

No. 11982

**UNITED STATES OF AMERICA
and
CANADA**

**Agreement on Great Lakes Water Quality (with annexes and
attachments). Signed at Ottawa on 15 April 1972**

Authentic texts : English and French.

Registered by the United States of America on 26 September 1972.

**ÉTATS-UNIS D'AMÉRIQUE
et
CANADA**

**Accord relatif à la qualité de l'eau dans les Grands Lacs (avec
annexes et pièces jointes). Signé à Ottawa le 15 avril 1972**

Textes authentiques : anglais et français.

Enregistré par les États-Unis d'Amérique le 26 septembre 1972.

AGREEMENT¹ BETWEEN THE UNITED STATES OF AMERICA AND CANADA ON GREAT LAKES WATER QUALITY

The Government of the United States of America and the Government of Canada,

Determined to restore and enhance water quality in the Great Lakes System;

Seriously concerned about the grave deterioration of water quality on each side of the boundary to an extent that is causing injury to health and property on the other side, as described in the 1970 report of the International Joint Commission on Pollution of Lake Erie, Lake Ontario and the International Section of the St. Lawrence River;

Intent upon preventing further pollution of the Great Lakes System owing to continuing population growth, resource development and increasing use of water;

Reaffirming in a spirit of friendship and cooperation the rights and obligations of both countries under the Boundary Waters Treaty signed on January 11, 1909,² and in particular their obligation not to pollute boundary waters;

Recognizing the rights of each country in the use of its Great Lakes waters;

Satisfied that the 1970 report of the International Joint Commission provides a sound basis for new and more effective cooperative actions to restore and enhance water quality in the Great Lakes System;

Convinced that the best means to achieve improved water quality in the Great Lakes System is through the adoption of common objectives, the development and implementation of cooperative programs and other measures, and the assignment of special responsibilities and functions to the International Joint Commission;

Have agreed as follows :

¹ Came into force on 15 April 1972 by signature, in accordance with article XIII.

² De Martens, *Nouveau Recueil général de Traités*, troisième série, tome IV, p. 208.

Article I

DEFINITIONS

As used in this Agreement :

(a) " Boundary waters of the Great Lakes System " or " boundary waters " means boundary waters, as defined in the Boundary Waters Treaty, that are within the Great Lakes System;

(b) " Boundary Waters Treaty " means the Treaty between the United States and Great Britain Relating to Boundary Waters, and Questions Arising Between the United States and Canada, signed at Washington on January 11, 1909;

(c) " Compatible regulations " means regulations no less restrictive than agreed principles;

(d) " Great Lakes System " means all of the streams, rivers, lakes and other bodies of water that are within the drainage basin of the St. Lawrence River at or upstream from the point at which this river becomes the international boundary between Canada and the United States;

(e) " Harmful quantity " means any quantity of a substance that if discharged into receiving waters would be inconsistent with the achievement of the water quality objectives;

(f) " Hazardous polluting substance " means any element or compound identified by the Parties which, when discharged in any quantity into or upon receiving waters or adjoining shorelines, presents an imminent and substantial danger to public health or welfare; for this purpose, " public health or welfare " encompasses all factors affecting the health and welfare of man including but not limited to human health, and the conservation and protection of fish, shellfish, wildlife, public and private property, shorelines and beaches;

(g) " International Joint Commission " or " Commission " means the International Joint Commission established by the Boundary Waters Treaty;

(h) " Phosphorus " means the element phosphorus present as a constituent of various organic and inorganic complexes and compounds;

(i) " Specific water quality objective " means the level of a substance or physical effect that the Parties agree, after investigation, to recognize as a maximum or minimum desired limit for a defined body of water or portion thereof, taking into account the beneficial uses of the water that the Parties desire to secure and protect;

(j) " State and Provincial Governments " means the Governments of the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin, and the Government of the Province of Ontario;

(k) “Tributary waters of the Great Lakes System” or “tributary waters” means all the waters of the Great Lakes System that are not boundary waters;

(l) “Water quality objectives” means the general water quality objectives adopted pursuant to article II of this Agreement and the specific water quality objectives adopted pursuant to article III of this Agreement.

Article II

GENERAL WATER QUALITY OBJECTIVES

The following general water quality objectives for the boundary waters of the Great Lakes System are adopted. These waters should be :

- (a) Free from substances that enter the waters as a result of human activity and that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life or waterfowl;
- (b) Free from floating debris, oil, scum and other floating materials entering the waters as a result of human activity in amounts sufficient to be unsightly or deleterious;
- (c) Free from materials entering the waters as a result of human activity producing colour, odour or other conditions in such a degree as to create a nuisance;
- (d) Free from substances entering the waters as a result of human activity in concentrations that are toxic or harmful to human, animal or aquatic life;
- (e) Free from nutrients entering the waters as a result of human activity in concentrations that create nuisance growths of aquatic weeds and algae.

Article III

SPECIFIC WATER QUALITY OBJECTIVES

1. The specific water quality objectives for the boundary waters of the Great Lakes System set forth in annex I are adopted.

2. The specific water quality objectives may be modified and additional specific water quality objectives for the boundary waters of the Great Lakes System or for particular sections thereof may be adopted by the Parties in accordance with the provisions of articles IX and XII of this Agreement.

3. The specific water quality objectives adopted pursuant to this article represent the minimum desired levels of water quality in the boundary waters of the Great Lakes System and are not intended to preclude the establishment of more stringent requirements.

4. Notwithstanding the adoption of specific water quality objectives, all reasonable and practicable measures shall be taken to maintain the levels of water quality existing at the date of entry into force of this Agreement in those areas of the boundary waters of the Great Lakes System where such levels exceed the specific water quality objectives.

Article IV

STANDARDS AND OTHER REGULATORY REQUIREMENTS

Water quality standards and other regulatory requirements of the Parties shall be consistent with the achievement of the water quality objectives. The Parties shall use their best efforts to ensure that water quality standards and other regulatory requirements of the State and Provincial Governments shall similarly be consistent with the achievement of the water quality objectives.

