Directorate requests your assistance in having the following three gauging stations along the Alaska-Canada boundary designated as international gauging stations:

09FD001      Porcupine River at Old Crow (Yukon)  
15024800      Stikine River near Wrangell (Alaska)  
15356000      Yukon River at Eagle (Alaska)

The designation of these stations as international gauging stations is required to ensure that long-term, accurate flow data are collected for meeting and evaluating existing and future legal agreements between Canada and the United States. Both the United States Geological Survey and the Water Resources Branch offices responsible for operating gauging stations along the Alaska-Canada boundary have realized the cost effectiveness and efficiency of coordinating their field monitoring activities. The following are specific concerns related to each site:

Porcupine River at Old Crow

- Major tributary to the Yukon River
- Fisheries
- Mineral exploration

.../2

Canada

In order to conserve energy  
and resources, this paper  
contains 45 per cent recycled  
post consumer fibre

A des fins de conservation  
de l'énergie et des ressources  
ce papier contient 45 pour cent  
de fibres recyclées

Stikine River near Wrangell

- Potential hydroelectric development
- Navigation
- Fisheries
- Channel morphology and estuary changes
- Change in sediment regime

Yukon River at Eagle

- Ongoing water studies
- Potential hydroelectric development
- Navigation
- Fisheries
- Mineral exploration

These designations, if approved, will ensure the stations are operated in accordance with the usual terms for international stations, i.e. each government will maintain the stations located in its country with operations and approval of station records being jointly conducted regularly by officials of both countries. The records will be equally acceptable and available to the two governments. The records will be published annually in both the Water Resources Branch "Surface Water Data" publications and in the United States Geological Survey's "Water Resources Data for Alaska".

A similar letter is being sent to the United States Department of State by the United States Geological Survey.

I would appreciate if you keep me informed of the actions you will be taking in this matter.

Yours sincerely,

Original Signed by  
*Original signé par*  
R. L. PENTLAND

N.H. James  
Director General  
Inland Waters Directorate

cc: J.E. Slater  
E.M. Clark  
G. Tofte  
B.G. Brulé  
P. Cohen  
D.G. Chance, Canadian Section, IJC



# United States Department of the Interior

GEOLOGICAL SURVEY  
RESTON, VA 22092

In Reply Refer To:  
EGS-Mail Stop 405

September 28, 1982

Mr. Robin Porter  
Office of Canadian Affairs  
Department of State  
Washington, D.C. 20520

Dear Mr. Porter:

We would like to request your assistance in designating three streamflow gaging stations in Alaska as international gaging stations. These gaging stations are the Yukon River at Eagle, Alaska, the Porcupine River at Old Crow, Yukon Territory, and the Stikine River near Wrangell, Alaska.

The designation of international gaging stations for these sites is needed to insure that long term, accurate flow data are available for meeting and evaluating existing and future legal agreements between Canada and the United States. The following are specific concerns related to each site:

### Yukon River at Eagle, Alaska

Ongoing water studies  
Potential hydroelectric development  
Navigation  
Fisheries  
Mineral exploration

### Porcupine River at Old Crow, Yukon Territory

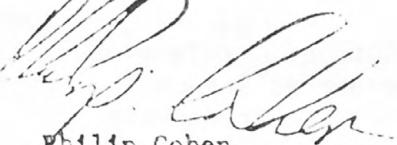
Major tributary to the Yukon River  
Fisheries  
Mineral exploration

### Stikine River near Wrangell, Alaska

Potential hydroelectric development  
Navigation  
Fisheries  
Channel morphology and estuary changes  
Changes in sediment regime

We would appreciate your assistance in designating these stations as international gaging stations and request that you advise us of the action you plan to take. A similar letter is being sent by Environment Canada to the Canadian Department of External Affairs.

