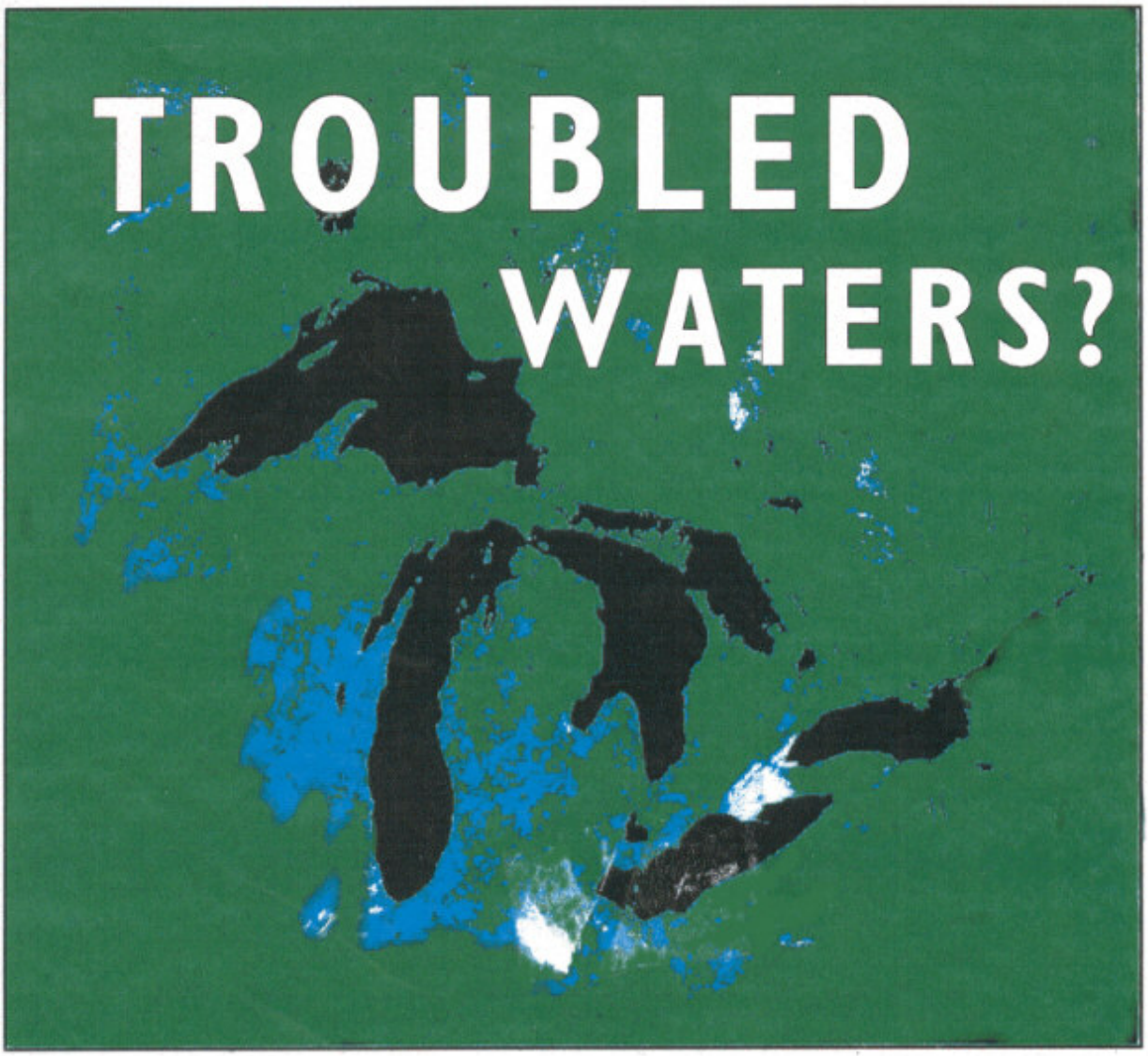
TROUBLED WATERS?



A Review of the Performance of the Governments of Canada and Ontario under the 1994 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

CANADIAN INSTITUTE FOR ENVIRONMENTAL LAW AND POLICY

L'INSTITUT CANADIEN DU DROIT ET DE LA POLITIQUE DE L'ENVIRONNEMENT

Est. 1970

Troubled Waters?

A Review of the Performance of the Governments of Canada and Ontario under the 1994 Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

prepared by

Mark Winfield, Ph.D.
Director of Research

Greg Jenish, B.E.S.
Project Officer

March 1999

Cover Photo: Satellite mosaic of the Great Lakes watershed. Courtesy of the Canada Centre for Remote Sensing.

Printed in Canada.

Acknowledgements

The Canadian Institute for Environmental Law and Policy would like to thank the Joyce Foundation for its support of this project.

The authors would like to thank those who contributed to this effort: Anne Mitchell for project management, editorial oversight and communications; Sara Hartley for research assistance; and Margaret Wooster, Peter Victor, John Jackson and Paul Muldoon, for their review and insights.

Appreciation is also expressed for contributions made by members of Remedial Action Plan Public Advisory Committees, from organizations such as Great Lakes United as well as staff of government departments and agencies involved in Great Lakes issues including: Environment Canada, Health Canada, Industry Canada, the Department of Fisheries and Oceans, the Ontario Ministries of the Environment and of Natural Resources, as well as binational agencies such as the International Joint Commission.

The authors assume responsibility for the views expressed in this paper and responsibility for any inaccuracies or misconceptions that may arise.