Article V

PROGRAMS AND OTHER MEASURES

1. Programs and other measures directed toward the achievement of the water quality objectives shall be developed and implemented as soon as practicable in accordance with legislation in the two countries. Unless otherwise agreed, such programs and other measures shall be either completed or in process of implementation by December 31, 1975. They shall include the following :

- (a) *Pollution from Municipal Sources.* Programs for the abatement and control of discharges of municipal sewage into the Great Lakes System including :
- (i) construction and operation in all municipalities having sewer systems of waste treatment facilities providing levels of treatment consistent with the achievement of the water quality objectives, taking into account the effects of waste from other sources;
 - (ii) provision of financial resources to assist prompt construction of needed facilities;
 - (iii) establishment of requirements for construction and operating standards for facilities;

- (iv) measures to find practical solutions for reducing pollution from overflows of combined storm and sanitary sewers;
- (v) monitoring, surveillance and enforcement activities necessary to ensure compliance with the foregoing programs and measures.
- (b) *Pollution from Industrial Sources.* Programs for the abatement and control of pollution from industrial sources, including :
 - (i) establishment of waste treatment or control requirements for all industrial plants discharging waste into the Great Lakes System, to provide levels of treatment or reduction of inputs of substances and effects consistent with the achievement of the water quality objectives, taking into account the effects of waste from other sources;
 - (ii) requirements for the substantial elimination of discharges into the Great Lakes System of mercury and other toxic heavy metals;
 - (iii) requirements for the substantial elimination of discharges into the Great Lakes System of toxic persistent organic contaminants;
 - (iv) requirements for the control of thermal discharges;
 - (v) measures to control the discharge of radioactive materials into the Great Lakes System;
 - (vi) monitoring, surveillance and enforcement activities necessary to ensure compliance with the foregoing requirements and measures.
- (c) *Eutrophication.* Measures for the control of inputs of phosphorus and other nutrients including programs to reduce phosphorus inputs, in accordance with the provisions of annex 2.
- (d) *Pollution from Agricultural, Forestry and Other Land Use Activities.* Measures for the abatement and control of pollution from agricultural, forestry and other land use activities, including :
 - (i) measures for the control of pest control products with a view to limiting inputs into the Great Lakes System, including regulations to ensure that pest control products judged to have long term deleterious effects on the quality of water or its biotic components shall be used only as authorized by the responsible regulatory agencies, and that pest control products shall not be applied directly to water except in accordance with the requirements of the responsible regulatory agencies;
 - (ii) measures for the abatement and control of pollution from animal husbandry operations, including encouragement to appropriate regulatory agencies to adopt regulations governing site selection and disposal of liquid and solid wastes in order to minimize the loss of pollutants to receiving waters;

- (iii) measures governing the disposal of solid wastes and contributing to the achievement of the water quality objectives, including encouragement to appropriate regulatory agencies to ensure proper location of land fill and land dumping sites and regulations governing the disposal on land of hazardous polluting substances;
 - (iv) advisory programs and measures that serve to abate and control inputs of nutrients and sediments into receiving waters from agricultural, forestry and other land use activities.
- (e) *Pollution from Shipping Activities.* Measures for the abatement and control of pollution from shipping sources, including :
- (i) programs and compatible regulations for vessel design, construction and operation, to prevent discharges of harmful quantities of oil and hazardous polluting substances, in accordance with the principles set forth in annex 3;
 - (ii) compatible regulations for the control of vessel waste discharges in accordance with the principles set forth in annex 4;
 - (iii) such compatible regulations to abate and control pollution from shipping sources as may be deemed desirable in the light of studies to be undertaken in accordance with the terms of references set forth in annex 5;
 - (iv) programs for the safe and efficient handling of shipboard generated wastes, including oil, hazardous polluting substances, garbage, waste water and sewage, and their subsequent disposal, including any necessary compatible regulations relating to the type, quantity and capacity of shore reception facilities;
 - (v) establishment of a coordinated system for the surveillance and enforcement of regulations dealing with the abatement and control of pollution from shipping activities.
- (f) *Pollution from Dredging Activities.* Measures for the abatement and control of pollution from dredging activities, including the development of criteria for the identification of polluted dredged spoil and compatible programs for disposal of polluted dredged spoil, which shall be considered in the light of the review provided for in annex 6; pending the development of compatible criteria and programs, dredging operations shall be conducted in a manner that will minimize adverse effects on the environment.
- (g) *Pollution from Onshore and Offshore Facilities.* Measures for the abatement and control of pollution from onshore and offshore facilities, including programs and compatible regulations for the prevention of discharges of

harmful quantities of oil and hazardous polluting substances, in accordance with the principles set forth in annex 7.

- (h) *Contingency Plan.* Maintenance of a joint contingency plan for use in the event of a discharge or the imminent threat of a discharge of oil or hazardous polluting substances, in accordance with the provisions of annex 8.
- (i) *Hazardous Polluting Substances.* Consultation within one year from the date of entry into force of this Agreement for the purpose of developing an Annex identifying hazardous polluting substances; the Parties shall further consult from time to time for the purpose of identifying harmful quantities of these substances and of reviewing the definition of “harmful quantity of oil” set forth in annexes 3 and 7.

2. The Parties shall develop and implement such additional programs as they jointly decide are necessary and desirable for the achievement of the water quality objectives.

3. The programs and other measures provided for in this Article shall be designed to abate and control pollution of tributary waters where necessary or desirable for the achievement of the water quality objectives for the boundary waters of the Great Lakes System.

Article VI

POWERS, RESPONSIBILITIES AND FUNCTIONS OF THE INTERNATIONAL JOINT COMMISSION

1. The International Joint Commission shall assist in the implementation of this Agreement. Accordingly, the Commission is hereby given, pursuant to Article IX of the Boundary Waters Treaty, the following responsibilities:

- (a) Collation, analysis and dissemination of data and information supplied by the Parties and State and Provincial Governments relating to the quality of the boundary waters of the Great Lakes System and to pollution that enters the boundary waters from tributary waters;
- (b) Collection, analysis and dissemination of data and information concerning the water quality objectives and the operation and effectiveness of the programs and other measures established pursuant to this Agreement;
- (c) Tendering of advice and recommendations to the Parties and to the State and Provincial Governments on problems of the quality of the boundary waters of the Great Lakes System, including specific recommendations concerning the water quality objectives, legislation, standards and other regulatory requirements, programs and other measures, and intergovernmental agreements relating to the quality of these waters;

- (d) Provision of assistance in the coordination of the joint activities envisaged by this Agreement, including such matters as contingency planning and consultation on special situations;
- (e) Provision of assistance in the coordination of Great Lakes water quality research, including identification of objectives for research activities, tendering of advice and recommendations concerning research to the Parties and to the State and Provincial Governments and dissemination of information concerning research to interested persons and agencies;
- (f) Investigations of such subjects related to Great Lakes water quality as the Parties may from time to time refer to it. At the time of signature of this Agreement, the Parties are requesting the Commission to enquire into and report to them upon :
 - (i) pollution of the boundary waters of the Great Lakes System from agricultural, forestry and other land use activities, in accordance with the terms of reference attached to this Agreement;
 - (ii) actions needed to preserve and enhance the quality of the waters of Lake Huron and Lake Superior in accordance with the terms of reference attached to this Agreement.

