5.1 Introduction

The primary goal of this management plan for Lake Ontario is to reduce the chemical, physical, and biological factors that are directly or indirectly contributing to use impairments on a lakewide basis. As described in Chapter 3, the Four Parties have identified the lakewide beneficial use impairments of Lake Ontario as:

- Restrictions on Fish and Wildlife Consumption
- Degradation of Wildlife Populations
- Bird or Animal Deformities or Reproductive Problems
- Loss of Fish and Wildlife Habitat

The toxic chemicals that directly or indirectly contribute to these impairments include PCBs, DDT, dioxin, mirex, mercury, and dieldrin. These chemicals are persistent, bioaccumulative toxic substances; they remain in the water, sediment, and biota for long periods of time and they accumulate in aquatic organisms to levels that are harmful to human health. It is the intent of the Four Parties to prevent the development of additional lakewide use impairments that may be caused by other persistent, bioaccumulative toxics entering the lake. The biological and physical factors contributing to the identified use impairments include lake level management; exotic species; and the physical loss, modification, and destruction of habitat. As such, the Four Parties seek to restore the beneficial uses of the lake by reducing the input of critical pollutants and persistent, bioaccumulative toxics to the lake, and by addressing the biological and physical factors causing lakewide impairments.

The successful control of atmospheric transport and deposition of critical pollutants will require actions both inside and outside the Lake Ontario basin. Sources of atmospheric releases of critical pollutants within the Lake Ontario basin will be targeted by the LaMP as part of its pollutant reduction strategy. However, significant sources of critical pollutants may also be found to originate outside the basin. The LaMP will raise issues related to out of basin sources to the attention of other environmental initiatives such as the U.S. Clean Air Act, the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (COA), the 1997 Binational Strategy, and the 1997 North American Regional Action Plan.

This chapter provides a description of the actions that the Four Parties propose to implement, both individually and jointly, in support of the LaMP. The Four Parties recognize that there are many groups, organizations, and agencies implementing activities to improve and protect the Lake Ontario basin. The LaMP process provides the opportunity to develop better connections with these various activities and build on the successes already achieved.

5.2 Ongoing and Future Binational Activities

Binational Virtual Elimination Strategy

The U.S. and Canada have developed a binational strategy entitled "Canada-United States Strategy for the Virtual Elimination of Persistent Toxic Substances in the Great Lakes Basin". This binational strategy sets forth a collaborative process by which Environment Canada (EC) and the United States Environmental Protection Agency (USEPA), in consultation with other Great Lakes stakeholders, will work towards the goal of virtual elimination of persistent toxic substances and a means to track progress in the reduction of loadings to the basin. An implementation framework is currently being prepared with stakeholder input.

Integrated Atmospheric Deposition Network (IADN)

The Integrated Atmospheric Deposition Network (IADN) is a binational network of 19 stations in the U.S. and Canada established and operated for the purpose of monitoring the atmospheric deposition of toxic substances to the Great Lakes. IADN has been in operation since 1990, providing the data used by the U.S. and Canadian governments to report loadings of toxics to the Great Lakes biennially as called for in the Great Lakes Water Quality Agreement (GLWQA). The Four Parties will continue to support these efforts in order to learn more about significant sources of airborne pollutants into the Great Lakes.

5.3 Ongoing and Future Activities in the U.S.

USEPA/New York State Performance Partnership Agreement

On November 26, 1996, the New York State Department of Environmental Conservation (NYSDEC) and USEPA entered into a cooperative partnership to protect and enhance the water resources of New York State for the benefit of its citizens.

While NYSDEC and USEPA have always worked cooperatively to protect New York's water resources, this new Agreement, under the National Environmental Performance Partnership System, provided an opportunity for the state and USEPA to jointly establish priorities, direction, and accountability for water resource management in New York. The Agreement includes mutual understandings of the state and USEPA regarding environmental projects to be pursued as well as the lead agencies responsible for the successful implementation of these projects.

The Performance Partnership Agreement (PPA) is built on two principles:

- Maintaining the efficiency and effectiveness of existing programs in the state.

- Taking more action, beyond these ongoing programs, as necessary to solve particular problems in particular places - through "Community-Based Environmental Protection".

The Agreement contains an environmental and programmatic self-assessment, individual strategies for each of the existing programs and for all identified community-based environmental protection efforts, agreed upon indicators of success, fiscal accountability, public involvement procedures, and a process for reporting success.