For more information about this publication or its publisher contact Anne Mitchell, Executive Director at the:

Canadian Institute for Environmental Law and Policy
517 College Street, Suite 400
Toronto, Ontario
M6G 4A2

telephone (416) 923-3529
facsimile (416) 923-5949
E-mail: cielap@web.net
http://www.web.net/cielap

ISBN 1-896588-34-4

Table of Contents

Executive Summary

This report reviews the progress of the governments of Canada and Ontario on the commitments which they made through the July 1994 *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem*. The *Canada-Ontario Agreement* is the primary vehicle for the fulfilment of Canada's obligations under the *Canada-United States Great Lakes Water Quality Agreement*. The 1994 Canada-Ontario Agreement was signed by the federal Ministers of the Environment, Fisheries and Oceans, Health, and Agriculture and Agri-Food, and by the Ontario Ministers of Environment and Energy, Natural Resources, Health, and Agriculture, Food and Rural Development. The current Agreement expires in March 2000.

The 1994 Agreement was focused on three key objectives: the restoration of degraded areas, particularly the seventeen Canadian and binational Areas of Concern (AOCs) identified through the 1987 Protocol to the *Great Lakes Water Quality Agreement*; the prevention and control of pollution, including a 90% reduction in the use, generation and release of persistent toxic substances identified in the Agreement; and the conservation and protection of human and ecosystem health in the Great Lakes Basin. In the Agreement, the Parties agreed to an estimated cost of $2.5 billion to achieve its objectives, including approximately $1.7 billion for the restoration of degraded areas.

The 1994 COA departed from the format of previous COA Agreements in that it outlined 47 specific goals and commitments to be achieved by the signatories over the six year life of the Agreement. This report concludes that it is clear that most of the Agreement's specific goals and objectives will not be met by the date of its expiry in March 2000. In fact, the report notes that there is evidence of worsening problems in a number of areas that were to be addressed through the Agreement.

The report highlights the year 1995 as a watershed for COA at both the federal and provincial levels. The February 1995 federal 'Program Review' budget, and the June 1995 change in provincial government are identified as critical events for COA. Many of the most significant achievements reported by the governments under COA result from initiatives launched before these events.

The report finds that progress on many of the Remedial Action Plans (RAPs) for the AOCs has been severely affected by budgetary reductions and restructuring, especially at the provincial level. Progress on priority substances pollution prevention and control largely flows from pre-1995 regulatory initiatives, such as the establishment of new discharge controls on the pulp and paper sector. Since then, the provincial and federal governments have undertaken initiatives which are seen by many to undermine the goals of COA and the *Great Lakes Water Quality Agreement* in this area. The situation with respect to the Agreement's human and ecosystem health objectives is similar, with little or no real progress, and many provincial initiatives which are undermining COA goals.

The report notes that, in its initial stages, COA emerged as a notable example of

successful intergovernmental cooperation, where the budgeting, planning and work activities of the participating federal and provincial agencies was closely integrated. Since 1995, however, many key agencies, such as the Ontario Ministry of Natural Resources, and the Federal Department of Fisheries and Oceans, have virtually abandoned their COA-related activities, while the work of other agencies, such as the Ontario Ministry of the Environment, and Health Canada, have been reduced dramatically.

The current Canada-Ontario Agreement Respecting the Great Lakes Ecosystem expires March 2000. The report concludes that the commitment and effective cooperation of the federal and Ontario governments is essential to the fulfilment of Canada's commitments under the *Great Lakes Water Quality Agreement*, and the ultimate goal of the restoration of the Great Lakes. A number of recommendations regarding the structure of the next *Canada-Ontario Agreement*, for the period 2000 onwards, are provided in the final section of the report.

Introduction

This report evaluates the progress of the Governments of Canada and Ontario in the implementation of their commitments under the July 1994 *Canada-Ontario Agreement Respecting the Great Lakes Ecosystem Basin* (COA). The Agreement is the principal instrument for the fulfilment of Canada's obligations under the Canada-United States *Great Lakes Water Quality Agreement*. The COA was signed on behalf of Canada by the Deputy Prime Minister and the Ministers of the Environment, Fisheries and Oceans, Agriculture and Agri-Food, and Health, and by the Ministers of Environment and Energy, Agriculture, Food and Rural Affairs, Natural Resources, and Health for Ontario.

The capacity of both federal and Ontario governments to fulfil their COA obligations has been heavily affected by the dramatic changes that have occurred to environmental laws, policies and institutions over the past four years. These changes began with the federal government's February 1995 'Program Review' budget, which imposed a 30% reduction in the budget of Environment Canada, and similar cuts to the other agencies of the federal government involved in the Agreement. The June 1995 Ontario election has been followed by even more dramatic reductions in the resources of the province's environmental and natural resource management agencies, and extensive changes to Ontario's framework of environmental laws and policies.

The impact of these changes was highlighted by the Canada-U.S. International Joint Commission, the body mandated to monitor the Parties' fulfilment of their obligations under the *Great Lakes Water Quality Agreement*, in its 1996 8th Biennial Report on Great Lakes Water Quality:

> "We are concerned that regulatory reviews, revisions and legislative riders may be used to weaken and eliminate environmental laws...
>
> "We recognize that Governments are reducing regulatory burdens and their own spending under current financial and political conditions. However, these reductions should not be allowed to sacrifice environmental protection or compromise the ability of Canada and the United States to meet their Agreement commitments. We strongly believe that the existing legislative and regulatory base is a required baseline to restore and protect the Great Lakes Basin Ecosystem."[1]

Commission's concerns were expressed even more strongly in its 1998 9th Biennial Report:

> "The ability of governments at all levels to deliver, however, is being stressed, and programs to restore and protect the Great Lakes have drastically slowed or halted."[2]

As this report illustrates, these outcomes have been especially evident on the Canadian side of the Great Lakes Basin Ecosystem.