2. In the discharge of its responsibilities under this Agreement, the Commission may exercise all of the powers conferred upon it by the Boundary Waters Treaty and by any legislation passed pursuant thereto, including the power to conduct public hearings and to compel the testimony of witnesses and the production of documents.

3. The Commission shall make a report to the Parties and to the State and Provincial Governments no less frequently than annually concerning progress toward the achievement of the water quality objectives. This report shall include an assessment of the effectiveness of the programs and other measures undertaken pursuant to this Agreement, and advice and recommendations. The Commission may at any time make special reports to the Parties, to the State and Provincial Governments and to the public concerning any problem of water quality in the Great Lakes System.

4. The Commission may in its discretion publish any report, statement or other document prepared by it in the discharge of its functions under this Agreement.

5. The Commission shall have authority to verify independently the data and other information submitted by the Parties and by the State and Provincial Governments through such tests or other means as appear appropriate to it, consistent with the Boundary Waters Treaty and with applicable legislation.

Article VII

JOINT INSTITUTIONS

1. The International Joint Commission shall establish a Great Lakes Water Quality Board to assist it in the exercise of the powers and responsibilities assigned to it under this Agreement. Such Board shall be composed of an equal number of members from Canada and the United States, including representation from the Parties and from each of the State and Provincial Governments. The Commission shall also establish a Research Advisory Board in accordance with the terms of reference attached to this Agreement. The members of the Great Lakes Water Quality Board and the Research Advisory Board shall be appointed by the Commission after consultation with the appropriate government or governments concerned. In addition, the Commission shall have the authority to establish as it may deem appropriate such subordinate bodies as may be required to undertake specific tasks, as well as a regional office, which may be located in the basin of the Great Lakes System, to assist it in the discharge of its functions under this Agreement. The Commission shall also consult the Parties about the site and staffing of any regional office that might be established.

2. The Commission shall submit an annual budget of anticipated expenses to be incurred in carrying out its responsibilities under this Agreement to the Parties for approval. Each Party shall seek funds to pay one-half of the annual budget so approved, but neither Party shall be under an obligation to pay a larger amount than the other toward this budget.

Article VIII

SUBMISSION AND EXCHANGE OF INFORMATION

1. The International Joint Commission shall be given at its request any data or other information relating to the quality of the boundary waters of the Great Lakes System in accordance with procedures to be established, within three months of the entry into force of this Agreement or as soon thereafter as possible, by the Commission in consultation with the Parties and with the State and Provincial Governments.

2. The Commission shall make available to the Parties and to the State and Provincial Governments upon request all data or other information furnished to it in accordance with this Article.

3. Each Party shall make available to the other at its request any data or other information in its control relating to the quality of the waters of the Great Lakes System.

4. Notwithstanding any other provision of this Agreement, the Commission shall not release without the consent of the owner any information identified as proprietary information under the law of the place where such information has been acquired.

Article IX

CONSULTATION AND REVIEW

1. Following the receipt of each report submitted to the Parties by the International Joint Commission in accordance with paragraph 3 of article VI of this Agreement, the Parties shall consult on the recommendations contained in such report and shall consider such action as may be appropriate, including :

- (a) The modification of existing water quality objectives and the adoption of new objectives;
- (b) The modification or improvement of programs and joint measures;
- (c) The amendment of this Agreement or any annex thereto.

Additional consultations may be held at the request of either Party on any matter arising out of the implementation of this Agreement.

2. When a Party becomes aware of a special pollution problem that is of joint concern and requires an immediate response, it shall notify and consult the other Party forthwith about appropriate remedial action.

3. The Parties shall conduct a comprehensive review of the operation and effectiveness of this Agreement during the fifth year after its coming into force. Thereafter, further comprehensive reviews shall be conducted upon the request of either Party.

Article X

IMPLEMENTATION

1. The obligations undertaken in this Agreement shall be subject to the appropriation of funds in accordance with the constitutional procedures of the Parties.

2. The Parties commit themselves to seek :

- (a) The appropriation of the funds required to implement this Agreement, including the funds needed to develop and implement the programs and other measures provided for in article V, and the funds required by the International Joint Commission to carry out its responsibilities effectively;

- (b) The enactment of any additional legislation that may be necessary in order to implement the programs and other measures provided for in article V;
- (c) The cooperation of the State and Provincial Governments in all matters relating to this Agreement.

Article XI

EXISTING RIGHTS AND OBLIGATIONS

Nothing in this Agreement shall be deemed to diminish the rights and obligations of the Parties as set forth in the Boundary Waters Treaty.

Article XII

AMENDMENT

This Agreement and the annexes thereto may be amended by agreement of the Parties. The annexes may also be amended as provided therein, subject to the requirement that such amendments shall be within the scope of this Agreement.

Article XIII

ENTRY INTO FORCE AND TERMINATION

This Agreement shall enter into force upon signature by the duly authorized representatives of the Parties, and shall remain in force for a period of five years and thereafter until terminated upon twelve months' notice given in writing by one of the Parties to the other.

IN WITNESS WHEREOF, the representatives of the two Governments have signed this Agreement.

DONE in two copies at Ottawa this fifteenth day of April 1972 in English and French, each version being equally authentic.

EN FOI DE QUOI, les représentants des deux Gouvernements ont signé le présent Accord.

FAIT en double exemplaire à Ottawa le quinzième jour d'avril 1972 en anglais et en français, les deux textes faisant également foi.

[Signed — Signé]

RICHARD NIXON

[Signed — Signé]

WILLIAM P. ROGERS

For the Government of the United States of America

Pour le Gouvernement des Etats-Unis d'Amérique

[Signed — Signé]

P. E. TRUDEAU

[Signed — Signé]

MITCHELL SHARP

For the Government of Canada

Pour le Gouvernement du Canada

ANNEX 1

SPECIFIC WATER QUALITY OBJECTIVES

1. *Specific Objectives.* The specific water quality objectives for the boundary waters of the Great Lakes System are as follows :

(a) *Microbiology.* The geometric mean of not less than five samples taken over not more than a thirty-day period should not exceed 1,000/100 millilitres total coliforms, nor 200/100 millilitres fecal coliforms. Waters used for body contact recreation activities should be substantially free from bacteria, fungi, or viruses that may produce enteric disorders or eye, ear, nose, throat and skin infections or other human diseases and infections.