Sincerely yours,



Philip Cohen  
Chief Hydrologist

Copy to: J. E. Slater, Ottawa, Canada  
District Chief, Anchorage, Alaska  
Regional Hydrologist, Western Region



Government  
of Canada

Gouvernement  
du Canada

MEMORANDUM

NOTE DE SERVICE

TO  
A

Mr. J.E. Slater, Director  
Inland Waters Directorate  
Water Resources Branch  
Environment Canada  
Ottawa, Ontario

FROM  
DE

Regional Chief  
Water Resources Branch  
Inland Waters Directorate  
Pacific & Yukon Region

SUBJECT  
OBJET

REASONS FOR DESIGNATING INTERNATIONAL STATIONS  
BETWEEN ALASKA - B.C. & Y.T.

The reason for designating three specific gauging stations as "International" was discussed at a joint meeting of U.S.G.S. and W.R.B. personnel from Alaska and the Pacific and Yukon Region respectively in Anchorage on September 16, 1982.

The stations in question are :

- 1) 09FD001 Porcupine River at Old Crow (Yukon)
- 2) 15024800 Stikine River near Wrangell (Alaska)
- 3) 15356000 Yukon River at Eagle (Alaska)

Long term accurate flow data is essential for meeting and evaluating existing agreements between Canada and United States. Existing agreements include the Boundary Waters Treaty of 1909. Also each country is bound by laws enacted by their respective federal, state and territorial governments.

Following are specific concerns related to each site:

Porcupine River at Old Crow

- Major tributary to the Yukon River
- Mineral exploration
- Fisheries

Stikine River near Wrangell

- Potential hydroelectric development
- Navigation
- Fisheries
- Change in sediment regime
- Channel morphology and estuary changes

Yukon River at Eagle

- Ongoing water studies
- Potential hydroelectric development
- Navigation
- Fisheries
- Mineral exploration

Tofte/IWD/WRB/P&Y/3606/mlc

SECURITY - CLASSIFICATION - DE SÉCURITÉ

OUR FILE/NOTRE RÉFÉRENCE

5900

YOUR FILE/VOTRE RÉFÉRENCE

DATE

September 20, 1982

Water quality data will be required to evaluate existing and future problems at these three important river basins. Procedures for sampling and analysing and presenting data results will have to receive joint agreement between U.S.G.S. and I.W.D. personnel before official designation as International Water Quality Stations.

A similar letter is being sent to Mr. P. Cohen, Chief Hydrologist, U.S.G.S. Headquarters, Reston, Virginia by Mr. P. Emery, U.S.G.S. District Chief for Alaska.



G. Tofte

Copy to:

P. Emery  
E.M. Clark



## APPENDIX 8

### U.S.A. Operating Standards



Techniques of Water Resources Investigations  
of the U.S. Geological Survey

Book	Chapter	
3	A1	General Field and Office Procedures for Indirect Discharge Measurements
3	A2	Measurement of Peak Discharge by the Slope-Area Method
3	A3	Measurement of Peak Discharge at Culverts by Indirect Methods
3	A4	Measurement of Peak Discharge at Width Contractions by Indirect Methods
3	A5	Measurement of Peak Discharge at Dams by Indirect Methods
3	A6	General Procedure for Gaging Streams
3	A7	Stage Measurements at Gaging Stations
3	A8	Discharge Measurements at Gaging Stations
3	A11	Measurement of Discharge by Moving-Boat Method
3	A13	Computation of Continuous Records of Streamflow
3	A14	Use of Flumes in Measuring Discharge
3	A15	Computation of Water-Surface Profiles in Open Channels
3	C2	Field Methods for Measurement of Fluvial Sediment
3	C3	Computation of Fluvial-Sediment Discharge
4	A1	Some Statistical Tools in Hydrology
4	A2	Frequency Curves
4	B1	Low-Flow Investigations
4	B2	Storage Analyses for Water Supply
4	B3	Regional Analyses of Streamflow Characteristics
5	C1	Laboratory Theory and Methods for Sediment Analysis
8	A2	Installation and Service Manual for U.S. Geological Survey Manometers
8	B2	Calibration and Maintenance of Vertical-Axis Type Current Meters



The following table gives the  
hydrodynamic sediment transport rates computed, according to equations (1) and (2),  
Survey of Canada bathymetric data, 1:250,000 scale  
standard depth of 100 fms. The sediment transport rates are given in  $\text{tonnes/ha yr}$ .