Background: The Great Lakes Water Quality Agreement and the *Canada Ontario Agreements*

The *Great Lakes Water Quality Agreement* between Canada and the United States was first signed in 1972. The Agreement underwent major revisions in 1978 and 1987. The original 1972 Agreement focussed on changing water chemistry to reverse eutrophication, a process by which the presence of excess nutrients result in dramatic increase in algae populations in a lake. The algae consume oxygen, resulting in large scale "die offs" of fish. By the late 1960's eutrophication had become a severe problem in Lakes Michigan, Ontario and Erie.

In Canada, the federal and Ontario governments signed the first Canada-Ontario Agreement in August 1971. This committed $50 million, mostly for improving sewage treatment systems on the Canadian side of the Lakes to reduce nutrient loadings.[3] The COA Agreement was regarded as necessary, as the bulk of the obligations under the Canada-U.S. Agreement were seen to lie within the jurisdiction of the province.

The main aims of the 1972 Agreement were largely accomplished through better sewage treatment, reductions in the phosphorous content of detergents, and reductions in runoff of agricultural fertilizers.[4] The focus of the 1978 Agreement shifted from nutrient loadings to a new call for the "virtual elimination" of persistent toxic substances from the Lakes. This reflected a growing body of scientific evidence regarding the impacts of persistent toxic contaminants on aquatic life, wildlife and human beings. The Agreement targeted a list of critical pollutants for virtual elimination.

The 1978 Agreement also broadened the goals of the Parties, from the restoration and enhancement "of water quality in the Great Lakes System", to "restore and maintain the chemical, physical and biological integrity of the waters of the Great Lakes Basin Ecosystem."

Following the conclusion of the 1978 Canada-U.S. Agreement, new Canada-Ontario Agreements were negotiated in 1982 and again in 1986. These continued to provide funding arrangements for the upgrading of sewage treatment infrastructure, with the federal government providing 15% of the costs, the province 40% and municipalities the balance.[5] In addition, in 1986 Ontario initiated a new water pollution control regulatory program call the Municipal-Industrial Strategy for Abatement (MISA). The stated purpose of the program was to set technology-based effluent limits to "virtually eliminate" the discharge of toxic substances into the waterways of Ontario.[6]

The Canada-U.S. Agreement was further amended through a Protocol adopted in 1987. A new Annex was added to the Agreement calling for the development of Remedial Action Plans (RAPs) for 43 heavily degraded areas, identified as Areas of Concern (AOCs), and the development of Lakewide Management Plans (LaMPs) to reduce loadings of critical pollutants in order to restore beneficial uses in each of the Lakes.[7] Fourteen AOCs were identified on the Canadian side of the Lakes, along with three binational AOCs.

The current Canada-Ontario Agreement was signed in July 1994. The 1994 COA differed from its predecessors in that it employed an ecosystem perspective and included specific targets for achieving basic objectives. The Agreement stated that the Parties agreed that the achievement of its objectives would cost Canada, Ontario and municipal governments $2.5 billion, including $1.7 billion for restoration of degraded areas. The Parties also agreed to share the core administrative costs associated with the central and local coordination of the RAP program. Neither government was to modify its financial support to agreed upon commitments without consultation with the other. However, unlike previous COA Agreements, the federal government would make no specific financial contribution to the upgrading of sewage treatment infrastructure.

The 1994 COA Agreement is structured around three major objectives: the Restoration of Degraded Areas; the Prevention and Control of Pollution; and the Conservation and Protection of Human and Ecosystem Health. Under each objective, a number of Programs and Targets are identified, totalling 47 specific commitments. To date, the governments have released two progress reports on their work under the COA, the most recent being in October 1997.[8] The current Agreement is scheduled to expire on March 31, 2000.

Deregulation, Devolution and Downsizing - "3 D" and COA

The International Joint Commission's 1998 9th Biennial Report on Great Lakes Water Quality highlighted the impact of the themes of Deregulation, Devolution and Downsizing - "3 D" on the commitments of Canadian and U.S. governments made under the *Great Lakes Water Quality Agreement*.[9]

All of the Canadian agencies who are signatories to the COA agreement have been heavily affected by these factors since 1995. The impacts of downsizing on key COA agencies have, for example, included the following:

° Ontario Ministry of the Environment: 43% loss of operating budget; 81% loss of capital budget; and 32% loss of staff from 1994/95 to 1998/99; Direct and indirect funding support for many provincially lead Remedial Action Plans has been terminated by the Ministry;[10]

° Ontario Ministry of Natural Resources: Great Lakes Branch disbanded, direct participation and funding for Remedial Action Plan work terminated; 73% reduction in operating budget for the four Great Lakes Management Units which delivered enforcement, fish community monitoring and fisheries management, from 1992/93 to 1997/98, resulting in a 40% reduction in staff.[11] There are no references to COA and Great Lakes commitments in the Ministry's current business plan;[12]

° Environment Canada: 15%/year reduction to the six-year (1994-2000) $150 million Great Lakes 2000 program.[13] The program is the mechanism for the delivery of the government of Canada's commitments under the GLWQA and COA;

- Health Canada: 40% reduction, from $20 million over six years, to $11-$13 million over seven years, in resources for Great Lakes Health Effects Program since approval of program in 1994;[14] and

- Department of Fisheries and Oceans: 40% loss of staff and 70% loss of operating budgets for Great Lakes Research Program.[15]

These reductions in resources, along with the extensive changes to environmental laws and regulations that have taken place in Ontario over the past four years, are having a major impact on the ability of the federal and Ontario governments to fulfil their commitments under COA and, by implication, the *Great Lakes Water Quality Agreement* itself.