(b) *Dissolved Oxygen.* In the Connecting Channels and in the upper waters of the Lakes, the dissolved oxygen level should be not less than 6.0 milligrams per litre at any time; in hypolimnetic waters, it should be not less than necessary for the support of fishlife, particularly cold water species.

(c) *Total Dissolved Solids.* In Lake Erie, Lake Ontario and the International Section of the St. Lawrence River, the level of total dissolved solids should not exceed 200 milligrams per litre. In the St. Clair River, Lake St. Clair, the Detroit River and the Niagara River, the level should be consistent with maintaining the levels of total dissolved solids in Lake Erie and Lake Ontario at not to exceed 200 milligrams per litre. In the remaining boundary waters, pending further study, the level of total dissolved solids should not exceed present levels.

(d) *Taste and Odour.* Phenols and other objectionable taste and odour producing substances should be substantially absent.

(e) *pH.* Values should not be outside the range of 6.7 to 8.5.

(f) *Iron (Fe).* Levels should not exceed 0.3 milligrams per litre.

(g) *Phosphorus (P).* Concentrations should be limited to the extent necessary to prevent nuisance growths of algae, weeds and slimes that are or may become injurious to any beneficial water use.

(h) *Radioactivity.* Radioactivity should be kept at the lowest practicable levels and in any event should be controlled to the extent necessary to prevent harmful effects on health.

2. *Interim Objectives.* Until objectives for particular substances and effects in the classes described in this paragraph are further refined, the objectives for them are as follows :

(a) *Temperature.* There should be no change that would adversely affect any local or general use of these waters.

(b) *Mercury and Other Toxic Heavy Metals.* The aquatic environment should be free from substances attributable to municipal, industrial or other discharges in concentrations that are toxic or harmful to human, animal or aquatic life.

(c) *Persistent Organic Contaminants.* Persistent pest control products and other persistent organic contaminants that are toxic or harmful to human, animal or aquatic life should be substantially absent in the waters.

(d) *Settleable and Suspended Materials.* Waters should be free from substances attributable to municipal, industrial or other discharges that will settle to form putrescent or otherwise objectionable sludge deposits, or that will adversely affect aquatic life or waterfowl.

(e) *Oil, Petrochemicals and Immiscible Substances.* Waters should be free from floating debris, oil, scum and other floating materials attributable to municipal, industrial or other discharges in amounts sufficient to be unsightly or deleterious.

3. *Non-degradation.* Notwithstanding the adoption of specific water quality objectives, all reasonable and practicable measures shall be taken in accordance with paragraph 4 of article III of the Agreement to maintain the levels of water quality existing at the date of entry into force of the Agreement in those areas of the boundary waters of the Great Lakes System where such levels exceed the specific water quality objectives.

4. *Sampling Data.* The Parties agree that the determination of compliance with specific objectives shall be based on statistically valid sampling data.

5. *Mixing Zones.* The responsible regulatory agencies may designate restricted mixing zones in the vicinity of outfalls within which the specific water quality objectives shall not apply. Mixing zones shall not be considered a substitute for adequate treatment or control of discharge at their source.

6. *Localized Areas.* There will be other restricted, localized areas, such as harbours, where existing conditions such as land drainage and land use will prevent the objectives from being met at least over the short term; such areas, however, should be identified specifically and as early as possible by the responsible regulatory agencies and should be kept to a minimum. Pollution from such areas shall not contribute to the violation of the water quality objectives in the waters of the other Party. The International Joint Commission shall be notified of the identification of such localized areas, in accordance with article VIII.

7. *Consultation.* The Parties agree to consult within one year from the date of entry into force of the Agreement, for the purpose of considering :

(a) Specific water quality objectives for the following substances :

Ammonia	Copper	Oil
Arsenic	Cyanide	Organic chemicals
Barium	Fluoride	Phenols
Cadmium	Lead	Selenium
Chloride	Mercury	Sulphate
Chromium	Nickel	Zinc

(b) Refined objectives for radioactivity and temperature; for radioactivity the objective shall be considered in the light of the recommendations of the International Commission on Radiation Protection.

8. *Amendment.*

(a) The objectives adopted herein shall be kept under review and may be amended by mutual agreement of the Parties.

(b) Whenever the International Joint Commission, acting pursuant to article VI of the Agreement, shall recommend the establishment of new or modified specific water quality objectives, this annex shall be amended in accordance with such recommendation on the receipt by the Commission of a letter from each Party indicating its agreement with the recommendation.

ANNEX 2

CONTROL OF PHOSPHORUS

1. *Programs.* Programs shall be developed and implemented to reduce inputs of phosphorus to the Great Lakes System. These programs shall include :

- (a) Construction and operation of waste treatment facilities to remove phosphorus from municipal sewage;
- (b) Regulatory measures to require industrial dischargers to remove phosphorus from wastes to be discharged into the Great Lakes System;
- (c) Regulatory and advisory measures to control inputs of phosphorus through reduction of waste discharges attributable to animal husbandry operations.

In addition, programs may include regulations limiting or eliminating phosphorus from detergents sold for use within the basin of the Great Lakes System.

2. *Effluent Requirements.* The phosphorus concentrations in effluent from municipal waste treatment plants discharging in excess of one million gallons per day, and from smaller plants as required by regulatory agencies, shall not exceed a daily average of one milligram per litre into Lake Erie, Lake Ontario and the International Section of the St. Lawrence River.

3. *Industrial Discharges.* Waste treatment or control requirements for all industrial plants discharging wastes into the Great Lakes System shall be designed to achieve maximum practicable reduction of phosphorus discharges to Lake Erie, Lake Ontario and the International Section of the St. Lawrence River.

4. *Reductions for Lower Lakes.* These programs are designed to attain reductions in gross inputs of phosphorus to Lake Erie and Lake Ontario of the quantities indicated in the following tables for the years indicated.