Through the Agreement, USEPA and NYSDEC continue their commitment to implement the existing regulatory programs, described in Chapter 4, in order to reduce the load of critical pollutants to the lake from point and non-point sources. The Agreement then lays out commitments specific to the Lake Ontario Community-Based Environmental Protection Initiative. A number of these community-based activities are described below.

The 1997/1998 PPA was entered into by USEPA, NYSDEC, and the New York State Department of Health (NYSDOH). This PPA was expanded in scope to include programs under the Safe Drinking Water Act that are under the purview of NYSDOH. Further information and details regarding the commitments laid out in the PPA can be obtained by viewing USEPA's Worldwide Web Site at www.epa.gov\regional\pps\docs.htm.

Great Lakes Water Quality Guidance

In February 1998, NYSDEC completed the adoption process and began to implement the regulations, policies, and procedures contained within the Great Lakes Water Quality Guidance (GLWQG) (further described in Chapter 4). The implementation of the GLWQG will result in consistent state water pollution control programs throughout the U.S. Great Lake States and will lead to substantial reductions in the loading of LaMP critical pollutants and other pollutants.

The GLWQG will play a major role in addressing all of the lakewide impairments identified in this document. The following illustrates how the implementation of the GLWQG by the eight Great Lakes States will significantly address these concerns.

Restrictions on Fish and Wildlife Consumption: The GLWQG requires that the eight Great Lakes States adopt human health criteria based on the consumption of aquatic life, which will result in the eventual elimination of restrictions on fish and wildlife consumption by humans. The GLWQG includes numeric human health criteria for 16 pollutants, and methodologies to derive cancer and non-cancer human health criteria for additional pollutants.

Degradation of Wildlife Populations and Bird or Animal Deformities or Reproductive Problems: The GLWQG requires that the eight Great Lakes States adopt wildlife criteria, which, once achieved, will result in the eventual elimination of degraded wildlife populations and bird or animal deformities or reproductive problems. The GLWQG includes numeric criteria to protect wildlife from four pollutants (PCBs, DDT and its metabolites, dioxin, and mercury) and a methodology to derive criteria for additional bioaccumulative chemicals of concern (BCCs) discharged to the Great Lakes system.

Targeting the Pollutants of Concern, which are Bioaccumulative and Persistent: The GLWQG focuses on the reduction of 22 known chemicals of concern, including PCBs, dieldrin, DDT and its metabolites, and dioxin. In addition to requiring the adoption of numeric water quality criteria for BCCs and other pollutants, as well as the detailed methodologies to develop criteria for additional pollutants, the GLWQG also includes implementation procedures that will result in loading reductions of BCCs to the Great Lakes basin. These include requirements for the development of more consistent, enforceable water quality-based effluent limits in discharge permits (including requirements for pollution minimization plans to track down and eliminate sources of BCCs); the development and implementation of total maximum daily loads for pollutants that can be allowed to reach the Great Lakes and their tributaries from all sources; and antidegradation policies and procedures which further restrict new or increased discharges of BCCs.

The Majority of the Loadings of these Pollutants are from other Great Lakes: Since the GLWQG will be implemented in all eight Great Lakes States, the loadings of the identified pollutants of concern will be significantly reduced throughout the entire Great Lakes basin. Therefore, the major source of the loadings of the pollutants of concern to Lake Ontario will be substantially reduced.

Clean Sweep Projects

USEPA is continuing its commitment to reduce inputs of agricultural pesticides into Lake Ontario, by funding the County of Erie to expand its Clean Sweep project throughout the Lake Ontario basin. Erie County will use the strategies that were successful in previous Clean Sweep projects to solicit new participating counties and will provide local project management teams with the guidance and technical expertise necessary for successful implementation of this program.

Source Trackdown

USEPA and NYSDEC will conduct additional trackdown studies in order to pinpoint significant sources of critical pollutants in tributaries to the lake. USEPA and NYSDEC will form a trackdown workgroup to identify immediate remedial activities and future monitoring activities for sources of persistent, bioaccumulative toxics to the lake.