The Structure of this Report

This report is structured in three sections: this introduction; the assessment of the performance of the federal and Ontario governments relative to their COA commitments; and a summary and conclusion.

The assessment of performance is subdivided into three sections, one for each of the major COA objectives: Restore Degraded Areas; Prevent and Control Pollution; and Conserve and Protect Ecosystem Health. Following the structure of the Agreement, within each of these major sections, the discussion is subdivided into the major program areas. Within each program area, the governments' statements of progress on their specific commitments are summarized, and a commentary and discussion provided on each commitment. Conclusions are provided within each program area, and overall summaries and conclusions regarding the three major objectives of COA.

General conclusions are provided in the final chapter, along with recommendations regarding the structure of the next Canada-Ontario Agreement. This will be required to be in place when the current Agreement expires in March 2000.

ENDNOTES

1. International Joint Commission, *8th Biennial Report on Great Lakes Water Quality* (Washington and Ottawa: IJC, 1996), pg.3.
2. IJC, *9th Biennial Report on Great Lakes Water Quality*, pg.18.
3. P.Botts, "Great Lakes Water Quality Agreement: Its Past Successes and Uncertain Future (Short Version)" (Hanover, NH: Institute for International Environmental Governance, April 1997), pg.5.
4. *Ibid*.
5. *Ibid*., pg.8.
6. Ministry of the Environment, *Municipal Industrial Strategy for Abatement: A Policy and Program Statement of the Government of Ontario on Controlling Municipal and Industrial Discharges for Surface Waters* (Toronto, MoE, 1986).
7. *Protocol for Amending the 1978 Agreement Between Canada and the United States of America on Great Lakes Water Quality* "Annex 2: Remedial Action Plans and Lakewide Management Plans" 1987.
8. *2nd Report of Progress under the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem* (Toronto: Environment Canada and the Ontario Ministry of the Environment, October 31, 1997.
9. IJC, *9th Biennial Report*, pp.17-18.
10. M.Winfield and G.Jenish, *Ontario's Environment and the 'Common Sense Revolution:' A Third Year Report* (Toronto: CIELAP, June 1998).
11. Great Lakes Water Quality Board, "Review of Government Resources and Changing Program Thrusts as they Relate to Delivery of Programs under the Great Lakes Water Quality Agreement (International Joint Commission, 1998), Canada- Ontario Ministry of Natural Resources, URL:http://www.ijc.org/ boards/wqb/govres/review.html.
12. Ministry of Natural Resources, *1998-99 Business Plan*, Key Result Areas. URL:http://www.gov.on.ca/ MBS/english/press/plans98/env.html.
13. Great Lakes Water Quality Board, "Review of Government Resources," Canada - Environment Canada.
14. *Ibid*., Canada - Health Canada.
15. *Ibid*., Canada - Department of Fisheries and Oceans.

Objective One:

Restore Degraded Areas

Objective One: Restore Degraded Areas

Remedial Action Plans

COA Commitments:

1.1.1 Restore 60 per cent of impaired beneficial uses across all 17 AOCs, leading to the delisting of nine AOCs by the year 2000.

1.1.2 Complete and submit all RAP Stage 2 reports to government by the end of 1996. Governments will respond to all completed Stage 2 RAP (Remedial Action Plan) reports and submit them to the IJC (International Joint Commission) by end of 1997.

1.1.3 Establish organizational frameworks for individual AOCs to coordinate and facilitate implementation of local RAPs upon completion of Stage 2 reports.

1.1.4 By 1995, establish cooperative mechanisms, such as environmental surveillance and monitoring to track progress toward delisting all 17 AOCs.

Statement of Progress[i]

Key Elements of the Governments' Statement of Progress on COA Commitments. [1]

1.1.1 Approximately 13 per cent of the beneficial uses impaired by local sources have now been fully restored. Many more have shown signs of incremental improvements and one AOC, Collingwood Harbour, has been declared fully restored and delisted.[2] Reasons cited for the rate of progress include that "some impairments were found to be caused by sources outside the AOC" or that some "were incorrectly designated based on preliminary or anecdotal evidence."[3] Also cited with respect to the rate of progress is the consideration that: "The change in status of a beneficial use from "impaired" to "restored" is not as clear-cut as was first envisioned when the COA targets were established in 1994."

More than 50 per cent of the necessary actions to restore the AOCs are stated to have been implemented. The government response also notes that "Since 1995, five beneficial uses have been restored and 15 are undergoing technical confirmation of restoration."