TABLE 1

ANNUAL PHOSPHORUS LOADINGS AND REDUCTIONS IN LOADINGS TO LAKE ERIE
(including Lake St. Clair and the St. Clair and Detroit Rivers)

(Short tons per year)

	1971	1972	1973	1974	1975	1976
UNITED STATES						
Baseload	25,800	26,400	27,000	27,600	28,300	28,800
Reduction	100	5,200	9,800	15,100	16,000	17,300
Residual load	25,700	21,200	17,200	12,500	12,300	11,500
CANADA						
Baseload	3,300	3,300	3,400	3,500	3,500	3,600
Reduction	100	100	600	1,400	1,400	1,400
Residual load	3,200	3,200	2,800	2,100	2,100	2,200
Input from Lake Huron . .	2,300	2,300	2,300	2,400	2,400	2,400
TOTALS						
Baseload	31,400	32,000	32,700	33,500	34,200	34,800
Reduction	200	5,300	10,400	16,500	17,400	18,700
Residual load	31,200	26,700	22,300	17,000	16,800	16,100

TABLE 2

ANNUAL PHOSPHORUS LOADINGS AND REDUCTIONS IN LOADINGS TO LAKE ONTARIO
(including the Niagara River)

(Short tons per year)

	1971	1972	1973	1974	1975	1976
UNITED STATES						
Baseload	6,900	7,000	7,200	7,400	7,600	7,700
Reduction	—	500	500	2,100	3,800	5,100
Residual load	6,900	6,500	6,700	5,300	3,800	2,600
CANADA						
Baseload	6,700	6,900	7,000	7,000	7,100	7,200
Reduction	400	400	1,800	1,800	1,800	4,600
Residual load	6,300	6,500	5,200	5,200	5,300	2,600
Input from Lake Erie . . .	4,800	4,800	4,800	4,800	4,800	4,800
TOTALS						
Baseload	18,400	18,700	19,000	19,200	19,500	19,700
Reduction	400	900	2,300	3,900	5,600	9,700
Residual load	18,000	17,800	16,700	15,300	13,900	10,000

5. *Reservation.* The amounts shown as “residual loads” in Tables 1 and 2 above do not constitute allocations to the two countries, but represent anticipated results of municipal and industrial waste reduction and detergent phosphorus control programs.

6. *Refinement of Data.* The residual loads are based upon best available data. The Parties, in cooperation with the State and Provincial Governments and with the International Joint Commission, shall continue to refine these estimates to ensure a comparable data base. These estimates are subject to revision upon agreement by the Parties to reflect future refinement of the data.

7. *Objective of Programs.* The objective of the foregoing programs is to minimize eutrophication problems in the Great Lakes System. It is anticipated that successful implementation of these programs will accomplish the following results, which are of critical importance to the success of the joint undertaking to preserve and enhance the quality of the waters of the Great Lakes System :

- (a) Restoration of year-round aerobic conditions in the bottom waters of the central basin of Lake Erie;
- (b) Reduction in present levels of algal growth in Lake Erie;
- (c) Reduction in present levels of algal growth in Lake Ontario, including the International Section of the St. Lawrence River;
- (d) Stabilization of Lake Superior and Lake Huron in their present oligotrophic state.

It is nevertheless recognized that additional measures and programs may be required to minimize eutrophication problems in the future. Available evidence suggests that reductions in phosphorus loadings to achieve a net discharge to Lake Erie in the range of 8,000 to 11,000 tons per year may be required to bring about mesotrophic conditions in this lake.

8. *Reductions for Upper Lakes.* The Parties, in consultation with the State and Provincial Governments and with the International Joint Commission, shall within one year from the entry into force of the Agreement determine the gross reductions in inputs of phosphorus that they agree to seek for Lake Superior and Lake Huron (including the St. Marys River). Pending such agreement, such limitations on municipal and industrial phosphorus discharges as may be required by regulatory agencies to meet loading objectives or to prevent and control eutrophication problems in Lake Superior and Lake Huron shall apply. Any more comprehensive findings resulting from the study by the International Joint Commission of water quality in these lakes shall be taken into account as soon as available.

9. *Commission Recommendations.* The Parties shall take into account, as soon as available, the recommendations of the International Joint Commission made pursuant to its study of pollution from agricultural, forestry and other land use activities, in order to develop and implement appropriate programs for control of inputs of phosphorus from these sources.

10. *Monitoring.* The Parties, in cooperation with the State and Provincial Governments and with the International Joint Commission, shall continue to monitor the extent of eutrophication in the Great Lakes System and the progress being made in

reducing or preventing it. They shall consult periodically to exchange the results of research and to pursue proposals for additional programs to control eutrophication.

11. *Submission of Information.* The International Joint Commission shall be given information at least annually, in accordance with procedures established by the Commission in consultation with the Parties and with the State and Provincial Governments, concerning :

- (a) Total reductions in gross inputs of phosphorus achieved as a result of the programs implemented pursuant to this annex;
- (b) Anticipated reductions in gross inputs of phosphorus for the succeeding twelve months.

12. *Review and Modification.* In connection with the first comprehensive joint review of the operation and effectiveness of the Agreement conducted in accordance with paragraph 3 of article IX thereof, the effects of phosphorus control programs on the Great Lakes System shall be reviewed and further modifications in the programs undertaken pursuant to this annex shall be considered.

ANNEX 3

VESSEL DESIGN, CONSTRUCTION AND OPERATION

1. *Definitions.* As used in this annex :

(a) "Discharge" means the introduction of oil and hazardous polluting substances, including oily bilgewater, into receiving waters and includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting or dumping; it does not include unavoidable direct discharges of oil from a properly functioning vessel engine;

(b) "Harmful quantity of oil" means any quantity of oil that, if discharged into receiving waters, would produce a film or sheen upon, or discoloration of, the surface of the water or adjoining shoreline, or that would cause a sludge or emulsion to be deposited beneath the surface of the water or upon the adjoining shoreline;

(c) "Oily wastes" means oil and mixtures containing oil such as oily ballast, tank washing and bilge slops;

(d) "Tanker" means any vessel designed for the carriage of oil or liquid chemicals in bulk;

(e) "Vessel" means any ship, barge or other floating craft, whether or not self-propelled.

2. *Oil.* As used in this annex, "oil" refers to oil of any kind or in any form, including, but not limited to petroleum, fuel oil, oil sludge, oil refuse, and oil mixed with wastes, but does not include constituents of dredged spoil.