#### APPENDIX 9

#### Canada National Standards



CANADA  
NATIONAL STANDARDS

The term "National Standards" refers to the manner in which hydrometric and sediment survey data are observed, recorded, and computed, according to procedures and accuracy described in Water Survey of Canada manuals as well as other recognized procedural standards. Data that meet these standards are suitable for official publication and distribution to the user.

NATIONAL STANDARDS

The complete list of National Standards is updated periodically to include latest additions or revisions to existing material.

<u>FIELD</u>	(a) Hydrometric Field Manual - Levelling, 1984
<u>MANUALS</u>	(b) Hydrometric Field Manual - Measurement of Stage, 1982
	(c) Hydrometric Field Manual - Measurement of Discharge, 1981
	(d) Hydrometric Field Manual - Moving Boat Method, 1984
	(e) Hydrometric Field Manual - Fluorometric Techniques (in preparation)
	(f) Telemark Manual, 1971
	(g) A Guide to Gauging Station Inspection, 1984
	(h) Safety Guide - Construction and Operation of Stream-Gauging Cableways, 1984
	(i) Hydrometric Equipment Handbook, 1984 - Auxiliary Document
	(j) Servo-Manometer Gauge Troubleshooting Handbook, 1981 - Auxiliary Document
	(k) A Guide for Users of Data Telemetry Systems - Auxiliary Document.

CANADA

OFFICE (a) Manual of Hydrometric Data Computation and Publication

MANUALS Procedures, Fifth Edition, 1980

(b) Manual of Hydrometric Data Review Procedures,  
Fifth Edition, 1980

(c) HYDEX System Operations Manual, Fifth Edition, 1980

(d) Automated Hydrometric Computation Procedures, 1977

(e) Automated Procedures for Area, Length and Point Location  
Computations, Third Edition, 1981

(f) SAVE System Operations Manual, Second Edition, 1981

(g) FLOW File Operations Manual, Fourth Edition, 1983

(h) LEVELS File Operations Manual, Second Edition, 1981

(i) PEAKS File Operations Manual, Second Edition, 1981

(j) Supplying Hydrometric and Sediment Data to Users, Second  
Edition, 1980

(k) Publication Procedures for Surface Water Data Reference  
Index, Second Edition, 1981

(l) Publication Procedures for Surface Water Data,  
Second Edition, 1981

(m) Publication Procedures for the Historical Streamflow  
Summary, Second Edition, 1981

(n) Publication Procedures for the Historical Water Levels  
Summary, First Edition, 1981

(o) Automated Thermograph Computations, First Edition, 1980

(p) MEASUREMENTS File Operations Manual, First Edition, 1984

(q) Methods for the Estimation of Hydrometric Data,  
First Edition, 1984

CANADA

- (r) Procedural Guide for International Gauging Stations, 1985
- (s) Stage-Discharge Relationships (in preparation)
- (t) Winter Computations (in preparation)

SEDIMENT (a) Office Procedures for Sediment Data Computations, 1983

MANUALS (b) SEDEX System Operations Manual, Second Edition, 1983

(c) Sediment Data Files Operations Manual, 1984

(d) Automated Suspended Sediment Computations, 1978

(e) Automated Suspended Sediment Pump Sampling,  
First Edition, 1979

(f) Publication Procedures for Sediment Data, 1979

(g) Laboratory Procedure for Sediment Analysis,  
First Edition, 1984

INTERNATIONAL (a) Dilution Methods for Measurement of Steady Flow -

STANDARDS Constant Rate Injection Method (555/I)

ORGANIZATION (b) Dilution Methods for Measurement of Steady Flow -

(ISO) Integration (Sudden Injection) Method (555/II)

STANDARDS (c) Constant Rate Injection Method and Interaction Method  
using Radioactive Tracers (555/II)

(d) Velocity-Area Methods (748)

(e) Vocabulary of Terms and Symbols (bilingual), (772)