---

[i] *A complete copy of the governments' statement of progress on the Canada-Ontario Agreement can be found at Environment Canada's website: http://www.cciw.ca/glimr. The Statements of Progress in this report have been abbreviated for length considerations.*

Beneficial uses as defined in the Revised 1978 Great Lakes Water Quality Agreement as amended by the 1987 Protocol

"Impairment of beneficial use(s)" means a change in the chemical, physical or biological integrity of the Great Lakes System sufficient to cause any of the following:

(i) restrictions on fish and wildlife consumption;
(ii) tainting of fish and wildlife flavour;
(iii) degradation of fish and wildlife populations;
(iv) fish tumours or other deformities;
(v) bird or animal deformities or reproduction problems;
(vii) degradation of benthos;
(viii) restrictions on dredging activities;
(ix) restrictions on drinking water consumption, or taste and odour problems;
(x) beach closings;
(xi) degradation of aesthetics;
(xii) added costs to agriculture or industry;
(xiii) degradation of phytoplankton and zooplankton populations; and
(xiv) loss of fish and wildlife habitat;

1.1.2 Nine RAP Stage 2 reports have been submitted to governments.[4] The governments have formally responded to eight of these reports. Two complete Stage 2 reports (Collingwood Harbour and Hamilton Harbour) have been submitted to the IJC. Work towards completion of all remaining RAP Stage 2 reports continues in all AOCs, except Port Hope Harbour where a separate process is being followed due to the nature of the contamination at that site. The government report indicates that "Progress on this target is behind the schedule referenced in the target statement."

1.1.3 The Implementation Frameworks are considered to be behind schedule. Implementation frameworks have been developed for seven AOCs. "Progress on this target is behind the schedule referenced in the target statement."[5]

Moreover, the governments are indicating their intention to reduce their role in the RAP implementation process: "As the RAP process has shifted its emphasis from planning to implementation, governments and stakeholders recognized the need to broaden support for continued public involvement. Canada and Ontario have therefore amended the COA RAP Public Involvement Guidelines to encourage greater self-sufficiency. PACs are attempting to become more self-sufficient and less reliant on government funding."[6]

1.1.4 EC and MOEE have developed a plan to monitor AOCs and the near shore zone of the Great Lakes to the year 2002. In 1997, MOEE and EC agreed to coordinate and oversee the monitoring and surveillance activities that were related to their respective mandates. These activities are designed to track the delisting of seven of the 14 beneficial uses. The seven beneficial uses are: fish consumption, degradation of benthos, restrictions on dredging activities, eutrophication, drinking water consumption, aesthetics (as related to eutrophication), and degradation of phytoplankton and zooplankton populations.

The present monitoring and surveillance plan will be a component of a larger monitoring activity which will incorporate the other seven beneficial uses and will require the involvement of additional federal and provincial agencies such as the Department of Fisheries and Oceans (DFO), Health Canada and MNR.

As part of the implementation phase for RAPs, the provincial and federal governments have identified an audit function for PACs in order to track progress towards delisting AOCs. Information generated from monitoring programs is essential to this audit process.

To date, audit reports have been completed in Hamilton and Bay of Quinte. These reports outline the extent to which implementation is under way and provide a mechanism for the public to ensure that progress toward meeting RAP commitments continues.

Remedial Action Plan Progress as documented in Government Response:

- The Severn Sound Environmental Association was established and will ensure that restoration activities that lead to the delisting of this AOC is completed.
- An agreement is being finalized for a new implementation framework for the Metro Toronto and Region RAP.
- Implementation of the Bay of Quinte RAP is under way.
- Stage 2 Report recommendations for the St. Clair River RAP are to be carried out.
- Hamilton Harbour was the first AOC to set up a coordinated implementation effort. The Bay Area Restoration Council conducts education and public outreach activities and reports on progress.
- Development and implementation of the Lake Superior RAPs, the Spanish Harbour RAP and the St. Mary's River RAPs are being undertaken.
- In Collingwood Harbour, the Collingwood Harbour Action Team meets periodically to review monitoring data and to ensure that environmental restoration continues.
- As of June 1997, implementation frameworks are pending for St. Lawrence River, Detroit River, and Niagara River.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Commentary and Discussion[ii]

COA Commitments 1.1.1 - 1.1.4

RAP Development and Implementation

The development of Remedial Action Plans (RAPs) for the 43 Areas of Concern (AOCs) around the Great Lakes identified by the International Joint Commission was one of the major elements of the 1987 Protocol to the Great Lakes Water Quality Agreement. There are 14 AOCs on the Canadian side of the Lakes and three binational AOCs. In 1991, the Auditor-General of Canada estimated that the remediation of the AOCs would require "several billion dollars."[7] The 1994 COA states that the RAP work mandated by the Agreement will require approximately $1.7 billion to complete.[8]

Prior to 1997 responsibility for development and implementation of RAPs was shared by federal and provincial governments. The federal government was assigned the lead on Niagara River, Hamilton Harbour, Port Hope and St. Lawrence River RAPs. Leadership for remainder rested with the provincial government. The State of Michigan has the overall lead for the St. Mary's River and Detroit River Binational RAPs. Memoranda of Understanding (MOUs) regarding the sharing of RAP work were developed between Environment Canada, the Department of Fisheries and Oceans, Ontario Ministry of Natural

[ii].The commentary and discussion in this section includes the results of interviews with participants in the Public Advisory Committee Process for eight of the Canadian or Binational RAPs.

Resources, and Ontario Ministry of the Environment, for the Lake Superior RAPs. Similar agreements existed between Environment Canada and the Ministry of the Environment's Southwestern Region regarding the Detroit and St. Clair River RAPs, and the Ministry's Eastern Region regarding the Bay of Quinte and St. Lawrence River RAPs.

Among other things, the lead agencies provided funding for a coordinator for each of the RAPs. The coordinators were responsible for leading the development of the RAP plans, coordinating the efforts of different government agencies involved in the RAP, and developing proposals to funding sources for RAP implementation work. Public Advisory Committees (PACs) were also established for each of the RAPs. These were multi-stakeholder bodies intended to be focal points for public involvement in the RAP process. The PAC members were volunteers, and the Committee's depended on the governments to support their core functions. In the federally lead RAPs, full or part -time public involvement facilitators were provided.