3. *General Principles.* Compatible regulations shall be adopted for the prevention of discharges into the Great Lakes System of harmful quantities of oil and hazardous polluting substances from vessels in accordance with the following principles :

- (a) Discharges of harmful quantities of oil or hazardous polluting substances shall be prohibited and made subject to appropriate penalties;
- (b) As soon as any person in charge has knowledge of any discharge of harmful quantities of oil or hazardous polluting substances, immediate notice of such discharge shall be given to the appropriate agency in the jurisdiction where the discharge occurs; failure to give this notice shall be made subject to appropriate penalties.

4. *Programs.* The programs and measures to be adopted for the prevention of discharges of harmful quantities of oil shall include the following :

- (a) Compatible regulations for design and construction of vessels based on the following principles :
 - (i) each tanker shall have a suitable means of containing on board cargo oil spills caused by loading or transfer operations;
 - (ii) each vessel shall have a suitable means of containing on board fuel oil spills caused by loading or transfer operations, including those from tank vents and overflow pipes;
 - (iii) each vessel shall have a capability of retaining on board oily wastes accumulated during vessel operation;
 - (iv) each vessel shall be capable of off-loading contained oily wastes to a shore facility.
- (b) Compatible regulations for vessel operating procedures based on the following principles :
 - (i) tankers shall be provided with a means for rapidly and safely stopping the flow of cargo oil during transfer operations in the event of an emergency;
 - (ii) suitable deck lighting shall be provided to illuminate all cargo and fuel handling areas if the transfer occurs at night;
 - (iii) hose assemblies used aboard vessels for oil transfer shall be suitably designed, marked and inspected to minimize the possibility of failure;
 - (iv) oil transfer, loading and off-loading systems shall be designed to minimize the possibility of failure.
- (c) Programs to train merchant vessel personnel in all functions involved in the use, handling and stowage of oil and in procedures for abatement of oil pollution.

5. *Additional Measures.* The programs and measures to be adopted for the prevention of discharges of hazardous polluting substances shall use as a guide the Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk of the Intergovernmental Maritime Consultative Organization (IMCO). Such programs and measures shall include design and construction features, operating procedures, and merchant vessel personnel qualification standards with respect to handling hazardous polluting substances and pollution abatement. In addition, the programs shall establish compatible regulations for :

- (a) Identification and placarding of vessels carrying hazardous polluting substances as well as containers and packages containing hazardous polluting substances when carried by vessels;
- (b) Identification in vessel manifests of all hazardous polluting substances carried;
- (c) Procedures for notification to responsible authorities of all hazardous polluting substances carried.

ANNEX 4

VESSEL WASTES

1. *Definitions.* As used in this annex :

(a) " Garbage " means solid galley waste, papers, rags, plastics, glass, metal, bottles, crockery, junk and similar refuse;

(b) " Sewage " means human or animal waste generated on board ship and includes wastes from water closets, urinals or hospital facilities handling fecal material;

(c) " Vessel " means any ship, barge or other floating craft, whether or not self-propelled;

(d) " Waste water " means water in combination with other substances, including ballast water and water used for washing cargo holds, but excluding water in combination with oil, hazardous polluting substances or sewage.

2. *Compatible Regulations.* The Parties shall adopt within one year from the entry into force of the Agreement regulations governing the disposal of vessel waste in the waters of the Great Lakes System in accordance with principles at least as stringent as the following :

- (a) Garbage shall not be discharged by a vessel into these waters;
- (b) Waste water shall not be discharged by a vessel into these waters in amounts or in concentrations that will be deleterious;
- (c) Every vessel operating in these waters with an installed toilet facility shall be equipped with a device or devices to contain the vessel's sewage, or to incinerate it, or to treat it to an adequate degree.

3. *Critical Use Areas.* Critical use areas of the Great Lakes System may be designated where the discharge of waste water or sewage shall be limited or prohibited.

4. *Containment Devices.* Regulations may be established requiring a device or devices to contain the sewage of pleasure craft or other classes of vessels operating in the Great Lakes System or designated areas thereof.

ANNEX 5

STUDIES OF POLLUTION FROM SHIPPING SOURCES

1. *Studies.* The Parties agree that studies of pollution problems in the Great Lakes System that arise in relation to shipping activities shall be undertaken for the purpose of strengthening their programs and other measures for the abatement and control of pollution from shipping sources. Responsibility for the coordination of these studies is assigned to the United States Coast Guard and the Canadian Ministry of Transport. Initially, these studies shall include the following subjects :

- (a) *Navigational Equipment.* Determination of minimum safe standards respecting the fitting, maintenance, testing, and use of navigational equipment for both normal and ice operations.
- (b) *Traffic Routes for Navigational Purposes.* Review of the existing informal system of traffic routes and determination of their adequacy and effectiveness; determination of the need for additional traffic routes; review of track widths, shifting of tracks, limited tracks, rules of passing, speeds, and similar matters for normal and ice operations; and identification of priorities for needed remedial measures.
- (c) *Traffic Control.* Review of existing traffic control systems and determination of their adequacy and effectiveness; determination of the need for additional traffic control systems; review of operations with respect to open waters, harbours, and channels under normal and ice conditions; and identification of priorities for needed remedial measures.
- (d) *Manning of Vessels.* Review of existing United States and Canadian competency standards to determine acceptable minimum standards; review of existing foreign competency standards to determine whether they are adequate and effective and equivalent to the United States and Canadian minimum standards; determination of the need for certificated pilots and other officers and for improvement of existing pilot certifications, for special manning regulations for towing vessels, for separate manning standards for ice operations, and for separate manning standards for vessels carrying oil and hazardous polluting substances in periods of adverse weather or in areas of high traffic density.

- (e) *Aids to Navigation Systems.* Review of the adequacy and effectiveness of existing aids to navigation systems; determination of the need for additional aids to navigation; and identification of priorities for needed remedial measures.
 - (f) *Waste Water.* Review of problems arising from the discharge of waste waters, and recommendations for reducing the deleterious effects of such discharges.
 - (g) *Sewage Treatment Systems for Vessels.* Review of current research and development of systems for the treatment of vessel sewage.
 - (h) *Loading and Unloading of Grain and Ore.* Review of pollution problems arising from these operations.
2. *Consultation.* Representatives of the United States Coast Guard and Canadian Ministry of Transport together with representatives of other concerned agencies shall meet periodically in order to :
- (a) Identify problems requiring further study;
 - (b) Apportion, as between Canada and the United States, responsibility for various aspects of the studies;
 - (c) Provide continuing interchange of information with respect to ongoing and proposed projects;
 - (d) Exchange results of completed projects.
3. *Additional Studies and Results.* The United States Coast Guard and the Canadian Ministry of Transport shall inform the International Joint Commission of any additional subjects that are being studied and of the results of all studies undertaken pursuant to this annex as they become available.