(f) Slope-Area Method (1070)

(g) Collection of Data for Determination of Errors in  
Measurement (1088)

1985-03

CANADA

- (h) Establishment and Operation of a Gauging Station (1100/I)
- (i) Determination of the Stage-Discharge Relation (1100/II)
- (j) Thin Plate Weirs (1438/I)
- (k) Measurement of Flow in Tidal Channels (2425)
- (l) Cup-Type and Propeller-Type Current Meters (2537)
- (m) Sounding and Suspension Equipment (3454)
- (n) Calibration of Current Meters in Straight Open Tanks (3455)
- (o) Functional Requirements and Characteristics of Suspended Sediment Load Samplers (3716)
- (p) Free Overfall Weirs of Finite Crest Width-Rectangular Broad-Crested Weirs (3846)
- (q) End-Depth Method for Estimation of Flow in Rectangular Channels with Free Overfall (3847)
- (r) Flumes (4359)
- (s) Triangular Profile Weirs (4360)
- (t) Methods for Measurement of Suspended Sediment (4363)
- (u) Bed Material Sampling (4364)
- (v) Echo Sounders for Water Depth Measurements (4366)
- (w) Moving Boat Method (4369)
- (x) Water Level Measuring Devices (4373)
- (y) Round Nose Horizontal Crest Weirs (4374)
- (z) Cableway Systems for Stream Gauging (4375)
- (aa) Flat-V Weirs (4377)

CANADA

- (bb) Estimation of Uncertainty of a Flow-Rate Measurement (5168)
- (cc) Investigation of Total Error in Measurement of Flow by Velocity Area Methods (Technical Report) (7178)

Draft International Standards

- (a) Sediment in Streams and Canals - Determination of Concentration, Particle Size Distribution, and Relative Density (4365)
- (b) End Depth Method in Non-Rectangular Channels (4371)
- (c) Measurement of Discharge by Ultrasonic Method (6416)
- (d) Ultrasonic Velocity Meters (6418)
- (e) Hydrometric Telemetry - General (6419/1)
- (f) Position Fixing for Hydrometric Boats (6420)
- (g) Methods for Measurement of Sedimentation in Reservoirs (6421)
- (h) Assessment of Uncertainty in Calibration and Use of Flow Measuring Devices (7066)

Draft Proposals

- (a) Hydrometric Telemetry - Methods of Specification (6419/11)
- (b) Selection of Flow Gauging Structures
- (c) Short Throated Flumes

CANADA

- (d) Measurements Under Ice Cover
- (e) V-Shaped Broad Crested weirs
- (f) Electromagnetic Methods

Canadian Standards Association Publications

- (a) CSA Standard CAN3-Z234.1-79,  
Canadian Metric Practice Guide
- (b) CSA Standard CAN3-Z2234.2-76,  
The International System of Units (SI)
- (c) CSA Standard CAN3-Z234.4, All-Numeric Dates and Times
- (d) CSA Special Publication Z351-1978,  
Glossary of Metric Units

Where these documents do not fully cover all aspects of WSC work, as for example in the sediment survey field work, they will be supplemented by the USGS Series of "Techniques of Water-Resources Investigations" or the World Meteorological Organization's Guide to Hydrometeorological Practices and Technical Regulations - Hydrology.

All manuals are under continuing review and revision.



## APPENDIX 10

Conversion Factors, SI to Imperial (inch-pound) Units



### Conversion Factors

The following list of often-used conversions of measure gives the relationship between imperial (yard/pound) units and the International System of Units (SI) (metric), and includes other convenient equivalents of measure.\*