Clean Water/Clean Air Bond Act

In 1996, the citizens of New York passed a $1.75 billion Clean Water/Clean Air Bond Act. Over the next five to ten years, the Bond Act will fund capital projects that will result in the protection of and improvements to the environment. Approximately $125 million has been targeted for Clean Water projects in the Great Lakes basin, including $25 million specifically intended to implement NYSDEC's Great Lakes Program, which includes Remedial Action Plans (RAPs) and LaMPs. Funding will support point source, non-point source, and pollution prevention initiatives, as well as activities to restore aquatic habitat and preserve open space.

Hazardous Waste Site Report

NYSDEC will use the findings of a July 1995 report, entitled "Preliminary Review of New York State Inactive Hazardous Waste Disposal Sites in the Lake Ontario Basin", as a first step in identifying which sites contribute significant amounts of critical pollutants to the lake. Where possible, NYSDEC will accelerate schedules for cleaning up these sites. NYSDEC will complete its sources and loadings report for Lake Ontario, documenting the existing knowledge of U.S. sources and loadings of contaminants to the lake.

Fish Advisory Project

USEPA and NYSDEC will continue to implement outreach programs in the Lake Ontario basin to more effectively communicate the risk of consuming contaminated fish. This project involves translating public

outreach pamphlets and brochures into different languages and training citizens to effectively communicate risk in various languages.

Niagara Falls Public Information Office

USEPA will continue to support the Niagara Falls Public Information Office in order to provide the public with easily accessible information on activities in Lake Ontario.

5.4 Ongoing and Future Activities in Canada

Canada-Ontario Agreement (COA)

COA is the primary mechanism for addressing Canadian commitments under the GLWQA. This Agreement was signed by the federal and provincial governments in July 1994. COA sets out a six year plan of action that establishes priorities, targets, and schedules for environmental issues of concern and provides a framework for strategic coordination of environmental responsibilities in the Great Lakes basin and efforts to fulfill Canada's obligations to the GLWQA. COA focuses on results in three main areas: restoration of degraded areas; prevention and control of pollution; and conservation and protection of human and ecosystem health.

COA identifies more than 55 programs and targets to ensure that progress towards the three objectives over the six-year term of the Agreement is measurable. Examples of key targets under Objective 2 – prevent and control pollution – are shown below. The ultimate goal of COA is to achieve the virtual elimination of persistent, bioaccumulative substances from the Great Lakes basin ecosystem by implementing strategies consistent with zero discharge.

- Decommission 90 percent of the high-level PCBs in use; destroy 50 percent of the high level PCBs now in storage; and accelerate the destruction of stored low-level PCB waste.

- Achieve a 90 percent reduction in the use, generation, and release of seven toxic substances by the year 2000 (benzo(a)pyrene, hexachlorobenzene, alkyl lead, mercury, octachlorostyrene, dioxins, and furans).

- Collaborate with, and provide support for, voluntary programs by industry and others to reduce the use, release, or generation of Tier II substances, and establish specific timelines and targets for achieving their virtual elimination.

As part of COA, Canada and Ontario will continue to develop essential information on the fate and effects of selected toxic pollutants from industrial, urban, and agricultural sources and to identify and quantify toxic chemical inputs from the atmosphere. Canada and Ontario are also conducting a coordinated evaluation of registered and scheduled pesticides through a multi-agency Pesticides Review Committee established under COA.

Under the revised Canadian Environmental Protection Act (CEPA), Environment and Health Canada may be able to request pollution prevention and virtual elimination plans from high priority sources of identified substances. The LaMP critical pollutants are thus candidates for mandatory elimination plans from major sources.

Municipal and Industrial Strategy for Abatement (MISA)

Under MOE's Clean Water Regulations, developed under MISA, effluent limits for 10 sectors will be in force by 1998. These include 34 industrial plants in the Lake Ontario basin.

- Petroleum Refining and Pulp and Paper sector regulations were enacted in September and November 1993 and both came into force on January 1, 1996, controlling 11 Lake Ontario basin sources.

- Metal Mining, Industrial Minerals, and Metal Casting sector regulations were enacted in August 1994; all came into force in August 1997, controlling 9 Lake Ontario basin sources.

- Organic Chemical Manufacturing and Inorganic Chemical sector regulations were enacted in February 1995; these regulations came into force in February 1998, controlling 7 Lake Ontario basin sources.

- Iron and Steel Manufacturing and Electric Power Generation regulations were enacted in April 1995; these regulations came into force in April 1998, controlling 8 Lake Ontario basin sources.