Resources for the implementation of RAPs came from a diversity of sources. These included the Great Lakes Clean-Up Fund of the federal government's Great Lakes 2000 program, a $1 million/yr fund for RAP work provided by the Ontario Ministry of Natural Resources, the Municipal Assistance Program and Urban and Rural Beach Clean-up Programs of the Ontario Ministry of the Environment, Great Lakes Research Program of the Department of Fisheries and Oceans, and the regional operating budgets of the Ontario Ministries of the Environment and Natural Resources and the resources of local conservation authorities and municipalities.

The governments' December 1997 progress report[9], indicates that approximately 13 per cent of the beneficial uses impaired by local sources have been fully restored and one AOC delisted. However, it is clear that the goal of 60 per cent restoration of the impaired beneficial uses across all 17 AOCs, leading to the delisting of nine AOCs by the year 2000 will not be met.

All RAP Stage 2 reports were to have been submitted and responded to by the end of 1997. As of December 1997 eight of the stage two reports were still outstanding, and only two (Hamilton Harbour and Collingwood Harbour) had been submitted to the IJC. In addition, concerns have been raised that the delisting of the Collingwood Harbour AOC, was premature,[10] and that the bulk of the restoration work that has taken place in the other RAPs has been on habitat restoration and the reduction of point sources of pollution. The more complex, challenging and costly restoration work, such as the remediation of contaminated sediments, remains outstanding. In May 1998, the Ontario Ministry of the Environment stated that only the Nipigon Bay, Spanish Harbour, Wheatly Harbour and Niagara River RAPs were close to meeting the year 2000 delisting deadline.[11]

Moreover, governments have reduced their commitment to the RAP process just as the processes move from planning to implementation, a point at which significant financial resources would be required to complete the work. The implications of these changes for the RAP implementation process were highlighted by the IJC in its 1998 9th Biennial Report on Great Lakes Water Quality:

"Recent staff reductions and budget cutbacks in many jurisdictions give, at least, the appearance of a reduced commitment to RAPs and LaMPs and, hence to the Agreement. Many of these developments have occurred with little advance notice, little discussion and no publicity."[12]

The major changes affecting RAP development and implementation in over the past three years have included the following:

Federal

Reductions in Great Lakes 2000 Program and Great Lakes Clean-Up Fund

The fulfilment of the federal government's commitments under the GLWQA and COA are supported through the Great Lakes 2000 program, announced in 1994 as a six year $150 million partnership involving seven federal departments. Environment Canada' share of this program was $110 million. Work on the RAPs is supported through the Great Lakes 2000 Clean-up Fund within the program. The budget for the Fund is approximately $5 million/yr.[13]

The February 1995 federal budget imposed a 30% cut to the Great Lakes 2000 Program over the three year program review period. This resulted in an actual cut of 15% ($22.5 million) over the six year life of the program.[14] *This has resulted in a reduction in the available budget for RAP work and slowed RAP implementation.*[15]

Reductions in Department of Fisheries and Oceans RAP Related Activities.

The Department of Fisheries and Oceans announced its intention to withdraw from its freshwater functions as part of the February 1995 budget. Subsequently, the Department downsized the scientific staff of its Great Lakes Research Program staff by 40% and its operating budget by 70%. Toxicology research in the Hamilton Harbour, Jackfish Bay, Peninsula Harbour, Toronto Harbour and Spanish River AOCs was discontinued and transferred to Environment Canada.[16] *The Department has terminated its participation in the MOU's for those RAPs.*[17] *The Great Lakes Laboratory for Fisheries and Aquatic Science has received funding from the Environment Canada Great Lakes 2000 Clean-up fund to continue habitat and water quality work in the Hamilton Harbour, St. Mary's River and Severn Sound AOCs.*[18]

Reductions in the Health Canada Great Lakes Health Effects Program

Health Canada reports a reduction in the budget of the Great Lakes Health Effects Program, which is a component of the Great Lakes 2000 Program, from $20 million to $11-13 million over the 1994-2000 life of the program. Among other things, this has lead to a reduction in the Department's direct involvement in RAP work and RAP specific research.[19] *Health Canada has compiled, but has yet to release to the public, health data for each of the AOCs.*[20]

Provincial

MoE Termination of Funding for RAP Programs

In January 1997, the Ontario government made a number of major reductions in its support for the RAPs for which it was the lead agency. These included:

- *the elimination of the positions of the Coordinators for the Thunder Bay, Spanish Harbour, Detroit River, Niagara River, Metro Toronto and Bay of Quinte/St. Lawrence RAPs;*

- *the termination of support for the RAP Public Advisory Committees;[21] and*

- *the downgrading of the Ministry of the Environment District Offices in Windsor, Sault Ste. Marie and Cornwall to sub-offices. Staff in each of these offices had been contributing to RAP work.*

The position of the Lake Ontario Lakewide Management Plan (LaMP) was also terminated by the Ministry in January 1997.

The implementation of the RAPs has also been affected by other budgetary reductions by the Ministry of the Environment. These have included:

Termination of Urban and Rural Beach Clean-up Programs

The termination of the funding for urban and rural beach clean-up ($3.5 million & $4.7 million/year respectively) was announced in November 1995. The program had provided funding for RAP implementation activities in a number of AOC's, including Severn Sound, the St. Clair River, Hamilton Harbour and the Bay of Quinte.