1 inch	= 2.54 cm (centimetres)
1 centimetre	= 0.393 700 8 in. (inches)
1 foot	= 0.304 8 m (metres)
1 metre	= 3.280 840 ft. (feet)
1 yard	= 0.914 4 m (metres)
1 metre	= 1.093 613 yd. (yards)
1 statute mile	= 1.609 344 km (kilometres)
1 kilometre	= 0.621 371 2 mi. (miles)
1 square mile	= 2.589 988 km <sup>2</sup> (square kilometres)
1 square kilometre	= 0.386 102 2 mi. <sup>2</sup> (square miles)
1 hectare	= 10 000 m <sup>2</sup> (square metres)
1 square kilometre	= 100 ha (hectares)
1 acre	= 0.404 685 6 ha (hectares)
1 hectare	= 2.471 054 ac. (acres)
1 acre-foot	= 1.233 5 dam <sup>3</sup> (cubic decametres)
1 cubic decametre	= 0.810 701 2 ac.-ft. (acre-feet)
1 cubic foot per second	= 0.028 317 m <sup>3</sup> /s (cubic metre per second)
1 cubic metre per second	= 35.315 cfs (cubic feet per second)
1 imperial gallon	= 4.546 09 L (litres)
1 imperial gallon	= 1.200 950 U.S. gallons
1 U.S. gallon	= 0.832 673 9 imperial gallons
1 U.S. gallon	= 3.785 306 L (litres)
1 litre	= 0.219 975 3 imperial gallons
1 litre	= 0.264 179 4 U.S. gallons
1 imperial gallon per minute	= 0.075 768 2 L/s (litres per second)
1 U.S. gallon per minute	= 0.063 090 2 L/s (litres per second)
1 million imperial gallons/day	= 4.546 090 m <sup>3</sup> /d (cubic metres per day)
1 million U.S. gallons/day	= 3.785 412 m <sup>3</sup> /d (cubic metres per day)
1 ounce	= 28.349 523 125 g (grams)
1 gram	= 0.035 273 96 oz. (ounces)
1 pound	= 0.453 592 37 kg (kilograms)
1 kilogram	= 2.204 623 lbs. (pounds)
degrees Celsius	= 5/9 (degrees Fahrenheit - 32)
degrees Fahrenheit	= 9/5 (degrees Celsius + 32)

\* Applicable listings conform to the Canadian Metric Practice Guide  
CAN3-Z234.1-79



APPENDIX 11

Correspondence in Canada Related to  
Border Crossing Permits



FORM LETTER FOR  
BORDER CROSSING PERMIT

Ottawa, Ontario  
K1A 0E7

November 29, 1983

TO ALL CANADIAN IMMIGRATION OFFICERS AND  
COLLECTORS OF CUSTOMS AND EXCISE

This letter will introduce a member of the United States Geological Survey, whose duties will require him/her to cross the International Boundary on numerous occasions during the year to participate in studies of joint interest to Canada and the United States.

It would be appreciated if you would extend border crossing facilities, including the import of official correspondence and/or survey equipment for water quantity analysis without detention or assessment of duty and taxes during 1984 to the bearer of this letter, whose signature appears below for identification purposes.

N.H. James  
Director General  
Inland Waters Directorate

\_\_\_\_\_  
Signature



BORDER CROSSING CORRESPONDENCE

United States Department of the Interior

GEOLOGICAL SURVEY  
RESTON, VA. 22092

In Reply Refer To:  
EGS-Mail Stop 405

MAY 5 1982

Mr. N. H. James  
Director General  
Inland Waters Directorate  
Environment Canada  
Ottawa, Ontario, Canada K1A 0E7

Dear Mr. James:

In our letter of December 16, 1981, we requested Canadian Custom Certificates and Border Crossing Permits for designated Geological Survey personnel for the 1982 calendar year. Our New York District office is beginning work on a new project which will involve travel into Canada. At this time, we would like to request additional permits for Edward J. Koszalka, Donald J. Searles, and James E. Paschal.

Your attention to this matter is appreciated.