Accelerated Reduction/Elimination of Toxics (ARET)

Under ARET, voluntary activities and commitments by sources of persistent, toxic, and bioaccumulative substances are publicly reported on a multi-media basis. Industries and municipalities alike are encouraged by the governments to use ARET to publicly commit to pollutant reductions beyond compliance. The 1995 update of Canada's National Pollutant Release Inventory was released in winter 1997.

Tributary Priority Pollutant Monitoring Study

Canada and Ontario initiated a Lake Ontario Tributary Priority Pollutant Monitoring Study beginning in the spring of 1997. The objectives of the collaborative study are to:

- Identify those tributary discharges along the Canadian shore of Lake Ontario that contribute significant loadings of Priority Pollutants (including all LaMP critical pollutants).

- Establish the range of concentrations of priority pollutants present in the most significant tributaries.

- Where feasible, use the concentration data in conjunction with federal and federal/provincial flow data to estimate the mean annual mass discharge of priority pollutants for those Lake Ontario tributaries that have been selected for monitoring.

- Provide the degree of certainty associated with estimates of the mean concentration and mass discharges.

- Provide recommendations for targeted action within watersheds identified as significant sources of priority pollutants, such as source trackdown and load reduction activities.

Cleanup Fund

Environment Canada's (EC's) Cleanup Fund (in place until the year 2000) will continue to provide funding and technical support to a wide range of contaminated sediment, urban stormwater, and agricultural projects aimed at controlling sources of pollution to Lake Ontario, both in RAPs and other areas. The Fund will also support a wide range of habitat restoration and enhancement projects in the Lake Ontario basin.

Site Remediation Activities

Contaminated site remediation activities will continue at "orphan sites" (those sites which have been abandoned by their owners and the owners cannot be located). EC has provided funding for the cleanup of these orphan sites in the past under the National Contaminated Sites Remediation Program. This was a 5 year program that expired in March of 1995. The sites remediated under this program include: Chemical Waste Management Ltd. PCB Spill Site, Smithville; National Hard Chrome Site, North York; and Deloro Mine Site, Deloro.

Outreach Programs

EC will conduct outreach programs for PCB owners in the Toronto area and other Lake Ontario communities. EC will conduct a residential pesticide reduction project in the Toronto area and training and workshops to reduce the use of pesticides by Lake Ontario municipalities. Outreach will continue to the farming community to reduce the impact of rural land use practices. The MOE-MNR Guide to Eating Ontario Sport Fish provides health related advice to the public.

5.5 Binational LaMP Workplan

The 1987 GLWQA specifies that, when the problems in the lake have been identified and the Stage 1 LaMP has been completed, a Stage 2 LaMP be prepared which sets out a schedule for load reduction activities. The Four Parties propose to develop the technical information necessary to focus the actions undertaken through the LaMP and provide the foundation for the Stage 2 LaMP. Table 5 identifies the activities that the Four Parties propose to undertake binationally (either jointly or in a complementary fashion) to move towards the completion of the draft Stage 2, and to continue to build partnerships and provide information about the LaMP process. It is the goal of the Four Parties to develop the technical information in draft form within two years. Preparation of the Stage 2 LaMP will then commence, incorporating public input on the draft technical information. It is the goal of the Four Parties to produce a draft Stage 2 document for public review by fall of the year 2000.

5.6 Summary

In Chapter 3, the impaired beneficial uses of Lake Ontario and the critical pollutants and biological/physical factors contributing to these impairments were identified.

In this chapter, the Four Parties have identified the ongoing and future activities that will continue efforts to move towards the restoration of beneficial uses of the lake and achieve virtual elimination of critical pollutants. The Four Parties have also proposed joint or complementary actions that will, within two years, provide the technical basis for the Stage 2 LaMP. It is the goal of the Four Parties to produce a draft Stage 2 LaMP for public review by fall of the year 2000.

The Stage 2 LaMP will identify the additional actions that will be necessary to restore the beneficial uses of Lake Ontario. The Four Parties will, however, initiate additional LaMP actions prior to the completion of the Stage 2 document if these actions are identified as necessary to achieve LaMP goals.

