1978 Agreement Between The United States and Canada on Great Lakes Water Quality

(As Amended through 16 October 1983)

Entered into force 22 November 1978

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

Having in 1972 entered into an Agreement on Great Lakes Water Quality;

Reaffirming their determination to restore and enhance water quality in the Great Lakes System;

Continuing to be concerned about the impairment 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 by the International Joint Commission;

Reaffirming their intent to prevent further pollution of the Great Lakes Basin Ecosystem 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, and in particular their obligation not to pollute boundary waters;

Continuing to recognize the rights of each country in the use of its Great Lakes waters;

Having decided that the Great Lakes Water Quality Agreement of April 15, 1972 and subsequent reports of the International Joint Commission provide a sound basis for new and more effective cooperative actions to restore and enhance water quality in the Great Lakes Basin Ecosystem;

Recognizing that restoration and enhancement of the boundary waters cannot be achieved independently of other parts of the Great Lakes Basin Ecosystem with which these waters interact;

Concluding that the best means to preserve the aquatic ecosystem and achieve improved water quality throughout the Great Lakes System is by adopting common objectives, developing and implementing cooperative programs and other measures, and assigning special responsibilities and functions to the International Joint Commission;

Have agreed as follows:

ARTICLE 1

Definitions

As used in this Agreement:

(a) "Agreement" means the present Agreement as distinguished from the Great Lakes Water Quality
Agreement of April 15, 1972;

(b) "Annex" means any of the Annexes to this Agreement, each of which is attached to and forms an integral part of this Agreement;

(c) "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;

(d) "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;

(e) "Compatible regulations" means regulations no less restrictive than agreed principles set out in this Agreement;

(f) "General Objectives" are broad descriptions of water quality conditions consistent with the protection of the beneficial uses and the level of environmental quality which the Parties desire to secure and which will provide overall water management guidance;

(g) "Great Lakes Basin Ecosystem" means the interacting components of air, land, water and living organisms, including man, within the drainage basin of the St. Lawrence River at or upstream from the point at which this River becomes the International Boundary between the United States and Canada.

(h) "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 the United States and Canada;

(i) "Harmful quantity" means any quantity of a substance that if discharged into receiving waters would be inconsistent with the achievement of the General and Specific Objectives;

(j) "Hazardous polluting substance" means any element or compound identified by the Parties which, if discharged in any quantity into or upon receiving waters or adjoining

shorelines, would present 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 flora and fauna, public and private property, shorelines and beaches;

(k) "International Joint Commission" and "Commission" means the International Joint Commission established by the Boundary Waters Treaty;

(l) "Monitoring" means a scientifically designed system of continuing standardized measurements and observations and the evaluation thereof;

(m) "Objectives". means the General Objectives adopted pursuant to Article III and the Specific Objectives adopted pursuant to Article IV of this Agreement;

(n) "Parties" means the Government of the United States and the Government of Canada;

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

(p) "Research" means development, demonstration and other research activities but does not include monitoring and surveillance of water or air quality;

(g) "Science Advisory Board" means the Great Lakes Science Advisory Board of the International Joint Commission established pursuant to Article VIII of this Agreement.

(r) "Specific Objectives" means the concentration or quantity of a substance or level of 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 or level of environmental quality which the Parties desire to secure and protect;

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

(t) "Surveillance" means specific observations and measurements relative to control or management;

(u) "Terms of Reference" means the Terms of Reference for the Joint Institutions and the Great Lakes Regional Office established pursuant to this Agreement, which are attached to and form an integral part of this Agreement;

(v) "Toxic substance" means a substance which can cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions or physical deformities in any organism or its offspring, or which can become poisonous after concentration in the food chain or in combination with other substances;

(w) "Tributary waters of the Great Lakes System" or "tributary waters" means all the waters within the Great Lakes System that are not boundary waters;

(x) "Water Quality Board" means the Great Lakes Water Quality Board of the International Joint Commission established pursuant to Article VIII of this Agreement.

ARTICLE 11

Purpose

The purpose of the Parties is to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem. In order to achieve this purpose, the Parties agree to make a maximum effort to develop programs, practices and technology necessary for a better under-standing of the Great Lakes Basin Ecosystem and to eliminate or reduce to the maximum extent practicable the discharge of pollutants to the Great Lakes System.

Consistent with the provisions of this Agreement, it is the policy of the Parties that:

(a) The discharge of toxic substances in toxic amounts be prohibited and the discharge of any or all persistent toxic substances be virtually eliminated;

(b) Financial assistance to construct publicly owned waste treatment works be provided by a combination of local, state, provincial, and federal participation; and

(c) Coordinated planning processes and best management practices be developed and implemented by the respective jurisdictions to ensure adequate control of all sources of pollutants.

ARTICLE III

General Objectives

The Parties adopt the following General Objectives for the Great Lakes System. These waters should
be:

(a) Free from substances that directly or indirectly 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 materials such as debris, oil, scum, and other immiscible substances resulting from human activities in amounts that are unsightly or deleterious;

(c) Free from materials and heat directly or indirectly entering the water as a result of human activity that alone, or in combination with other materials, will produce color, odor, taste, or other conditions in such a degree as to interfere with beneficial uses;

(d) Free from materials and heat directly or indirectly entering the water as a result of human activity that alone, or in combination with other materials, will produce conditions that are toxic or harmful to human, animal, or aquatic life; and

(e) Free from nutrients directly or indirectly entering the waters as a result of human activity in amounts that create growths of aquatic life that interfere with beneficial uses.

ARTICLE IV

Specific Objectives

1. The Parties adopt the Specific Objectives for the boundary waters of the Great Lakes System as set forth in Annex 1, subject to the following:

(a) The Specific Objectives adopted pursuant to this Article represent the minimum levels of water quality desired in the boundary waters of the Great Lakes System and are not intended to preclude the establishment of more stringent requirements.

(b) The determination of the achievement of Specific Objectives shall be based on statistically valid sampling data.

(c) Notwithstanding the adoption of Specific Objectives, all reasonable and practicable measures shall be taken to maintain or improve the existing water quality in those areas of the boundary waters of the Great Lakes System where such water quality is better than that prescribed by the Specific Objectives, and in those areas having outstanding natural resource value.

(d) The responsible regulatory agencies shall not consider flow augmentation as a substitute for adequate treatment to meet the Specific Objectives.

(e) The Parties recognize that in certain areas of inshore waters natural phenomena exist which, despite the best efforts of the Parties, will prevent the achievement of some of the Specific Objectives. As early as possible, these areas should be identified explicitly by the appropriate jurisdictions and reported to the International Joint Commission.

(f) Limited use zones in the vicinity of present and future municipal, industrial and tributary point source discharges shall be designated by the responsible regulatory agencies within which some of the Specific Objectives may not apply. Establishment of these zones shall not be considered a substitute for dequate treatment or control of discharges at their source. The size shall be minimized to the greatest possible degree, being no larger than that attainable by all reasonable and practicable effluent treatment measures. The boundary of a limited use zone shall not transect the

International Boundary. Principles for the designation of limited use zones are set out in Annex 2.

2. The Specific Objectives for the boundary waters of the Great Lakes System or for particular portions thereof shall be kept under review by the Parties and by the International Joint Commission, which shall make appropriate recommendations.

3. The Parties shall consult on:

(a) The establishment of Specific Objectives to protect beneficial uses from the combined effects of pollutants; and

(b) The control of pollutant loading rates for each lake basin to protect the integrity of the ecosystem over the long term.

ARTICLE V

Standards, Other Regulatory Requirements, and Research

1. Water quality standards and other regulatory requirements of the Parties shall be consistent with the achievement of the General and Specific 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 these Objectives. Flow augmentation shall not be considered as a substitute for adequate treatment to meet water quality standards or other regulatory requirements.

2. The Parties shall use their best efforts to ensure that:

(a) The principal research funding agencies in both countries orient the research programs of their organizations in response to research priorities identified by the Science Advisory Board and recommended by the Commission; and

(b) Mechanisms be developed for appropriate cost-effective international cooperation.

ARTICLE VI

Programs and Other Measures

1. The Parties shall continue to develop and implement programs and other measures to fulfill the purpose of this Agreement and to meet the General and Specific Objectives. Where present treatment is inadequate to meet the General and Specific Objectives, additional treatment shall be required. The programs and measures shall include the following:

(a) Pollution from Municipal Sources.

Programs for the abatement, control and prevention of municipal discharges and urban drainage into the Great Lakes System. These programs shall be completed and in operation as soon as practicable, and in the case of municipal sewage treatment facilities no later than December 31, 1982. These programs shall include:

(i) Construction and operation of waste treatment facilities in all municipalities having sewer systems to provide levels of treatment consistent with the achievement of phosphorus requirements and the General and Specific Objectives, taking into account the effects of waste from other sources;

(ii) Provision of financial resources to ensure prompt construction of needed facilities;

(iii) Establishment of requirements for construction and operating standards for facilities;

(iv) Establishment of pretreatment requirements for all industrial plants discharging waste into publicly owned treatment works where such industrial wastes are not amenable to adequate treatment or removal using conventional municipal treatment processes;

(v) Development and implementation of practical programs for reducing pollution from storm, sanitary, and combined sewer discharges; and

(vi) Establishment of effective enforcement programs to ensure that the above pollution abatement requirements are fully met.

(b) Pollution from Industrial Sources.