Sincerely yours,

Dallas L. Peck  
Director

MAY 14 1982

B5/99



Government  
of Canada      Gouvernement  
du Canada

MEMORANDUM

NOTE DE SERVICE

BORDER CROSSING CORRESPONDENCE

Regional Director  
Inland Waters Directorate  
Western and Northern Region

Director  
Water Resources Branch  
Ottawa

FROM  
DE

TERZI/WRB/WS/C/7-1934/m1

SECURITY CLASSIFICATION DE SECURITE

OUR FILE NOTRE REFERENCE

1325

YOUR FILE VOTRE REFERENCE

DATE

March 24, 1982

SUBJECT  
OBJET

Access to Canada of USGS Staff for monitoring river discharge  
in compliance with the Boundary Waters Treaty Act

Upon receiving your memorandum of 1982-02-16 we approached officials in the Recruitment and Selection Branch of Employment and Immigration Canada (EIC) to obtain their opinion on how best to solve the problem of access to Canada by USGS staff to perform their duties under the Boundary Waters Treaty Act.

A copy of the letter to Dr. Mountain from Mr. J.C. Best advising him of the action taken by Employment and Immigration is attached. Also attached is a copy of a memorandum to all Regional Officials of the Commission advising them that ports of entry staff are to be instructed to grant temporary entry to USGS personnel who are identified by a letter of introduction from the Director General of IWD. It is also important to note that WRB staff are identified in this memorandum as having to travel to the United States to perform their duties in relation to the Treaty.

I suggest that you retain a copy of this information on a permanent file for future reference, since this is the only time in the history of the Treaty that an action of this nature has been necessary.

I am informing the IJC of this transaction by separate letter.

J.E. Slater

Attachments

cc: N.H. James

Regional Directors, Ontario, Atlantic, Quebec, Pacific & Yukon  
P.I. Campbell

c.c. Official file (H-10)  
Executive Dir. (I&DP)(H-10)  
Dir. Gen. (R&S)(H-9)  
Nicole Cullen's Diary file (H-9)

IMM/R&S/GERLITZ/ht

BORDER CROSSING AUTHORITY

MAR 19 1982

Dr. W.B. Mountain  
Assistant Deputy Minister  
Environmental Conservation Service  
Environment Canada

Dear Dr. Mountain:

I am writing further to conversations and an exchange of correspondence between members of your Inland Waters Directorate and our Recruitment and Selection Branch concerning the entry of United States Geological Survey (USGS) staff to Canada for the purpose of carrying out inspection and field trips to international gauging stations pursuant to the Boundary Waters Treaty and arrangements established by the International Joint Commission pertaining to the treaty.

It seems that certain USGS staff have recently been detained at the U.S.-Canada border by officials of Employment and Immigration Canada for issuance of temporary employment authorizations. Officials of your service have pointed out that these delays at Canadian ports of entry and the restrictions imposed on the period of stay authorized by Canadian immigration officers could impede the ability of USGS personnel to complete their work in a timely manner.

After discussing the matter with my officials, I have written to regional Directors General and Executive Directors of the Commission instructing that a letter of introduction along the lines of the one attached, signed by Mr. N.H. James on December 5, 1980, be considered sufficient documentation to permit entry of USGS staff members coming to Canada to carry out their duties under the Boundary Waters Treaty. I am pleased to attach a copy of the relevant memorandum to regional officers, which I trust will resolve the difficulties experienced in this area.

Yours sincerely,

ORIGINAL SIGNED BY

*J.C. Best*

J.C. Best,  
Executive Director,  
Immigration & Demographic Policy

ISSUANCE OF ORDERSTO BORDER CROSSING INSPECTORSOffice of the Executive Director  
Immigration and Demographic PolicyBureau du Directeur exécutif  
Politique relative à l'immigration et à la population**Memorandum - Note de service**

**TO:** Tous les Directeurs généraux/Directeurs exécutifs de région  
**POUR:** All Regional Directors General/Executive Directors

**MAR 19 1982**

**FROM ORIGINE:** Le Directeur exécutif, Politique relative à l'immigration et à la population  
Executive Director, Immigration and Demographic Policy

**SUBJECT OBJET:** Admission des employés du United States Geological Survey (USGS) aux termes du Traité des eaux limitrophes  
Entry of United States Geological Survey (USGS) staff under the Boundary Waters Treaty

DATE

La Direction générale des eaux intérieures d'Environnement Canada nous a récemment signalé les difficultés qu'ont certains employés du United States Geological Survey (USGS), qui doivent souvent séjourner au Canada pour de courtes périodes afin d'inspecter les stations de jaugeage internationales dans le cadre du Traité des eaux limitrophes internationales. Il semble que des agents de la Commission ont retenu à la frontière des membres du personnel de l'USGS pour leur délivrer des permis de travail temporaires (IMM 1102).