ANNEX 6

IDENTIFICATION AND DISPOSAL OF POLLUTED DREDGED SPOIL

1. *Definitions.* As used in this annex :

(a) "Dredged spoil" means the solid materials removed from the bottom of water bodies generally for the purpose of improving waterways for navigation; these materials may include mud, silt, clay, sand, rock and other solid materials that have been deposited from municipal and industrial discharges and from natural sources;

(b) "Confined area" means an area developed for the deposit of dredge spoil that precludes the return of the dredge spoil to open portions of the waterway; the area may be located in the waterway or on other upland sites and may consist of dikes, levees, bulkheads, cells or any other type structure that will retain the material;

(c) "Open water" means any part of the boundary waters of the Great Lakes System other than a confined area;

(d) "Polluted dredged spoil" means dredged spoil containing harmful quantities of oil, hazardous polluting substances or other deleterious substances as designated by the responsible regulatory agencies.

2. *Review.* Pursuant to arrangements to be made by the International Joint Commission in consultation with the Parties, a working group shall be established to undertake a review of existing dredging practices, programs, laws and regulations with the objective of developing compatible criteria for the characterization of polluted dredged spoil and recommendations for compatible programs governing the disposal of polluted dredged spoil in open water. This review shall be completed within two years from the date of entry into force of the Agreement. The working group shall conduct its study and formulate its recommendations on the basis of the following principles :

- (a) Dredging activities should be conducted in a manner that will minimize harmful environmental effects;
- (b) All reasonable and practicable measures shall be taken to ensure that dredging activities do not cause a degradation of water quality and bottom sediments;
- (c) As soon as practicable, the disposal of polluted dredged spoil in open water should be carried out in a manner consistent with the achievement of the water quality objectives, and should be phased out.

3. *Consultations.* Upon completion of the review provided for in paragraph 2 above, the Parties shall consult pursuant to article IX of the Agreement to consider and act upon the recommendations of the working group.

4. *Interim Actions.* Pending the development of compatible criteria and programs :

- (a) Dredged spoil found by the appropriate regulatory agencies to be polluted shall be disposed of in confined areas when they are available;
- (b) The responsible agencies shall continue efforts to develop sites for confined areas.

ANNEX 7

DISCHARGES FROM ONSHORE AND OFFSHORE FACILITIES

1. *Definitions.* As used in this annex :

(a) "Discharge" means the introduction of oil or hazardous polluting substances into receiving waters and includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting or dumping; it does not include continuous effluent discharges from municipal or industrial treatment facilities;

(b) "Harmful quantity of oil" means any quantity of oil that, if discharged into receiving waters, would produce a film or sheen upon, or discoloration of the surface of the water or adjoining shoreline, or that would cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shoreline;

(c) “Offshore facility” means any facility of any kind located in, on or under any water;

(d) “Onshore facility” means any facility of any kind located in, on or under, any land other than submerged land.

2. *Facilities.* The term “facility” includes motor vehicles, rolling stock, pipelines, and any other facility that is used or capable of being used for the purpose of processing, producing, storing, transferring or transporting oil or hazardous polluting substances, but excludes vessels.

3. *Oil.* As used in this annex, “oil” refers to oil of any kind or in any form, including, but not limited to petroleum, fuel oil, oil sludge, oil refuse, and oil mixed with wastes, but does not include constituents of dredged spoil.

4. *Principles.* Regulations shall be adopted for the prevention of discharges into the Great Lakes System of harmful quantities of oil and hazardous polluting substances from onshore and offshore facilities in accordance with the following principles:

(a) Discharges of harmful quantities of oil or hazardous polluting substances shall be prohibited and made subject to appropriate penalties;

(b) As soon as any person in charge has knowledge of any discharge of harmful quantities of oil or hazardous polluting substances, immediate notice of such discharge shall be given to the appropriate agency in the jurisdiction where the discharge occurs; failure to give this notice shall be made subject to appropriate penalties.

5. *Programs and Measures.* The programs and measures to be adopted shall include the following:

(a) Programs to review the design, construction, and location of both existing and new facilities for their adequacy to prevent the discharge of oil or hazardous polluting substances;

(b) Programs to review the operation, maintenance and inspection procedures of facilities for their adequacy to prevent the discharge of oil or hazardous polluting substances;

(c) Programs to train personnel to perform all functions involving the use and handling of oil and hazardous polluting substances;

(d) Programs to ensure that at each facility plans and provisions are made for appropriate equipment for the containment and clean up of spills of oil or hazardous polluting substances;

(e) Programs including compatible regulations for the identification and placarding of containers and vehicles carrying oil or hazardous polluting substances.

ANNEX 8

JOINT CONTINGENCY PLAN

1. *The Plan.* The Parties agree that the “ Joint U.S.-Canadian Oil and Hazardous Materials Pollution Contingency Plan for the Great Lakes Region ” adopted on June 10, 1971, shall be maintained in force, as amended from time to time. It shall be the responsibility of the United States Coast Guard and the Canadian Ministry of Transport to coordinate and to maintain the plan, as so amended, in written form.

2. *Purpose.* The purpose of the Plan is to provide for coordinated and integrated response to pollution incidents in the Great Lakes System by responsible federal, state, provincial and local agencies. The Plan supplements the national, provincial and regional plans of the Parties.

3. *Pollution Incidents.* (a) A pollution incident is a discharge, or an imminent threat of a discharge, of oil or any other substance, of such magnitude or significance as to require immediate response to contain, clean up or dispose of the material.

(b) The objectives of the plan in pollution incidents are :

- (i) to develop appropriate preparedness measures and effective systems for discovery and reporting the existence of a pollution incident within the area covered by the plan;
- (ii) to institute prompt measures to restrict the further spread of the pollutant;
- (iii) to provide adequate equipment to respond to pollution incidents.

4. *Funding.* Unless otherwise agreed, the costs of operations of both Parties under the Plan shall be borne by the Party in whose waters the pollution incident occurred.

5. *Amendment.* The United States Coast Guard and the Canadian Ministry of Transport are empowered to amend the Plan subject to the requirement that such amendments shall be consistent with the purpose and objectives of this annex.