Programs for the abatement, control and prevention of pollution from industrial sources entering the Great Lakes System. These programs shall be completed and in operation as soon as practicable and in any case no later than December 31, 1983, and shall include:

(i) Establishment of waste treatment or control requirements expressed as effluent limitations (concentrations and/or leading limits for specific pollutants where possible) for all industrial plants including power generating facilities, to provide levels of treatment or reduction or elimination of inputs of substances and effects consistent with the achievement of the General and Specific Objectives and other control requirements, taking into account the effects of waste from other sources;

(ii) Requirements for the substantial elimination of discharges into the Great Lakes System of persistent toxic substances;

(iii)Requirements for the control of thermal discharges;

(iv)Measures to control the discharge of radio-active materials into the Great Lakes System;

(v) Requirements to minimize adverse environmental impacts of water intakes;

(vi)Development and implementation of programs to meet industrial pre-treatment requirements as specified under subparagraph (a)(iv) above; and

(vii)Establishment of effective enforcement programs to ensure the above pollution abatement requirements are fully met.

(c) Inventory of Pollution Abatement Requirements.

Preparation of an inventory of pollution abatement requirements for all municipal and industrial facilities discharging into the Great Lakes System in order to gauge progress toward the earliest practicable completion and operation of the programs listed in subparagraphs (a) and (b) above. This inventory, prepared and revised annually, shall include compliance schedules and status of compliance with monitoring and effluent restrictions, and shall be made available to the International Joint Commission and to the public. In the initial preparation of this inventory, priority shall be given to the problem areas previously identified by the Water Quality Board.

(d) Eutrophication.

Programs and measures for the reduction and control of inputs of phosphorus and other nutrients, in accordance with the provisions of Annex 3.

(e) 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 used in the Great Lakes Basin to ensure that pest control products likely to have long-term deleterious effects on the quality of water or its biota be used only as authorized by the responsible regulatory agencies; that inventories of pest control products used in the Great Lakes Basin be established and maintained by appropriate agencies; and that research and educational programs be strengthened to facilitate integration of cultural, biological and chemical pest control techniques;

(ii) Measures for the abatement and control of pollution from animal husbandry operations, including encouragement to appropriate agencies to adopt policies and regulations regarding utilization of animal wastes, and site selection and disposal of liquid and solid wastes, and to strengthen educational and technical assistance programs to enable farmers to establish waste utilization, handling and disposal systems;

(iii)Measures governing the hauling and disposal of liquid and solid wastes, including encouragement to appropriate regulatory agencies to ensure proper location, design and

regulation governing land disposal, and to ensure sufficient, adequately trained technical and administrative capability to review plans and to supervise and monitor systems for application of wastes on land;

(iv)Measures to review and supervise road salting practices and salt storage to ensure optimum use of salt and all-weather protection of salt stores in consideration of long-term environmental impact;

(v) Measures to control soil losses from urban and suburban as well as rural areas;

(vi)Measures to encourage and facilitate improvements in land use planning and management programs to take account of impacts on Great Lakes water quality;

(vii)Other advisory programs and measures to abate and control inputs of nutrients, toxic substances and sediments from agricultural, forestry and other land use activities; and

(viii)Consideration of future recommendations from the International Joint Commission based on the Pollution from Land Use Activities Reference.

(f) Pollution from Shipping Activities.

Measures for the abatement and control of pollution from shipping sources, including:

(i) Programs and compatible regulations to prevent discharges of harmful quantities of oil and hazardous polluting substances, in accordance with Annex 4;

(ii) Compatible regulations for the control of discharges of vessel wastes, in accordance with Annex 5;

(iii)Such compatible regulations to abate and control pollution from shipping sources as may be deemed desirable in the light of continuing reviews and studies to be undertaken in accordance with Annex 6;

(iv)Programs and any necessary compatible regulations in accordance with Annexes 4 and 5, for the safe and efficient handling of shipboard generated wastes, including oil, hazardous polluting substances, garbage, waste water and sewage, and for their subsequent disposal, including the type and quantity of reception facilities and, if applicable, treatment standards; and

(v) Establishment by the United States Coast Guard and Canadian Coast Guard of a coordinated system for aerial and surface surveillance for the purpose of enforcement of regulations and the early identification, abatement and clean-up of spills of oil, hazardous polluting substances, or other pollution.

(g) Pollution from Dredging Activities.

Measures for the abatement and control of pollution from all dredging activities, including the development of criteria for the identification of polluted sediments and compatible programs for disposal of polluted dredged material, in accordance with Annex 7. Pending the development of compatible criteria and programs, dredging operations shall be conducted in a manner will minimize adverse effects on the environment.

(h) 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 Annex 8.

(i) 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 Annex 9.

(j) Hazardous Polluting Substances.

Implementation of Annex 10 concerning hazardous polluting substances. The Parties shall further
consult from time to time for the purpose of revising the list of hazardous polluting substances and of
identifying harmful quantities of these substances.

(k) Persistent Toxic Substances.

Measures for the control of inputs of persistent toxic substances including control programs for their
production, use, distribution and disposal, in accordance with Annex 12.

(l) Airborne Pollutants.

Programs to identify pollutant sources and relative source contribution, including the more accurate
definition of wet and dry deposition rates, for those substances which may have significant adverse
effects on environmental quality including the indirect effects of impairment of tributary water quality
through atmospheric deposition in drainage basins. In cases where significant contributions to Great
Lakes pollution from atmospheric sources are identified, the Parties agree to consult on appropriate

remedial programs.

(m) Surveillance and Monitoring.

Implementation of a coordinated surveillance and monitoring program in the Great Lakes System, in accordance with pollution control requirements and achievement of the Objectives, to provide information for measuring local and whole lake response to control measures, and to identify emerging problems.

2. The Parties shall develop and implement such additional programs as they jointly decide are necessary and desirable to fulfill the purpose of this Agreement and to meet the General and Specific Objectives.

ARTICLE VII

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, by a Reference 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 and other sources;

(b) Collection, analysis and dissemination of data and information concerning the General and Specific 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 matters related to the quality of the boundary waters of the Great Lakes System including specific recommendations concerning the General and Specific Objectives, legislation,

standards and other regulatory requirements, programs and other measures, and intergovernmental
agreements relating to the quality of these waters,

(d) Tendering of advice and recommendations to the Parties in connection with matters covered under
the Annexes to this Agreement;

(e) Provision of assistance in the coordination of the joint activities envisaged by this Agreement;

(f) Provision of assistance in and advice on matters related to research in the Great Lakes Basin
Ecosystem, 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;

(g) Investigations of such subjects related to the Great Lakes Basin Ecosystem as the Parties may from
time to time refer to it.

2. In the discharge of its responsibilities under this Reference, 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 full report to the Parties and to the State and Provincial Governments
no less frequently than biennially concerning progress toward the achievement of the General and
Specific Objectives including, as appropriate, matters related to the Annexes to this Agreement. This
report shall include an assessment of the effectiveness of the programs, and other measures undertaken
pursuant to this Agreement, and advice and recommendations. In alternate years the Commission may
submit a summary report. 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 Reference.

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.

6. The Commission shall carry out its responsibilities under this Reference utilizing principally the
services of the Water Quality Board and the Science Advisory Board established under Article VIII of
this Agreement. The Commission shall also ensure liaison and coordination between the institutions
established under this Agreement and other institutions which may address concerns relevant to the
Great Lakes Basin Ecosystem, including both those within its purview, such as those Boards related to
Great Lakes levels and air pollution matters, and other international bodies, as appropriate.

ARTICLE VIII

Joint Institutions and Regional Office

1. To assist the International Joint Commission in the exercise of the powers and responsibilities
assigned to it under this Agreement, there shall be two Boards:

(a) A Great Lakes Water Quality Board which shall be the principal advisor to the Commission. The
Board shall be composed of an equal number of members from the United States and Canada,
including representatives from the Parties and each of the State and Provincial Governments; and

(b) A Great Lakes Science Advisory Board which shall provide advice on research to the Commission
and to the Water Quality Board. The Board shall further provide advice on scientific matters referred

to it by the Commission, or by the Water Quality Board in consultation with the Commission. The
Science Advisory Board shall consist of managers of Great Lakes research programs and recognized
experts on Great Lakes water quality problems and related fields.

2. The members of the Water Quality Board und the Science Advisory Board shall be appointed by
the Commission after consultation with the appropriate government or governments concerned. The
functions of the Boards shall be as specified in the Terms of Reference appended to this Agreement.

3. To provide administrative support and technical assistance to the two Boards, and to provide a
public information service for the programs, including public hearings, undertaken by the International
Joint Commission and by the Boards, there shall be a Great Lakes Regional Office of the International
Joint Commission. Specific duties and organization of the Office shall be as specified in the Terms of
Reference appended to this Agreement.

4. 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 IX

Submission and Exchange of Information

1. The International Joint Commission shall be given at its request any data or other information relating
to water quality in the Great Lakes System in accordance with procedures established by the
Commission.

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 water quality in 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 X

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 VII, 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 Objectives and the adoption of new Objectives;

(b) The modification or improvement of programs and joint measures; and

(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 following the third biennial report of the Commission required under Article VII.

ARTICLE XI

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 VI, 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 VI; and

(c) The cooperation of the State and Provincial Governments in all matters relating to this Agreement.

ARTICLE XII

Amendment

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 XIII

Amendment

1. This Agreement, the Annexes, and the Terms of Reference 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. All such amendments to the Annexes shall be confirmed by an exchange of notes or letters between the Parties through diplomatic channels which shall specify the effective date or dates of such amendments.