Termination of the Municipal Assistance Program

The termination of the $140 million/year Municipal Assistance Program was announced in April 1996. As outlined under ***1.2 Capital Works,*** *this program, which provided funding to municipalities for improvements to sewer and water services, supported the upgrading of sewage treatment facilities in several RAP's, such as the Bay of Quinte. Lack of adequate funding for sewage treatment facility upgrading and combined sewer overflow programs has also been identified as a significant problem with respect to the St. Clair River[22] and Hamilton Harbour RAPs.[23]*

A one-time grant program of $200 million for municipal sewer and water infrastructure upgrading was announced by the province in its May 1997 budget, although none of these funds are specifically targeted for RAP work.

Ministry of Natural Resources Reductions to RAP Related Programs

The MNR released a business plan for fish and wildlife management in June 1996.[24] The Plan stated the Ministry's intention to "significantly" reduce its direct involvement in the delivery of Remedial Action Plans on the Great Lakes.[25] The Ministry's Great Lakes Branch was subsequently disbanded. The Branch had been the focal point for the Ministry's work on Great Lakes issues, including RAPs and LaMPs. A $1 million/yr fund for RAP implementation projects provided by the Ministry was also eliminated,[26] and Ministry representation on the RAP implementation teams was ended.

In addition, the Ministry reports that the operating budget of its Great Lakes Management Units has fallen by 73% between 1992/93 and 1997/98. Full-time staff members have been reduced by 29% and contract staff by 79%, for a combined reduction of 40%. The reductions have been greatest in the areas of fish population monitoring, direct RAP funding, and Great Lakes Basin policy and program development.[27] The loss of MNR monitoring and surveillance activities has been highlighted as a serious problem in a number of RAPs, including the Bay of Quinte and St. Lawrence River.

Changes in Land-Use Planning Process

*As outlined in sections **1.3.1** and **3.6.2** major changes to the province's land use planning process were introduced in March 1996. Among other things, these changes effectively terminated the roles of the Ministries of Natural Resources and of the Environment in the land-use planning process, particularly the review of proposed planning decisions. In the past, these agencies had acted as advocates for RAP goals and RAP-related concerns in the planning process.*

The Current Situation.

The situation with respect to the RAPs remains in flux as a result of the reductions in support for RAP development and implementation by the province and the federal Departments of Fisheries and Ocean and Health. Environment Canada has intervened to provide funding on an interim basis for some of the positions of the RAP Coordinators terminated by the Ministry of the Environment.[28] The Department has also taken responsibility for toxicology research in a number of RAPs previously carried out by the Department of Fisheries and Oceans.

Environment Canada also terminated the Memoranda of Understanding (MOU) with the Ministry of the Environment regarding the Detroit River, Bay of Quinte and St. Lawrence River RAPs, when the Ministry withdrew its funding for the RAP coordinators, as the MOU's had been drafted on the premise of the existence of coordinators and were designed to support their work. The Department has led efforts to establish new implementation frameworks for some of the provincially-led RAPs, with mixed results.[29]

In general, progress is reported on the Nipigon Bay, Thunder Bay, Spanish Harbour,

Wheatly Harbour, Niagara River, and Hamilton Harbour RAPs. However, work has been significantly disrupted or stalled on other RAPs, such as the St. Mary's River, Toronto Harbour, Port Hope, Bay of Quinte, and St. Lawrence River.

The province's May 1998 budget included a one-time $5 million investment into an endowment for the Great Lakes Renewal Foundation. The province stated that it hoped to use the Foundation to attract private sector contributions for clean-up efforts.[30] The Ministry of the Environment's 1998-99 Business Plan states that the Ministry remains committed to the implementation of MoE restoration Actions for 8 RAP sites by the year 2000.[31] There is no reference to RAP goals or commitments in the Ministry of Natural Resource's current Business Plan.[32]

The Ministry of the Environment has also encouraged RAP teams and Public Advisory Committees to become self-sufficient, and has provided some support to those which moved in this direction.[33] These efforts have met with mixed results. The most successful example has been with respect to the Severn Sound RAP, where the Severn Sound Environmental Association, a partnership of seven municipalities, the Ministry of the Environment and Environment Canada, has taken on the role of the Public Advisory Committee.

However, many of RAP PAC members interviewed for this study expressed a high level of frustration over the impact of provincial budgetary reductions on the RAP process, which were described in a number of cases as 'severe.' In one case, for example, the effects were stated to have "set the RAP back five years." The province's withdrawal of support for the RAP PACs was also severely criticized, given that voluntary public participation in these processes had been originally solicited by the province and federal government, with expectations of ongoing support for core 'secretariate' functions for the PACs. The apparent lack of political will on the part of the provincial government with respect to RAPs was highlighted repeatedly as well

Concerns also exist regarding the direction of the future implementation of RAPs, illustrated by the Severn Sound Association model and the Great Lakes Renewal Foundation. This approach may be seen to download responsibility for the financing and carrying out of RAP implementation to municipal governments and the private sector by the province and federal government. The International Joint Commission has stressed the problems associated with the downloading of RAP responsibilities with no associated increases in local capacity.[34]

Conclusions

There has been progress on the development and implementation of RAPs, particularly in such locations as Nipigon Bay, Thunder Bay Harbour, the Spanish Harbour, the Niagara River, and Hamilton Harbour. However, RAP work has been heavily affected by budgetary reductions at the federal and provincial levels, and work in many of the RAPs, including the St. Mary's River, Toronto Harbour, Port Hope, Bay of Quinte and St.