Les employés de l'USGS entrent au Canada, tout comme les fonctionnaires de la Direction des ressources en eau d'Environnement Canada aux Etats-Unis, afin d'y exercer leurs fonctions aux termes du Traité du 11 janvier 1909 relatif aux eaux limitrophes connu sous le nom de Traité des eaux limitrophes internationales. La Loi du traité des eaux limitrophes internationales de 1914 dispose que les employés en question doivent être autorisés à mesurer et à répartir conjointement les eaux dont les Etats-Unis et le Canada auront besoin. C'est pourquoi le

The Inland Waters Directorate of Environment Canada has recently brought to my attention the difficulties being experienced by certain staff attached to the United States Geological Survey (USGS), who must enter Canada at frequent intervals during the year, often for short periods, for the purpose of carrying out field and inspection trips to international gauging stations in the context of the International Boundary Waters Treaty. Apparently, some members of the USGS staff have been detained at the U.S. - Canada border by Commission officials for issuance of temporary employment authorizations (IMM 1102).

USGS officers enter Canada, just as officers of the Water Resources Branch, Environment Canada enter the United States, in order to fulfill their responsibilities under the terms of the treaty of January 11, 1909 relating to boundary waters, known as the International Boundary Waters Treaty. The International Boundary Waters Treaty Act of 1914 provides that these officers shall be authorized to make joint measurement and apportionment of the water to be used by the United States and Canada. USGS officers have thus historically been granted temporary entry to Canada for the discharge of their

personnel du l'USGS a toujours été autorisé à entrer au Canada pour s'acquitter de ses fonctions aux termes du Traité précité sans devoir obtenir un permis de travail, sur présentation d'une lettre d'introduction signée par le titulaire et le Directeur général des Eaux intérieures d'Environnement Canada. Ci-joint copie d'une lettre type d'introduction.

Par conséquent, nous vous demandons de bien vouloir donner instruction aux agents aux points d'entrée de votre région de continuer à faciliter l'admission du personnel de l'USGS porteur d'une lettre d'introduction, semblable à celle en annexe, qui viennent au Canada pour un motif légitime en application du Traité précité. Le R19(1)(a) s'applique à ces personnes, c'est-à-dire qu'elles sont dispensées du permis de travail.

functions under the treaty without employment authorizations, upon presentation of a letter of introduction signed by the Director General, Inland Waters Directorate, Environment Canada and by the bearer. A copy of a sample letter of introduction is attached.

The purpose of this memorandum is, therefore, to request that you instruct ports of entry in your region to continue this procedure of facilitating the temporary entry of USGS staff bearing letters of introduction along the lines of the one attached and coming to carry out their duties under the Boundary Waters Treaty. Such persons may be considered to fall under the provisions of R19(1)(a), thus being exempt from the requirement to obtain an employment authorization.



J.C. Best



Environment  
Canada

Environnement  
Canada

Environmental  
Conservation

Conservation de  
l'environnement

BEARER LETTER

Your file      Votre référence

Ottawa, Ontario  
K1A 0E7

Our file      Notre référence

December 5, 1980

TO ALL CANADIAN IMMIGRATION OFFICERS AND  
COLLECTORS OF CUSTOMS AND EXCISE

This letter will introduce Joe A. Moreland a member of the United States Geological Survey, Helena, Montana whose duties will require him/her to cross the International Boundary on numerous occasions during the year to participate in studies of joint interest to Canada and the United States.

It would be appreciated if you would extend border crossing facilities during 1981 to the bearer of this letter, whose signature appears below for identification purposes.

N.H. James  
Director General  
Inland Waters Directorate

Signature

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