2. All amendments to this Agreement, the Annexes, and the Terms of Reference shall be communicated promptly to the International Joint Commission.

ARTICLE XIV

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.

ARTICLE XV

Supersession

This Agreement supersedes the Great Lakes Water Quality Agreement of April 15, 1972, and shall be
referred to as the "Great Lakes Water Quality Agreement of 1978".

ANNEX I

Specific Objectives

These Objectives are based on available information on cause/effect relationships between pollutants
and receptors to protect the recognized most sensitive use in all waters. These Objectives may be
amended, or new Objectives may be added, by mutual consent of the Parties.

I. CHEMICAL

A. Persistent Toxic Substances

1. Organic

(a) Pesticides

Aldrin/Dieldrin

The sum of the concentrations of aldrin and dieldrin in water should not exceed 0.001 microgram per
liter. The sum of concentrations of aldrin and dieldrin in the edible portion of fish should not exceed 0.3
microgram per gram (wet weight basis) for the protection of human consumers of fish.

Chlordane

The concentration of chlordane in water should not exceed 0.06 microgram per liter for the protection
of aquatic life.

DDT and Metabolites

The sum of the concentrations of DDT and its metabolites in water should not exceed 0.003
microgram per liter. The sum of the concentrations of DDT and its metabolites in whole fish should not
exceed 1.0 microgram per gram (wet weight basis) for the protection of fish-consuming aquatic birds.

Endrin

The concentration of endrin in water should not exceed 0.002 microgram per liter. The concentration
of endrin in the edible portion of fish should not exceed 0.3 microgram per gram (wet weight basis) for
the protection of human consumers of fish.

Heptachlor/Hepiachlor Epoxide

The sum of the concentrations of heptachlor and heptachlor epoxide in water should not exceed 0.001
microgram per liter. The sum of the concentrations of heptachlor and heptachlor epoxide in edible
portions of fish should not exceed 0.3 microgram per gram (wet weight basis) for the protection of
human consumers of fish.

Lindane

The concentration of lindane in water should not exceed 0.01 microgram per liter for the protection of
aquatic life. The concentration of lindane in edible portions of fish should not exceed 0.3 microgram per
gram (wet weight basis) for the protection of human consumers of fish.

Methoxychlor

The concentration of methoxychlor in water should not exceed 0.04 microgram per liter for the
protection of aquatic life.

Mirex

For the protection of aquatic organisms and fish-consuming birds and animals, mirex and its

degradation products should be substantially absent from water and aquatic organisms. Substantially absent here means less than detection levels as determined by the best scientific methodology available.

Toxaphene

The concentration of toxaphene in water should not exceed 0.008 microgram per liter for the protection of aquatic life.

(b) Other Compounds

Phihalic Acid Esters

The concentration of dibutyl phthalate and di(2-ethylhexyl) phthalate in water should not exceed 4.0 microgram per liter and 0.6 microgram per liter, respectively, for the protection of aquatic life. Other phthalic acid esters should not exceed 0.2 microgram per liter in waters for the protection of aquatic life.

Polychlorinated Biphenyls (PCBS)

The concentration of total polychlorinated biphenyls in fish tissues (whole fish, calculated on a wet weight basis), should not exceed 0.1 microgram per gram for the protection of birds and animals which consume fish.

Unspecified Organic Compounds

For other organic contaminants, for which Specific Objectives have not been defined, but which can be demonstrated to be persistent and are likely to be toxic, the concentrations of such compounds in water or aquatic organisms should be substantially absent, i.e., less than detection levels as determined by the best scientific methodology available.

2. Inorganic

(a) Metals

Arsenic

The concentrations of total arsenic in an unfiltered water sample should not exceed 50 micrograms per liter to protect raw material for public water supplies.

Cadmium

The concentration of total cadmium in an unfiltered water sample should not exceed 0.2 microgram per liter to protect aquatic life.

Chromium

The concentration of total chromium in an unfiltered water sample should not exceed 50 micrograms per liter to protect raw waters for public water supplies.

Copper

The concentration of total copper in an unfiltered water sample should not exceed 5 micrograms per liter to protect aquatic life.

Iron

The concentration of total iron in an unfiltered water sample should not exceed 300 micrograms per liter to protect aquatic life.

Lead

The concentration of total lead in an unfiltered water sample should not exceed 10 micrograms per liter in Lake Superior, 20 micrograms per liter in Lake Huron and 25 micrograms per liter in all remaining Great Lakes to protect aquatic life.

Mercury

The concentration of total mercury in a filtered water sample should not exceed 0.2 microgram per liter nor should the concentration of total mercury in whole fish exceed 0.5 microgram per gram (wet weight basis) to protect aquatic life and fish-consuming birds.

Nickel

The concentration of total nickel in an unfiltered water sample should not exceed 25 micrograms per liter to protect aquatic life.

Selenium

The concentration of total selenium in an unfiltered water sample should not exceed 10 micrograms per liter to protect raw water for public water supplies.

Zinc

The concentration of total zinc in an unfiltered water sample should not exceed 30 micrograms per liter to protect aquatic life.

(b) Other Inorganic Substances

Fluoride

The concentration of total fluoride in an unfiltered water sample should not exceed 1200 micrograms per liter to protect raw waters for public water supplies.

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 liter. 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 liter. In the remaining boundary waters, pending further study, the level of total dissolved solids should not exceed present levels.

B. Non-Persistent Toxic Substances

1. Organic Substances

(a) Pesticides

Diazinon

The concentration of diazinon in an unfiltered water sample should not exceed 0.08 microgram per liter
for the protection of aquatic life.

Guthion

The concentration of guthion in an unfiltered water sample should not exceed 0.005 microgram per liter
for the protection of aquatic life.

Parathion

The concentration of parathion in an unfiltered water sample should not exceed 0.008 microgram per
liter for the protection of aquatic life.

Other Pesticides

The concentration of unspecified, non-persistent pesticides should not exceed 0.05 of the median lethal
concentration on a 96-hour test for any sensitive local species.

(b) Other Substances

Unspecified Non-Persistent Toxic Substances and Complex Effluents

Unspecified non-persistent toxic substances and complex effluents of municipal, industrial, or other
origin should not be present in concentrations which exceed 0.05 of the median lethal concentration in
a 96 hour test for any sensitive local species to protect aquatic life.

Oil and Petrochemicals

Oil and petrochemicals should not be present in concentrations that:

(1) can be detected as visible film, sheen, or discoloration on the surface;

(2) can be detected by odor;

(3) can cause tainting of edible aquatic organisms;

(4) can form deposits on shorelines and bottom sediments that are detectable by sight or odor, or are
deleterious to resident aquatic organisms.

2. Inorganic Substances

Ammonia

The concentration of unionized ammonia (NH3) should not exceed 20 micrograms per liter for the
protection of aquatic life. Concentrations of total ammonia should not exceed 500 micrograms per liter
for the protection of public water supplies.

Hydrogen Sulfide

The concentration of undissociated hydrogen sulfide should not exceed 2 micrograms per liter to
protect aquatic life.

C .Other Substances

1. Dissolved oxygen

In the connecting channels and in the upper waters of the Lakes, the dissolved oxygen level should not
be less than 6.0 milligrams per liter at any time; in hypolimnetic waters, it should not be less than
necessary for the support of fish life, particularly cold water species.

2. pH

Values of pH should not be outside the range of 6.5 to 9.0, should discharge change the pH at the
boundary of a limited use zone more than 0.5 units from that of the ambient waters.

3. Nutrients

(a) Phosphorus

The concentration 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. (Specific phosphorus
control requirements are set out in Annex 3.)

4. Tainting Substances

(a) Raw public water supply sources should be essentially free from objectionable taste and odor for
aesthetic reasons.

(b) Levels of phenolic compounds should not exceed 1 microgram per liter in public water supplies to
protect against taste and odor in domestic water.

(c) Substances entering the water as the result of human activity that cause tainting of edible aquatic
organisms should not be present in concentrations which will lower the acceptability of these organisms
as determined by organoleptic tests.

II. PHYSICAL

A. Asbestos

Asbestos should be kept at the lowest practical levels and in any event should be controlled to the
extent necessary to prevent harmful effects on human health.

B. Temperature

There should be no change in temperature that would adversely affect any local or general use of the
waters.

C. Settleable and Suspended Solids, and Light Transmission

For the protection of aquatic life, waters should be free from substances attributable to municipal,
industrial or other charges resulting from human activity that will settle to form putrescent or otherwise
objectionable sludge deposits or that will alter the value of the Secchi disc depth by more than 10
percent.

111. MICROBIOLOGICAL

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.

IV. RADIOLOGICAL

The level of radioactivity in waters outside of any defined source control area should not result in a TED50 (total equivalent dose integrated over 50 years as calculated in accordance with the methodology established by the International Commission on Radiological Protection) greater than 1 millirem to the whole body from a daily ingestion of 2.2 liters of lake water for one year. For dose commitments between 1 and 5 millirem at the periphery of the source control area, source investigation and corrective action are recommended if releases are not as low as reasonably achievable. For dose commitments greater than 5 millirem, the responsible regulatory authorities shall determine appropriate corrective action.