TEXT OF REFERENCE TO THE INTERNATIONAL JOINT COMMISSION TO STUDY POLLUTION
IN THE GREAT LAKES SYSTEM FROM AGRICULTURAL, FORESTRY AND OTHER LAND
USE ACTIVITIES

I have the honour to inform you that the Governments of the United States of America and Canada, pursuant to article IX of the Boundary Waters Treaty of 1909, have agreed to request the International Joint Commission to conduct a study of pollution of the boundary waters of the Great Lakes System from agricultural, forestry and other land use activities, in the light of the provision of article IV of the Treaty which provides that the boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health and property on the other

side, and in the light also of the Great Lakes Water Quality Agreement signed on this date.

The Commission is requested to enquire into and report to the two Governments upon the following questions :

- (1) Are the boundary waters of the Great Lakes System being polluted by land drainage (including ground and surface runoff and sediments) from agriculture, forestry, urban and industrial land development, recreational and park land development, utility and transportation systems and natural sources?
- (2) If the answer to the foregoing question is in the affirmative, to what extent, by what causes, and in what localities is the pollution taking place?
- (3) If the Commission should find that pollution of the character just referred to is taking place, what remedial measures would, in its judgement, be most practicable and what would be the probable cost thereof?

The Commission is requested to consider the adequacy of existing programs and control measures, and the need for improvements thereto, relating to :

- (a) inputs of nutrients, pest control products, sediments, and other pollutants from the sources referred to above;
- (b) land use;
- (c) land fills, land dumping, and deep well disposal practices;
- (d) confined livestock feeding operations and other animal husbandry operations; and
- (e) pollution from other agricultural, forestry and land use sources.

In carrying out its study the Commission should identify deficiencies in technology and recommend actions for their correction.

The Commission should submit its report and recommendations to the two Governments as soon as possible and should submit reports from time to time on the progress of its investigation.

In the conduct of its investigation and otherwise in the performance of its duties under this reference, the Commission may utilize the services of qualified persons and other resources made available by the concerned agencies in Canada and the United States and should as far as possible make use of information and technical data heretofore acquired or which may become available during the course of the investigation, including information and data acquired by the Commission in the course of its investigations and surveillance activities conducted on the lower Great Lakes and in the connecting channels.

In conducting its investigation, the Commission should utilize the services of the international board structure provided for in article VII of the Great Lakes Water Quality Agreement.

TEXT OF REFERENCE TO THE INTERNATIONAL JOINT COMMISSION TO STUDY POLLUTION
PROBLEMS OF LAKE HURON AND LAKE SUPERIOR

I have the honour to inform you that the Governments of the United States of America and Canada, pursuant to article IX of the Boundary Waters Treaty of 1909, have agreed to request the International Joint Commission to conduct a study of water quality in Lake Huron and Lake Superior, in the light of the provision of article IV of the Treaty which provides that the boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health and property on the other side, and in the light also of the Great Lakes Water Quality Agreement signed on this date. This reference represents the response of the two Governments to recommendation No. 20 of the Commission in its final report dated December 9, 1970, on pollution of Lake Erie, Lake Ontario, and the International Section of the St. Lawrence River.

The Commission is requested to enquire into and to report to the two Governments upon the following questions :

- (1) Are the waters of Lake Superior and Lake Huron being polluted on either side of the boundary to an extent (a) which is causing or is likely to cause injury to health or property on the other side of the boundary; or (b) which is causing, or likely to cause a degradation of existing levels of water quality in these two lakes or in downstream portions of the Great Lakes System?
- (2) If the foregoing questions are answered in the affirmative, to what extent, by what causes, and in what localities is such pollution taking place?
- (3) If the Commission should find that pollution of the character just referred to is taking place, what remedial measures would, in its judgement, be most practicable to restore and protect the quality of the waters, and what would be the probable cost?
- (4) In the event that the Commission should find that little or no pollution of the character referred to is taking place at the present time, what preventive measures would, in its judgement, be most practicable to ensure that such pollution does not occur in the future and what would be the probable cost?

The Governments would welcome the recommendations of the Commission with respect to the general and specific water quality objectives that should be established for these lakes, and the programs and measures that are required in the two countries in order to achieve and maintain these water quality objectives.

The Commission should submit its report and recommendations to the two Governments as soon as possible and should submit reports from time to time on the progress of its investigation.

In the conduct of its investigation, the Commission is requested to include consideration of pollution entering Lake Huron and Lake Superior from tributary waters, including Lake Michigan, which affects water quality in the two lakes, and to enquire into and report on the upstream sources of such pollution. The Commission may utilize the services of qualified persons and other resources made available by water management agencies in Canada and the United States and should as far as possible make use of information and technical data heretofore acquired or which

may become available during the course of the investigation, including information and data acquired by the Commission in the course of its investigations and surveillance activities conducted on the lower Great Lakes and in the connecting channels.

In conducting its investigation, the Commission should utilize the services of the international board structure provided for in article VII of the Great Lakes Water Quality Agreement.

TERMS OF REFERENCE FOR THE ESTABLISHMENT OF A RESEARCH ADVISORY BOARD

1. As used herein, "research" includes development, demonstration and research activities, but does not include regular monitoring and surveillance of water quality.

2. The functions and responsibilities of the Research Advisory Board relating to research activities in Canada and the United States concerning the quality of the waters of the Great Lakes System shall be as follows:

- (a) To review at regular intervals these research activities in order to:
 - (i) examine the adequacy and reliability of research results, their dissemination, and the effectiveness of their application;
 - (ii) identify deficiencies in their scope, and inadequacies in their funding and in completion schedules;
 - (iii) identify additional research projects that should be undertaken;
 - (iv) identify specific research programs for which international cooperation will be productive;
- (b) To provide advice and consolidation of scientific opinion to the Commission and its boards on particular problems referred to the Advisory Board by the Commission or its boards;
- (c) To facilitate both formal and informal international cooperation and coordination of research;
- (d) To make recommendations to the Commission.

3. The Research Advisory Board on its own authority may seek analyses, assessments and recommendations from other professional, academic, governmental or intergovernmental groups about the problems of the Great Lakes water quality research and related research activities.

4. The International Joint Commission shall determine the size and composition of the Research Advisory Board. The Commission should appoint members to the Advisory Board from appropriate Federal, State and Provincial Government agencies and from other agencies, organizations and institutions involved in Great Lakes research activities. In making these appointments the Commission should consider individuals from the academic, scientific and industrial communities and the general public. Membership should be based primarily upon an individual's qualifications and potential contribution to the work of the Advisory Board.

5. The Research Advisory Board should work at all times in close cooperation with the Great Lakes Water Quality Board.