Table 5. Binational Workplan for the Lake Ontario LaMP

Activity	3-year objectives	Priorities	Deliverables (Spring 2000, unless otherwise specified)
Reducing inputs of critical and other pollutants	Continue existing programs to reduce loadings of critical pollutants	Evaluate effectiveness of existing programs Support implementation of Binational Great Lakes Toxics Strategy	a) Table and map identifying likely point and non-point sources of critical pollutants; the data collection will focus on sources in the basin but will also include upstream sources entering via the Niagara river; major atmospheric sources from out of the basin may also be included b) Forecast reductions in loadings as a result of existing activities
	Update pollutant loadings and contaminant levels and instigate new control programs to address identified sources and loadings	Undertake source trackdown to identify sources Update tributary loading Update sewage treatment plant loading Enhance existing mass balance models Facilitate cooperative lakewide monitoring	a) Prioritized listing of point, non-point, and basin sources contributing loadings of critical pollutants to include significant sources on each side of the lake b) Updated table 3-3 and 3-4 for LaMP c) Updated tables 3-5 and 3-6 for LaMP d) First cut mass balance model to describe major fluxes of critical pollutants into and out of Lake Ontario (Spring 1999) e) Binational priorities listing for monitoring needs (Spring 1999) f) Workplan for cooperative monitoring
	Refine LaMP List of Critical Pollutants	Review new data as necessary	Determination of any additional critical pollutants (in consultation with health and resource agencies)

Activity	3-year objectives	Priorities	Deliverables (Spring 2000, unless otherwise specified)
Updating/reassessing beneficial use assessments in open lake waters	Refine beneficial use impairment assessment	Further assess lakewide beneficial uses: Priorities: 1) Chemical impacts on benthos 2) Chemical and other factors influencing phytoplankton and zooplankton populations 3) Updates on status of colonial waterbirds, bald eagles, mink, and otter 4) Updates of all beneficial use impairments as necessary, where data available on impacts of physical and biological factors impacting beneficial uses	a) Updated benthos impairment section for Stage 2 LaMP b) Binational beneficial use assessment of phytoplankton and zooplankton populations using information from the Canadian Department of Fisheries and Oceans Bioindex project, MOE's intake monitoring, USEPA's Lake Guardian research program, and the U.S. Bioindex project carried out by the NYSDEC, U.S. Fish & Wildlife Service, and Cornell University c) Binational update on status, using relevant, readily available data, addressing chemical and nonchemical factors d) A series of prioritized updates to be prepared using relevant data on beneficial use impairment indicators, with management recommendations; may not include update on all 14 indicators for the Stage 2 LaMP
Managing biological and physical factors	Continue habitat protection and restoration activities	Summarize underway/proposed actions for nearshore by fall 1998	Map and table identifying nearshore underway and proposed (to year 2000) actions to protect or restore physical habitat
Developing ecosystem objectives and indicators	Update ecosystem objectives and determine monitoring indicators	Review work completed to date by technical subcommittees; in conjunction with partners, determine next steps	Binational workplan for ecosystem objectives development including role of public consultation, priority objectives for pelagic, benthic, and wildlife communities (Spring 1999); begin implementation of Workplan
	Develop objectives for restoration of beneficial uses	Set restoration objectives, determine necessary loading reduction schedules, develop monitoring mechanisms	Delisting objectives for the LaMP for each of 3 beneficial uses impaired by chemicals as basis for loading reduction schedules, for public consultation in 1999

FUTURE AGENDA FOR THE LaMP

Activity	3-year objectives	Priorities	Deliverables (Spring 2000, unless otherwise specified)
Facilitating public involvement - three tiered Lakewide Advisory Network	Establish Basin Teams and partnerships	Identify and meet with partners	a) Agreements with Basin Teams and partners to cooperate in sharing information, encouraging actions to preserve and protect the lake and watershed, and providing public input to the LaMP process (Spring 1999) b) Meetings with groups on issues of concern as necessary
	Maintain information connection	Provide updated information via the Lake Ontario LaMP Web page and mailings	a) Up to date Lake Ontario LaMP homepage b) Occasional mailings for informational updates and gathering public input
	Hold binational Lake Ontario forums at significant stages in the LaMP process	Convene binational Lake Ontario forums, as necessary, with participants from Basin Teams, partners, and other interested stakeholders	Binational forum meeting likely in 1999
Reporting	Produce annual status reports	Produce Year 1 Annual Report	A short annual report highlighting progress to be released at joint Lake Ontario LaMP and NRTMP annual meeting
	Produce draft Stage 2 report	1) Assess existing programs 2) Update sources and loadings 3) Present revised objectives and indicators 4) Present draft load reduction schedules	Draft Stage 2 will be available for public review in the fall of 2000