ANNEX 2

Limited Use Zones

1. The Parties, in consultation with the State and Provincial Governments, shall take measures to define and describe all existing and future limited use zones, and shall prepare an annual report on these measures. The measures shall include:

(a) Identification and quantitative and qualitative description of all point source waste discharges (including tributaries) to boundary waters;

(b) Delineation of boundaries for limited use zones assigned to identified discharges;

(c) Assessment of the impact of the proposed limited use zones on existing and potential beneficial uses; and

(d) Continuing review and revision of the extent of limited use zones to achieve maximum possible reduction in size and effect of such zones in accordance with improvements in waste treatment technology.

2. Limited use zones within the boundary waters of the Great Lakes System shall be designated for

industrial discharges, and for municipal discharges in excess of 1 million gallons per day before January
1, 1980 in accordance with the following principles:

(a) The boundary of a limited use zone shall not transect the International Boundary.

(b) The size, shape and exact location of a limited use zone shall tie specified on a case-by-case basis
by the responsible regulatory agency. The size shall be minimized to the greatest possible degree, being
no larger than that attainable by all reasonable and practicable effluent treatment measures.

(c) Specific Objectives and conditions applicable to the receiving water-body shall be met at the
boundary of limited use zones.

(d) Existing biological, chemical, physical and hydrological conditions shall be defined before
considering the location of a new limited use zone or restricting an existing one.

(e) Areas of extraordinary natural resource value shall not be designated as limited use zones.

(f) Limited use zones shall not form barriers to migratory routes of aquatic species or interfere with
biological communities or populations of important species to a degree which damages the ecosystem,
or diminishes other beneficial uses disproportionately. Routes for passage for specific organisms which
require protection and which would normally inhabit or pass through limited use zones shall be assured
either by location of the zones, or by design of conditions within limited use zones.

(g) Conditions shall not be permitted within the limited use zones which:

(i) are rapidly lethal to important aquatic life;

(ii) cause irreversible responses which could result in detrimental post-exposure effects; or

(iii) result in bioconcentration of toxic substances which are harmful to the organism or its consumers.

(h) Concentrations of toxic substances at any point in the limited use zone where important species are

physically capable of residing shall not exceed the 24-hour LC50

(i) Every attempt shall be made to insure that the zones are free from:

(i) objectionable deposits;

(ii) unsightly or deleterious amounts of flotsam, debris, oil, scum and other floating matter;

(iii) substances producing objectionable color, odor, taste or turbidity; and

(iv) substances and conditions or combinations thereof at levels which produce aquatic life in nuisance
quantities that interfere with other uses.

(j) Limited use zones may overlap unless the combined effects exceed the conditions set forth in other
guidelines

.

(k) As a general condition, limited use zones should not overlap with municipal and other water intakes
and recreational areas. However, knowledge of local effluent characteristics and effects could allow
such a combination of uses.

3. Candidate areas for designation as limited use zones shall be reported, in all available detail, by the
responsible regulatory agencies to the International Joint Commission. Within 60 days, the Commission
may comment upon the extent of the area proposed for designation as a limited use zone, or any other
aspect or measure to promote the attainment of the General and Specific Objectives of this Agreement.
The responsible regulatory agency will take the comments of the Commission into account prior to
making a formal designation of the area as a limited use zone. If no comment is received from the
Commission within 60 days, it may be assumed that the Commission agrees with the proposed
designation.

4. The Parties shall consult to develop more definitive procedures to delineate the extent of individual

limited use zones and to develop scientific guidelines for determining the maximum portions of the
boundary waters of each of the Great Lakes and connecting channels which may be occupied by
limited use zones.

ANNEX 3

Control of Phosphorus

1. The purpose of the following programs is to minimize eutrophication problems and to prevent
degradation with regard to phosphorus in the boundary waters of the Great Lakes System. The goals
of phosphorus control are:

(a) Restoration of year-round aerobic conditions in the bottom waters of the Central Basin of Lake
Erie;

(b) Substantial reduction in the present levels of algal bio-mass to a level below that of a nuisance
condition in Lake Erie,

(c) Reduction in present levels of algal biomass to below that of a nuisance condition in Lake Ontario
including the International Section of the St. Lawrence River;

(d) Maintenance of the oligotrophic state and relative algal biomass of Lakes Superior and Huron;

(e) Substantial elimination of algal nuisance growths in Lake Michigan to restore it to an oligotrophic
state; and

(f) The elimination of algal nuisance in bays and in other areas wherever they occur.

2. The following programs shall be developed and implemented to reduce input of phosphorus to the
Great Lakes:

(a) Construction and operation of municipal waste treatment facilities in all plants discharging more than
one million gallons per day to achieve, where necessary to meet the loading allocations to be

developed pursuant to paragraph 3 below, or to meet local conditions, whichever is more stringent,
effluent concentrations of 1 milligram per liter total phosphorus maximum for plants in the basins of
Lake Superior, Michigan, and Huron, and of 0.5 milligram per liter total phosphorus maximum for
plants in the basins of Lakes Ontario and Erie.

(b) Regulation of phosphorus introduction from industrial discharges to the maximum practicable
extent.

(c) Reduction to the maximum extent practicable of phosphorus introduced from diffuse sources into
Lakes Superior, Michigan, and Huron; and reduction by 300% of phosphorus introduced from diffuse
sources into Lakes Ontario and Eric, where necessary to meet the loading allocations to be developed
pursuant to paragraph 3 below, or to meet local conditions, whichever is more stringent.

(d) Reduction of phosphorus in household detergents to 0.507% by weight where necessary to meet
the loading allocations to be developed pursuant to paragraph 3 below, or to meet local conditions,
whichever is more stringent.

(e) Maintenance of a viable research program to seek maximum efficiency and effectiveness in the
control of phosphorus introductions into the Great Lakes.

3. The following table establishes phosphorus loads for the base year (1976) and future phosphorus
loads. The Parties, in cooperation with the State and Provincial Governments, shall within eighteen
months after the date of entry into force of this Agreement confirm the future phosphorus loads, and
based on these establish load allocations and compliance schedules, taking into account the
recommendations of the International Joint Commission arising from the Pollution from Land Use
Activities Reference.

TABLE 1

Phosphorus Target Loads

Basin (metric tonnes per year)

Lake Superior (see Section 3(b) below)

Lake Michigan

Main Lake Huron

Georgian Bay

North Channel

Saginaw Bay 440 (Note 1)

Lake Erie 11000 (Note 2)

Lake Ontario 7000 (Note 2)

Note 1 Target load designed to alleviate drinking water taste and odour problems.

Note 2 Target loads proposed to meet ecosystem objectives in Annex 3. The allocation of the
phosphorus target loads between the two countries shall be consistent with the equal rights of both
Parties in the use of their boundary waters.

Phosphorus Load Reductions

(a) Lower Lakes:

Table 2 summarizes the estimated phosphorus loadings that will be discharged to the Lower Lakes
basins when all municipal waste treatment facilities over one million gallons per day achieve compliance
with the 1 milligrams per litre (1 mg/1) effluent concentration (on a monthly average basis) as required
by Article VI, l(a) of the 1978 GLWQA. The table also shows the further reductions required to meet
the Phosphorus Target Loads.

TABLE 2

Phosphorus Load Reduction Targets - metric tonnes per year

Estimated Estimates of

Loadings Further

at 1 mg/1 Phosphorus Reductions

Basin (Note 1) Target Load Required

Lake Erie 13,000 11,000 2,000

Lake Ontario 8,210 7,000 1,210

_____

Note 1 Estimated loading when all municipal waste treatment facilities over one million gallons/day
achieve 1 mg/l phosphorus effluent target levels.

(b) Upper Lakes:

Load reductions for the Upper Lakes will be accomplished by achieving the 11 mg/l phosphorus
effluent concentration (on a monthly average) at municipal waste treatment facilities discharging more
than one million gallons per day. The Parties further agree to maintain the present oligotrophic state of
the open waters and relative algal biomass of Lakes Superior and Huron. In addition, the United States
agrees to undertake efforts to achieve the substantial elimination of algal nuisance growths in Lake
Michigan. Further measures will be implemented as required for Saginaw Bay, various localized near shore problem areas and Green Bay.

(c) Table 3 presents the distribution of further reductions in phosphorus loading required for Lake Erie
(in metric tonnes/year) in order to achieve the estimated target loads. These figures will be used by the
Parties in the development of detailed plans for achieving further phosphorus reductions as described in
4(a) and (b) below.

TABLE 3

Allocation of reductions to meet target loads

for Lake Erie as shown in Table I

Canada U.S. Total

300 1700 2000

(d) For Lake Ontario, the Parties, in cooperation and full consultation with State and Provincial governments, agree to review the measures to achieve further phosphorus reductions in this Basin and will, within one year, meet to allocate the further phosphorus reductions between the Parties. Plans to achieve the required reductions set out in Table 2 will be developed using these figures in accordance with the procedures described in 4(a) and (b) below.

4. Phosphorus Load Reduction Plans

(a) Phosphorus load reduction plans will be developed and implemented by the Parties in cooperation and full consultation with State and Provincial governments to achieve the phosphorus reductions for Lakes Erie and Ontario described in Table 2. The plans will include phosphorus control programs and other measures as outlined in Section 5 and will describe any additional measures which will be undertaken to evaluate and review progress in achieving the phosphorus load reductions. A staged approach, incorporating target dates for achieving further reductions, will be included in the plans to provide the Parties and State and Provincial governments with a framework for implementing and evaluating the effectiveness of controls.

(b) These detailed plans shall be tabled by the Parties with the International Joint Commission 18 months after agreement on this Supplement to Annex 3. The Parties will provide the Commission with progress reports and annual updates of these plans.

5. Programs and Other Measures

The following phosphorus control programs and measures will be developed and implemented by the Parties in cooperation and full consultation with State and Provincial governments to achieve the required reductions in accordance with the plans developed pursuant to Section 4. The Parties

recognize that the responsibility for the control of nonpoint sources is shared between the Parties and
the State and Provincial governments.

(a) Municipal Waste Treatment Facilities

(i) Priority will be given to the continuation and intensification of efforts to ensure that municipal waste
treatment facilities discharging more than one million gallons per day achieve an effluent concentration
of 1 mg/l total phosphorus on a monthly average.

(ii) Where necessary, consideration will be given to opening facilities capable of greater phosphorus
reduction at higher levels of phosphorus removal than that required in 5(a)(i).

(iii)Where necessary, municipal waste treatment facilities designed, built, expanded or modified after
October 1, 1983 should allow for later modification to provide for greater removal of phosphorus than
that required under 5(a)(i).

(b) Detergent Phosphorus Limitation

Priority will be given to continuing efforts to limit phosphorus in household detergents.

(c) Industrial Discharges

Reasonable and practical measures will be undertaken to control industrial sources of phosphorus.

(d) Nonpoint Source Programs and Measures

Priority management areas will be identified and designated for application of urban and agricultural
programs and measures which include:

(i) Urban drainage management control programs where feasible consisting of level 1 measures
throughout the Great Lakes Basin; and level 2 measures where necessary to achieve reductions or
where local environmental conditions dictate (Note 1); and

(ii) Agricultural nonpoint source management programme where feasible consisting of level 1 measures

throughout the Basin and level 2 measures where necessary to achieve reductions or where local
environmental conditions dictate (Note 1).

(e) Research

Pursuant to the provisions of paragraph 2(e) of Annex 3, the Parties will make special efforts to assure
that their research activities will be responsive to the Programs and Other Measures described herein.

(f) Monitoring and Surveillance

The Parties will develop and implement surveillance and monitoring measures to determine the progress
of the Phosphorus Load Reduction Plans for the Lower Lakes as called for under Section 4 above,
and to evaluate efforts taken by the Parties to reduce phosphorus in the Great Lakes Basin. These
measures will include an inventory of areas treated, watershed modelling and improved measurement of
tributary loadings to the Lower Lakes for the purpose of providing improved nonpoint source loading
estimates and the monitoring of mass loadings to the Upper Lakes to maintain or improve the
environmental conditions described in Section 3(b).

6. Review

The Parties shall meet no later than December 31, 1988, to review the effectiveness of the programs
and measures described herein, and any remaining load reduction measures required to achieve the
target loads.

Note 1: Level 1 nonpoint source control options include; Agricultural: adoption of management
practices such as animal husbandry control measures, crop residue management, conservation tillage,
no-till winter cover-crops, crop rotation, strip cropping, vegetated buffer strips along stream and ditch
banks, and improved fertilizer management practices.

Urban: adoption of management practices such as: erosion controls, use of natural storage capacities
and street cleaning.

Level 2 nonpoint source controls include Level 1 plus: Agricultural: adoption of intensive practices such
as: contour plowing, contour strip cropping, contour diversions, tile outlet-terraces, flow control
structures, grassed waterways, sedimentation basins and livestock manure storage facilities.

Urban: adoption of practices such as: artificial detention and sedimentation of stormwater and runoff,
and reduction of phosphorus in combined sewer overflows.

ANNEX 4

Discharges of Oil and Hazardous Polluting Substances From Vessels

1. Definitions. As used in this Annex:

(a) "Discharge" 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 from a ship that is stationary
into clear calm water on a clear day, would produce a film or a sheen upon, or discoloration of, the
surface of the water or adjoining shoreline, o r that would cause a sludge or emulsion to be deposited
beneath the surface of the water or upon the adjoining shoreline;

(c) "Oil" means oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, oil
sludge, oil refuse, oil mixed with ballast or bilge water, and oil mixed with wastes other than dredged
material;

(d) "Tanker" means any vessel designed for the carriage of liquid cargo in bulk; and

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

2. 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) The discharge of a harmful quantity of oil or hazardous polluting substance shall be prohibited and
made subject to appropriate penalties; and

(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.

3. Oil.

The programs and measures to be adopted for the prevention of discharges of harmful quantities of oil
shall include:

(a) Compatible regulations for design, construction, and operation of vessels based on the following
principles:

(i) Each vessel shall have a suitable means of containing on board cargo oil spills caused by loading or
unloading operations;

(ii) Each vessel shall have a suitable means of containing on board fuel oil spills caused by loading or
unloading operations, including those from tank vents and overflow pipes;

(iii) Each vessel shall have the capability of retaining on board oily wastes accumulated during vessel
operation;

(iv) Each vessel shall be capable of off-loading retained oily wastes to a reception facility;

(v) Each vessel shall be provided with a means for rapidly and safety stopping the flow of cargo of fuel

oil during loading, unloading or bunkering operations in the event of an emergency;

(vi)Each vessel shall be provided with suitable lighting to adequately illuminate all cargo and fuel oil
handling areas if the loading, unloading or bunkering operations occur at night;

(vii)Hose assemblies used on board vessels for oil loading, unloading, or bunkering shall be suitably
designed, identified, and inspected to minimize the possibility of failure; and

(viii)Oil loading, unloading, and bunkering systems shall be suitably designed, identified, and inspected
to minimize the possibility of failure; and

(b) Programs to ensure that merchant vessel personnel are trained in all functions involved in the use,
handling, stowage of oil and in procedures for abatement of oil pollution.

4. Hazardous Polluting Substances.

The programs and measures to be adopted for the prevention of discharges of harmful quantities of
hazardous polluting substances carried as cargo shall include:

(a) Compatible regulations for the design, construction, and operation of vessels using as a guide the
Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk as
established through the Inter-Governmental Maritime Consultative Organization (IMCO), including the
following requirements:

(i) Each vessel shall have a suitable means of containing on board spills caused by loading or unloading
operations;

(ii) Each vessel shall have a capability of retaining on board wastes accumulated during vessel
operation;

(iii)Each vessel shall be capable of off-loading wastes retained to a reception facility;

(iv)Each vessel shall be provided with a means for rapidly and safely stopping the flow during loading
or unloading operations in the event of an emergency; and

(v) Each vessel shall be provided with suitable lighting to adequately illuminate all cargo handling areas
if the loading or unloading operations occur at night;

(b) Identification of vessels carrying cargoes of hazardous polluting substances in bulk, containers, and
package form, and of all such cargoes;

(c) Identification in vessel manifests of all hazardous polluting substances;

(d) Procedures for notification to the appropriate agency by the owner, master or agent of a vessel of
all hazardous polluting substances; and

(e) Programs to ensure that merchant vessel personnel are trained in all functions involving the use,
handling, and stowage of hazardous polluting substances; the abatement of pollution from such
substances; and the hazards associated with the handling of such substances.

5. Additional Measures.

Both Parties shall take, as appropriate, action to ensure the provision of adequate facilities for the
reception, treatment, and subsequent disposal of oil and hazardous polluting substances wastes from all
vessels.

ANNEX 5

Discharges of Vessel Wastes

1. Definitions. As used in this Annex:

(a) "Discharge" includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, and
dumping;

(b) "Garbage" means all kinds of victual, domestic, and operational wastes, excluding fresh fish and
parts thereof generated during the normal operation of the ship and liable to be disposed of continually
or periodically;

(c) "Sewage" means human or animal waste generated on board ship and includes wastes from water

closets, urinals, or a hospital facility;

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

(e) "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. General Principles.

Compatible regulations shall be adopted governing the discharge into the Great Lakes System of
garbage, sewage, and waste water from vessels in accordance with the following principles:

(a) The discharge of garbage shall be prohibited and made subject to appropriate penalties;

(b) The discharge of waste water in amounts or in concentrations that will be deleterious shall be
prohibited and made subject to appropriate penalties; and

(c) Every vessel operating in there waters that is provided with toilet facilities shall be equipped with a
device or devices to contain, incinerate, or treat sewage to an adequate degree; appropriate penalties
shall be provided for failure to comply wit h the regulations.

3. Critical Use Areas.

Critical use arm 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.

5. Additional Measures.

The Parties shall take, as appropriate, action to ensure the provision of adequate facilities for the reception, treatment, and subsequent disposal of garbage, waste water, and sewage from all vessels.

ANNEX 6

Review of Pollution from Shipping Sources

1. Review.

The United States Coast Guard and the Canadian Coast Guard shall continue to review services, systems, programs, recommendations, standards, and regulations relating to shipping activities for the purpose of maintaining or improving Great Lakes water quality. The reviews shall include:

(a) Review of vessel equipment, vessel manning, and navigation practices or procedures, and of aids to navigation and vessel traffic management, for the purpose of precluding casualties which may be deleterious to water quality;

(b) Review of practices and procedures regarding waste water and their deleterious effect on water quality;

(c) Review of practices and procedures, as well as current technology for the treatment of vessel sewage; and

(d) Review of current practices and procedures regarding the prevention of pollution from the loading, unloading or on board transfer of cargo.

2. Consultation.

Representatives of the United States Coast Guard and the Canadian Coast Guard. and other interested agencies, shall meet at least annually to consider this Annex. A report of this annual consultation shall be furnished to the International Joint Commission prior to its annual meeting on Great Lakes water quality. The purpose of the consultation shall be to:

(a) Provide an interchange of information with respect to continuing reviews, ongoing studies, and areas
of concern;

(b) Identify and determine the relative importance of problems requiring further study; and

(c) Apportion responsibility, as between the United States Coast Guard and the Canadian Coast
Guard, for the studies, or portions thereof, which were identified in subparagraph 2(b) above.

3. Studies.

Where a review identifies additional areas for improvement, the United States Coast Guard and the
Canadian Coast Guard, and other interested agencies, will undertake a study to establish improved
procedures for the abatement and control of pollution from shipping sources, and will:

(a) Develop a brief study description which will include the nature of the perceived problem,
procedures to quantify the problem, alternative solutions to the problem, procedures to determine the
best alternative, and an estimated completion date;

(b) Transmit study descriptions to the International Joint Commission and other interested agencies;

(c) Transmit the study, or a brief summary of its conclusions, to the International Joint Commission and
other interested agencies; and

(d) Transmit a brief status report to the International Joint Commission and other interested agencies if
the study is not completed by the estimated completion date.

4. Responsibility.

Responsibility for the coordination of the review, consultation, and studies is assigned to the United
States Coast Guard and the Canadian Coast Guard.

ANNEX 7

Dredging

1. There shall be established, under the auspices of the Water Quality Board, a Subcommittee on
Dredging. The Subcommittee shall:

(a) Review the existing practices in both countries relating to dredging activities, as well as the previous
work done by the International Working Group on Dredging, with the objective of developing, within
one year of the date of entry into force of this Agreement, compatible guidelines and criteria for
dredging activities in the boundary waters of the Great Lakes System;

(b) Maintain a register of significant dredging projects being undertaken in the Great Lakes System
with information to allow for the assessment of environmental effects of the projects. The register shall
include pertinent statistics to allow for the assessment of pollution loadings from dredged materials to
the Great Lakes System;

(c) Encourage the exchange of information relating to developments of dredging technology and
environmental research.

2. The Subcommittee shall identify specific criteria for the classification of polluted sediments of
designated areas of intensive and continuing dredging activities within the Great Lakes System. Pending
development of criteria and guidelines by the Sub committee, and their acceptance by the Parties, the
Parties shall continue to apply the criteria now in use by the regulatory authorities; however, neither
Party shall be precluded from applying standards more stringent than those now in use.

3. The Parties shall continue to direct particular attention to the identification and preservation of
significant wetland areas in the Great Lakes Basin Ecosystem which are threatened by dredging and
disposal activities.

4. The Parties shall encourage research to investigate advances in dredging technology and the
pathways, fate and effects of nutrients and contaminants of dredged materials.

5. The Subcommittee shall undertake any other activities as the Water Quality Board may direct.

ANNEX 8

Discharges from Onshore and Offshore Facilities

1.Definitions.

As used in this Annex:

(a) "Discharge" means the introduction of 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 clear calm waters on a clear day, 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) "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 disposing, transferring or transporting oil or hazardous polluting substances , but excludes vessels;

(d) "Offshore facility" means any facility of any kind located in, on or under any water;

(e) "Onshore facility" means any facility of any kind located in, on or under any land other than submerged land;

(f) "Oil" means 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.

2.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.

3. Programs and Measures.

The programs and measures to be adopted shall include the following:

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

(c) Development and implementation of regulations and personnel training programs to ensure the safe
use and handling of oil or hazardous polluting substances;

(d) Programs to ensure that at each facility plans and provisions are made and equipment provided to
stop rapidly and safely, contain, and clean up discharges of oil or hazardous polluting substances; and

(e) Compatible regulations and other programs for the identification and placarding of containers,
vehicles and other facilities containing, carrying or handling oil or hazardous polluting substances; and,
where appropriate, notification to appropriate agencies of vehicle movements, maintenance of a
registry, and identification in manifests of such substances to be carried.

4. Implementation

(a) Each Party shall submit a report to the International Joint Commission outlining its programs and measures, existing or proposed, for the implementation of this Annex within six months of the date of entry into force of this Agreement.

(b) The report shall outline programs and measures, existing or proposed, for each of the following types of onshore and offshore facilities:

(i) land transportation including rail and road modes;

(ii) pipelines on land and submerged under water;

(iii)offshore drilling rigs and wells;

(iv)storage facilities both onshore and offshore; and

(v) wharves and terminals with trestle or underwater pipeway connections to land and offshore island type structures and buoys used for the handling of oil or hazardous polluting substances.

(c) The report shall outline programs and measures, existing or proposed, for any other type of onshore or offshore facilities.

(d) Upon receipt of the reports, the Commission, in consultation with the Parties, shall review the programs and measures outlined for adequacy and compatibility and, if necessary, make recommendations to rectify any such inadequacy or incompatibility it finds.

ANNEX 9

Joint Contingency Plan

1. The Plan.

The "Joint Canada-United States Marine Pollution Contingency Plan for the Great Lakes (CANUSLAK)" adopted on June 20, 1974, shall be maintained in force, as amended from time to time. The United States Coast Guard and Canadian Coast Guard shall, in cooperation with other affected parties, identify and provide detailed Supplements for areas of high risk and of particular

concern in augmentation of CANUSLAK. It shall be the responsibility of the United States Coast
Guard and the Canadian Coast Guard to coordinate and to maintain the Plan and the Supplements
appended to the Plan.

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 discharge of oil, hazardous polluting
substance or other substance of such magnitude or significance as to require immediate response to
contain, clean up, and 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; and

(iii)To provide adequate cleanup response to pollution incidents.

4. Funding.

The costs of operations of both Parties under the Plan shall be borne by the Party in whose waters the
pollution incident occurred, unless otherwise agreed.

5. Amendment.

The United States Coast Guard and the Canadian Coast Guard are empowered to amend the Plan
subject to the requirement that such amendments shall be consistent with the purpose and objectives of
this Annex.

ANNEX 10

Hazardous Polluting Substances

1. The Parties shall:

(a) Maintain a list, to be known as Appendix 1 of this Annex (hereinafter referred to as Appendix 1),
of substances known to have toxic effects on aquatic and animal life and a risk of being discharged to
the Great Lakes System;

(b) Maintain a list, to be known as Appendix 2 of this Annex (hereinafter referred to as Appendix 2),
of substances potentially having such effects and such a risk of discharge, and to give priority to the
examination of these substances for possible transfer to Appendix 1;

(c) Ensure that these lists are continually revised in the light of growing scientific knowledge; and

(d) Develop and implement programs and measures to minimize or eliminate the risk of release of
hazardous polluting substances to the Great Lakes System.

2. Hazardous polluting substances to be listed in Appendix 1 shall be determined in accordance with
the following procedures:

(a) Selection of all hazardous substances for listing in Appendix 1 shall be based upon documented
toxicological and discharge potential data which have been evaluated by the Parties and deemed to be
mutually acceptable.

(b) Revisions to Appendix 1 may be made by mutual consent of the Parties and shall be treated as
amendments to this Annex for the purposes of Article XIII.

(c) Using the agreed selection criteria, either Party may recommend at any time a substance to be
added to the list in Appendix 1. Such substance need not previously have been listed in Appendix 2.
The Party receiving the recommendation will have sixty (60) days to review the associated

documentation and either reject the proposed substance or accept the substance pending completion
of appropriate procedural or domestic regulatory requirements. Cause for rejection must be
documented and submitted to the initiating Party and may be the basis for any further negotiations.

3. The criteria to be applied to the selection of substances as candidates for listing in Appendix 1 are:

(a) Acute toxicological effects, as determined by whether the substance is lethal to:

(i) One-half of a test population of aquatic animals in 96 hours or less at a concentration of 500
milligrams per liter or less; or

(ii) One-half of a test population of animals in 14 days or less when administered in a single oral dose
equal to or less than 50 milligrams per kilogram of body weight; or

(iii)One-half of a test population of animals in 14 days or less when dermally exposed to an amount
equal to or less than 200 milligrams per kilogram body weight for 24 hours; or

(iv) One-half of a test population of animals in 14 days or less when exposed to a vapor concentration
equal to or less than 20 cubic centimeters per cubic meter in air for one hour; or

(v) Aquatic flora as measured by a maximum specific growth rate or total yield of biomass which is
500% lower than a control culture over 14 days in a medium at concentrations equal to or less than
100 milligrams per liter.

(b) Risk of discharge into the Great Lakes System, as determined by:

(i) Gathering information on the history of discharges or accidents;

(ii) Assessing the modal risks during transport and determining the use and distribution patterns;

(iii) Identifying quantities manufactured or imported.

4. Potentially hazardous polluting substances to be listed in Appendix 2 of this Annex shall be
determined in accordance with the following procedures:

(a) Either Party may add new substances to Appendix 2 by notifying the other in writing that the substance is considered to be a potential hazard because of documented information concerning aquatic toxicity, mammalian and other vertebrate toxicity, phytotoxicity, persistence, bioaccumulation, mutagenicity, teratogenicity, carcinogenicity, environmental translocation or because of documented information on risk of discharge to the environment. The documentation of the potential hazard and the selected criteria upon which it is based will also be submitted.

(b) Removal of substances from Appendix 2 shall be by mutual consent of the Parties.

(c) The Parties shall give priority to the examination of substances listed in Appendix 2 for possible transfer to Appendix1.

5. Programs and measures to control the risk of pollution from transport, storage, handling and disposal of hazardous polluting substances are contained in Annexes 4 and 8.

ANNEX 11

Surveillance and Monitoring

1. Surveillance and monitoring activities shall be under-taken for the following purposes:

(a) Compliance.

To assess the degree to which jurisdictional control requirements are being met.

(b) Achievement of General and Specific Objectives.

To provide definitive information on the location, severity, areal or volume extent, frequency and duration of nonachievement of the Objectives, as a basis for determining the need for more stringent control requirements.

(c) Evaluation of Water Quality Trends.

To provide information for measuring local and whole lake response to control measures using trend

analyses and cause/effect relationships, and to provide information which will assist in the development
and application of predictive techniques for assessing impact of new developments and pollution
sources. The results of water quality, evaluations will be used for:

(i) assessing the effectiveness of remedial and preventative measures and identifying the need for
improved pollution control;

(ii) assessing enforcement and management strategies; and

(iii) identifying the need for further technology development and research activities.

(d) Identification of Emerging Problems.

To determine the presence of new or hitherto undetected problems in the Great Lakes Basin
Ecosystem, leading to the development and implementation of appropriate pollution control measures.

2. A joint surveillance and monitoring program necessary to ensure the attainment of the foregoing
purposes shall be developed and implemented among the Parties and the State and Provincial
Governments. The Great Lakes International Surveillance Plan contained in the Water Quality Board
Annual Report of 1975 and revised in subsequent reports shall serve as a model for the development
of the joint surveillance and monitoring program.

3. The program shall include baseline data collection, sample analysis, evaluation and quality assurance
programs (including standard sampling and analytical methodology, inter-laboratory comparisons, and
compatible data management) to allow assessments o f the following:

(a) Inputs from tributaries, point source discharges, atmosphere, and connecting channels;

(b) Whole lake data including that for nearshore areas (such as harbors and embayments, general
shoreline and cladophora growth areas), open waters of the Lakes, fish contaminants, and wildlife
contaminants; and

(c) Outflows including connecting channels, water intakes and outlets.

ANNEX 12

Persistent Toxic Substances

1. Definitions.

As used in this Annex:

(a) "Persistent toxic substance" means any toxic substance with a half-life in water of greater than eight
weeks;

(b) "Half-life" means the time required for the concentration of a substance to diminish to one-half of its
original value in a lake or water body;

(c) "Early warning system" means a procedure to anticipate future environmental contaminants (i.e.,
substances having an adverse effect on human health or the environment) and to set priorities for
environmental research, monitoring and regulatory action .

2. General Principles

(a) Regulatory strategies for controlling or preventing the input of persistent toxic substances to the
Great Lakes System shall be adopted in accordance with the following principles:

(i) The intent of programs specified in this Annex is to virtually eliminate the input of persistent toxic
substances in order to protect human health and to ensure the continuating health and productivity of
living aquatic resources and man use thereof ,

(ii) The philosophy adopted for control of inputs of persistent toxic substances shall be zero discharge.

(b) The Parties shall take all reasonable and practical measures to rehabilitate those portions of the
Great Lakes System adversely affected by persistent toxic substances.

3. Programs.

The Parties, in cooperation with the State and Provincial Governments, shall develop and adopt the

following programs and measures for the elimination of discharges of persistent toxic substances:

(a) Identification of raw materials, processes, products, by-products, waste sources and emissions
involving persistent toxic substances, and quantitative data on the substances, together with
recommendations on handling, use and disposition. Every effort shall be made to complete this
inventory by January, 1982;

(b) Establishment of close coordination between air, water and-solid waste programs in order to
assess the total input of toxic substances to the Great Lakes System and to define comprehensive,
integrated controls;

(c) Joint programs for disposal of hazardous materials to ensure that these materials such as pesticides,
contaminated petroleum products, contaminated sludge and dredge spoils and industrial wastes are
properly transported and disposed of. Every effort shall be made to implement these programs by
1980.

4. Monitoring.

Monitoring and research programs in support of the Great Lakes International Surveillance Plan should
be established at a level sufficient to identify:

(a) Temporal and spatial trends in concentration of persistent toxic substances such as PCB, mirex,
DDT, mercury and dieldrin, and of other substances known to be present in biota and sediment of the
Great Lakes System;

(b) The impact of persistent toxic substances on the health of humans and the quality and health of
living aquatic systems;

(c) The sources of input of persistent toxic substances; and

(d) The presence of previously unidentified persistent toxic substances.

5. Early Warning System.

An early warning system consisting of, but not restricted to the following elements shall be established
to anticipate future toxic substances problems:

(a) Development and use of structure-activity correlations to predict environmental characteristics of
chemicals;

(b) Compilation and review of trends in the production, import, and use of chemicals;

(c) Review of the results of environmental testing on new chemicals;

(d) Toxicological research on chemicals, and review of research conducted in other countries;

(e) Maintenance of a biological tissue bank and sediment bank to permit retroactive analysis to
establish trends over time;

(f) Monitoring to characterize the presence and significance of chemical residues in the environment;

(g) Development and use of mathematical models to edict consequences of various loading rates of
different chemicals;

(h) Development of a data bank for storage of information on physical/chemical properties, toxicology,
use and quantities in commerce of known and suspected persistent toxic substances.

6. Human Health.

The Parties shall establish action levels to protect human health from the individual and interactive
effects of toxic substances.

7. Research.

Research should be intensified to determine the pathways, fate and effects of toxic substances aimed at
protection of human health, fishery resources and wildlife of the Great Lakes Basin Ecosystem. In
particular, research should be conducted to determine:

(a) The significance of effects of persistent toxic substances on human health and aquatic life;

(b) Interactive effects of residues of toxic substances on aquatic life, wildlife, and human health; and

(c) Approaches to calculation of acceptable loading rates for persistent toxic substances, especially
those which in part, are naturally occurring.

Terms of Reference for the Joint Institutions and the Great Lakes Regional Office

(a) This Board shall be the principal advisor to the International Joint Commission with regard to the
exercise of all the functions, powers and responsibilities (other than those functions and responsibilities
of the Science Advisory Board pursuant to paragraph 2 of this Annex) assigned to the Commission
under this Agreement. In addition, the Board shall carry out such other functions, related to the water
quality of the boundary waters of the Great Lakes System, as the Commission may request from time
to time.

(b) The Water Quality Board at the direction of the Commission shall:

(i) Make recommendations on the development and implementation of programs to achieve the
purpose of this Agreement;

(ii) Assemble and evaluate information evolving from such programs:

(iii)Identify deficiencies in scope and funding of such programs and evaluate the adequacy and
compatibility of results;

(iv)Examine the appropriateness of such programs in the light of present and future socioeconomic
imperatives; and

(v) Advise the Commission on the progress and effectiveness of such programs and submit appropriate
recommendations.

(c) The Water Quality Board, on behalf of the Commission, shall undertake liaison and coordination

between the institutions established under this Agreement and other institutions and jurisdictions which
may address concerns relevant to the Great Lakes Basin Ecosystem so as to ensure a comprehensive
and coordinated approach to planning and to the resolution of problems, both current and anticipated.

(d) The Water Quality Board shall report to the Commission periodically as appropriate, or as
required by the Commission, on all aspects relating to the operation and effectiveness of this
Agreement.

2. Great Lakes Science Advisory Board

(a) This Board shall be the scientific advisor to the Commission and the Water Quality Board.

(b) The Science Advisory Board shall be responsible for developing recommendations on all matters
related to research and the development of scientific knowledge pertinent to the identification,
evaluation and resolution of current and anticipated problems related to Great Lakes water quality.

(c) To effect these responsibilities the Science Advisory Board shall:

(i) Review scientific information in order to:

a. examine the impact and adequacy of research and the reliability of research results and ensure the
dissemination of such results;

b. identify additional research requirements

c. identify specific research programs for which international cooperation is desirable; and

(ii) Advise jurisdictions of relevant research needs, solicit their involvement and promote coordination.

(d) The Science Advisory Board shall seek analyses, assessments and recommendations from other
scientific, professional, academic, governmental or intergovernmental groups relevant to Great Lakes
Basin Ecosystem research.

(e) The Science Advisory Board shall report to the Commission and the Water Quality Board periodically as appropriate, or as required by the Commission, on all matters of a scientific or research nature relating to the operation and effectiveness of this Agreement.

3. The Great Lakes Regional Office

(a) This Office, located at Windsor, Ontario, shall assist the Commission and the two Boards in the discharge of the functions specified in subparagraph (b) below.

(b) The Office shall perform the following functions:

(i) Provide administrative support and technical assistance for the Water Quality Board and the Science Advisory Board and their suborganizations, to assist the Boards in discharging effectively the responsibilities, duties and functions assigned to the m.

(ii) Provide a public information service for the programs, including public hearings, undertaken by the Commission and its Boards.

(c) The Office shall be headed by a Director who shall be appointed by the Commission in consultation with the Parties and with the Co-Chairmen of the Boards. The position of Director shall alternate between a United States citizen and a Canadian citizen. The term of office for the Director shall be determined in the review referred to in subparagraph (d) below.

(d) The Parties, mindful of the need to staff the Great Lakes Regional Office to carry out the functions assigned the Commission by this Agreement, shall, within six months from the date of entry into force of this Agreement, complete a review of the staffing of the Office. This review shall be conducted by the Parties based upon recommendations of the Commission after consultations with the Co-Chairmen of the Boards. Subsequent reviews may be requested by either Party, or recommended by the Commission, in order to ensure that the staffing of the Regional Office is maintained at a level and character commensurate with its assigned functions.

(e) Consistent with the responsibilities assigned to the Commission, and under the general supervision
of the Water Quality Board, the Director shall be responsible for the management of the Regional
Office and its staff in carrying out the functions de scribed herein.

(f) The Co-Chairmen of the Boards, in consultation with the Director, will determine the activities
which they wish the Office to carry out on behalf of, or in support of the Boards, within the current
capability of the Office and its staff. The Director is responsible to the Co-Chairmen of each Board for
activities carried out on behalf of, or in support of such Board by the Office or individual staff
members.

(g) The Commission, in consultation with the Director, will determine the public information activities to
be carried out on behalf of the Commission by the Regional Office.

(h) The Director shall be responsible for preparing an annual budget to carry out the functions of the
Boards and the Regional Office for submission jointly by the two Boards to the Commission for
approval and procurement of resources.

APPENDIX 1

Hazardous Polluting Substances

Acetaldehyde Butyric Acid Endosulfan Nickel Ammonium Sulfate

Acetic Acid Cadmium Acetate Endrin Nickel Chloride

Acetic Anhydride Cadmium Bromide Ethion Nickel Hydroxide

Acetone Cyanohydrin Cadmium Chloride Ethylbenzene Nickel Nitrate

Acetyl Bromide Calcium Arsenate Ethylenediamine Nickel Sulfate

Acetyl Chloride Calcium Arsenite EDTA Nitric Acid

Acrolein Calcium Carbide Ferric Ammonium Citrate Nitrobenzene

Acrylonitrile Calcium Chromate Ferric Ammonium Oxalate Nitrogen Dioxide

Aldrin Calcium Cyanide Ferric Fluoride Paraformaldehyde

Allyl Chloride czenessulfonate Ferric Nitrate Parathion

Alluminum Sulfate Calcium Hydroxide Ferric Sulfate Penthchlorophenol

Ammonia Calcium Hypochlorite Ferrous Ammonium Sulfate Phenol

Ammonium Acetate Calcium Oxide Ferrous Chloride Phosgene

Ammonium Benzoate Captan Ferrous Sulfate Phosphoric Acid

Ammonium Bicarbonate Carbaryl Formaldehyde Phosphorous

Ammonium Bchromate Carbon Disulfide Formic Acid Phosphorous Oxychloride

Ammonium Bifluoride Chlordane Fumaric Acid Phosphorous Pentasulfide

Ammonium Bisulfite Chlorine Furfural Phosphorous Trichloride

Ammonium Carbamate Chlorobenzene Guthion Polychlorinated Biphenyls

Ammonium carbonate Chlorform Heptachlor Potassium Arsenate

Ammonium Chloride Chlorosulfonic Acid Hydrochloric Acid Patassium Arsenite

Ammonium Chromate Chlorpyrifos Hydrofluoric Acid Patassium Bichromate

Ammonium Citrate, Dibasic Chromic Acetate Hydrogen Cyanide Patassium Chromate

Ammonium Fluoborate Chromic Acid Isoprene Patassium Cyanide

Ammonium fluoride Chromic Sulfate Isopropanolamine Dodecyl- Potassium Hydroxide

Ammonium Hydroxide Chromous Chloride benzenesulfonate Potassium Permanganate

Ammonium Oxalate Cobaltous Bromide Kelthane Propionic Acid

Ammonium Silicofluoride Cobaltous Formate Lead Acetate Propionic Anhydride

Ammonium Sulfamate Cobaltous Sulfamate Lead Arsenate Pyrethrins

Ammonium Sulfide Coumaphos Lead Chloride Quinoline

Ammonium Sulfite Cresol Lead Fluoborate Resorcinol

Ammonium Tartrate Cupric Acetate Lead Fluoride Selenium Oxide

Ammonium Thiocyanate Cupric Acetoarsenite Lead Iodide Sodium

Ammonium Thiosulfate Cupric Chloride Lead Nitrate Sodium Arsenate

Amyl Acetate Cupric Nitrate Lead Stearate Sodium Arsenite

Aniline Cupric Oxalate Lead Sulfate Sodium Bichromate

Antimony Pentachloride Cupric Sulfate Lead Sulfide Sodium Bifuoride

Antimony Potassium Tar- Cupric Sulfate, Ammoniated Lead Thiocyanate Sodium Bisulfite

trate Cupric Tartrate Lindane Sodium Chromate

Antimony Tribromide Cyanogen Chloride Lithium Chromate Sodium Cyanide

Antimony Trichloride Cyclohexane Malathion Sodium Dodecylbenzene-

Antimony Trifluoride 2,4-D Acid Maleic Acid sulfonate

Antimony Trioxide 2,4-D Esters Maleic Anhydride Sodium Fluoride

Arsenic Disulfide Dalapon Mercuric Cyanide Sodium Hydrosulfide

Arsenic Pentoxide DDT Mercuric Nitrate Sodium Hydroxide

Arsenic Trichloride Diazinon Mercuric Sulfate Sodium Hypochlorite

Arsenic Trixide Dicamba Mercuric Thiocyanate Sodium Methylate

Arsenic Trisulfide Dichlobenil Mercurour Nitrate Sodium Nitrite

Barium Cyanide Dichlone Methoxychlor Sodium Phosphate, Dibasic

Benzene Dichlorvos Methylmercaptan Sodium Phosphate, Tribasic

Benzoic Acid Dieldrin Methyl Methacrylate Sodium Selenite

Benzonitrile Dithylamine Methyl Parathion Strontium Chromate

Benzoyl Chloride Dimthylamine Mevinphos Strychnine

Benzyl Chloride Dintrobenzene (mixed) Mexacarbate Styrene

Beryllium Chloride Dinitrophenol Monoethylamine Sulfuric Acid

Beryllium Fluoride Diquat Monomethylamine Sulfur Monochloride

Beryllium Nitrate Disulfoton Naled 2,4,5-T Acid

Butyl Acetate Diuron Naphthalene 2,4,5-T Esters

Butylamine Dodecylbenzenesulfonic Acid Naphthenic Acid TDE

Tetraethyl Lead Uranyl Acetate Zinc Bromide Zinc Silicofluoride

Tetraethyl Pyrophosphate Uranyl Nitrate Zinc carbonate Zinc Sulfate

Toluene Vanadium Pentoxide Zinc Chloride Zinconium Nitrate

Toxaphene Vanadyl Sulfate Zinc Cyanide Zirconium Patassium

Trichlorfon Vinyl Acetate Zinc Fluoride Fluoride

Trichlorophenol Xylene (mixed) Zinc Formate Zirconium Sulfate

Triethanolamine Dodecyl- Xylenol Zinc Hydrosulfite Zirconium Tetrachloride

Benzenesulfonate Zinc Acetate Zinc Nitrate

Triethylamine Zinc Ammonium Chloride Zinc Phenolsulfonate

Trimethylamine Zinc Barate Zinc Phosphide

APPENDIX 2

Potential Hazardous Polluting Substances

Acridine Chromyl Chloride Hyrooxylamine Potassium Freeicyanide

Allethrin Cobaltous Fluoride 2-Hydroxyphenazine-1- Propyl Alcohol

Aluminum Fluoride Copper Carboxylic Acid Pyridyl Mercuric Acetate

Aluminun Nitrate Crotoxyphos Lactonitrile Rotenone

Ammonium Bromide Cupric Carbonate Lead Tetraacetate Silver

Ammonium Hypophosphite Cupric Citrate Lead Thiosulfate Silver Nitrate

Ammonium Iodide Cupric Formate LeadTungstate Silver Sulphate

Ammonium Pentaborae Cupric Glycinate Lithium Bichromate Sodium Azide

Ammonium Persulfate Cepric Lactate Malachite Green Sodium 2-Chlorotoluene-5-Antimony
Pentafluoride Cupric Paraamino Benzoate Manganese Chloride, Sulphonate

Antimycin A Cupric Salicylate Anhydrous Sodium Pentachlorophenate

Arsenic Acid Cupric Subacetate MCPA Sudium Phosphate, Mono-

Barban Cuprous Bromide Mercuric Acetate baxic

Benfluralin Demeton Mercuric Chloride Sodium Sulfide

Bensulide Dibutyl Phthalate Murcury Stannous Fluoride

Benzene Hexachloride Dicapthon Metam-Sodium Strontium Nitrate

Beryllium Sulphate 2,4-Cinirochlorobenzene p-Methylamino-Phenol Sulphoxide

Butifos p-Dinitrocresol 2-Methyl-Naphthoquinone Temephos

Cadium Dinocap Neburon Thionazine

Cadmium Cyanide Dinoseb Nichel Formate Thallium

Cadmium Nitrate Dioxathion Phenylmercuric Acetate 1,2,4-Trichlorobenzene

Captafol Dodine n-Phenyl Naphthylamine Uranium Peroxide

Carbophenothion EPN Phorate Uranyl Sulfate

Chlorflurazole Gold Trichloride Phosphamidon Zinc Bichromate

Chlorothion Hexachlorophene Picloram Zinc Potassion Chromae

Chlorpropham Hydrogen Sulphide Patassium Azide Zirconium Acetate

Chromic Chloride m-Hyroxybenzoic Acid Potassium Cuprocyanide Zirconium Oxychloride

Chromium p-Hydroxybenzoic Acid.