Lawrence River, has been significantly disrupted or stalled completely. In addition, in many cases where there has been progress, it has been in relatively simple and inexpensive areas such as habitat restoration. Contaminated sediment remediation and other more complex and costly problems, remain unaddressed. In May 1998, the Ministry of the Environment stated that only the Nipigon Bay, Spanish Harbour, Wheatly Harbour and Canadian side of the Niagara River RAP were close to meeting the year 2000 delisting target. Collingwood Harbour was delisted in 1994. However, concerns have been raised that this step was premature.

Reductions have occurred both directly to RAP funding programs, and indirectly through reductions to programs that contributed to RAP implementation since 1995. The losses in support for RAP work have been particularly severe at the provincial level, where the Ministry of Natural Resources has virtually abandoned its RAP commitments, and the involvement of the Ministry of the Environment has been significantly reduced. This has included the withdrawal of funding for RAP coordinators and Public Advisory Committees in many provincially-led RAPs. Federal programs like the Great Lakes 2000 Program and the Great Lakes research activities of the Department of Fisheries and Oceans have also been significantly affected.

Environment Canada has intervened in some key areas where provincial government or other federal agencies have abandoned commitments. Examples of such actions include providing funding on an interim basis for some of the RAP coordinator positions previously funded by the province, and toxicology research in AOCs previously conducted by Department of Fisheries and Oceans. The implementation framework for many of the RAPs remains in flux as a result of the province's reduced role, and the sources of funding for the actual implementation of RAPs remains uncertain. The province has been severely criticized by some RAP participants for its withdrawal from many RAP-related activities, and its apparent lack of commitment to the RAP process.

Concerns also exist regarding the direction on the future implementation of RAPs, illustrated by the Severn Sound Association model and Great Lakes Renewal Foundation. This approach may be seen to download responsibility for the financing and carrying out of RAP implementation to municipal governments and the private sector by the provincial and federal governments. The International Joint Commission has stressed the problems associated with the downloading of RAP responsibilities with no associated increases in local capacity.

RAP MAP

Capital Works

COA Commitments:

1.2.1: Upgrade 8 RAP primary sewage treatment plants to secondary treatment and optimize effluent quality and sludge generation at 12 plants in AOCs.

1.2.2: Enhance phosphorus removal at 15 sewage treatment plants in AOCs by modifying or adding to existing phosphorus controls.

1.2.3: Undertake 25 storm water quality pilot projects in AOCs.

1.2.4: Abate 40% of combined sewer overflows in AOCs by implementing municipal Pollution Control Plans.

1.2.5: Demonstrate and implement technologies directly contributing to the restoration of beneficial uses through green industry strategies and other government programs.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[35]

1.2.1 STP upgrades are proceeding: 1 plant has been fully constructed, work on 5 others is at various stages of development, and 2 plants have been identified for upgrading. Seven STPs have been optimized for effluent quality in four AOCs (Severn Sound, St. Clair River, Bay of Quinte and Detroit River). Projects at 12 additional plants in five AOCs (Severn Sound, Hamilton Harbour, Niagara River, Metro Toronto and Region, and Bay of Quinte) are under way to optimize effluent quality and sludge generation.

1.2.2 This COA target is listed to be on track: Ten STPs in three AOCs (Collingwood Harbour, Severn Sound and Bay of Quinte) have achieved RAP phosphorus objectives either through optimization or capital works improvements. Projects at three other plants in two AOCs (Severn Sound and Bay of Quinte) are under way to enhance phosphorus removal.

1.2.3 This target is partially completed: 16 storm water quality projects have been initiated in five AOCs (Spanish Harbour, Metro Toronto and Region, St. Lawrence River, St. Clair River and Severn Sound).

1.2.4 The government response notes that plans have been completed: Pollution Prevention and Control Plans (PPCPs) have been completed for seven AOCs (Thunder Bay, St. Clair River, Detroit River, Niagara River, Hamilton Harbour, Metropolitan Toronto and Region, and St. Lawrence River).

Three AOCs (St. Clair River at Sarnia, Hamilton Harbour, Metropolitan Toronto and Region) have already completed projects to help meet this target (see box below bar), with additional projects planned for the near future.

Pollution Prevention and Control Plan Undertakings

- In Sarnia, the first four CSO tanks has been installed and has resulted in a 30% abatement of CSO volume. The tank will remove 56 per cent of solid pollutants, 99% of the bacteria and 55% of organics.
- In Hamilton Harbour, 4 of 11 CSO tanks have been installed. A Real Time Control system is under development to optimize treatment capacity of these tanks.
- In Toronto, the Eastern Beaches storage tanks have been completed and have reduced CSO volume by 5%. They have also eliminated the discharge of contaminated storm water into the beach and have eradicated beach closures due to high levels of bacteria.
- As a result of its PPCP, the City of Thunder Bay is able to meet the provincial CSO policy with minimal modifications to its CSO system. The City is also implementing a key recommendation to evaluate options for upgrading the primary STP to secondary treatment.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

1.2.5 Projects (see box below) are under way or proposed which will demonstrate and implement new and innovative low-cost remediation technologies which have potential for significant capital expenditure savings. These technologies support attainment of COA targets related to habitat rehabilitation, capital works, contaminated sediment and groundwater.

Measures to demonstrate and implement environmental technologies

- A project at the Waterdown STP in Hamilton Harbour demonstrates the use of various innovative low-cost ammonia reduction technologies, which can result in savings of hundreds of millions of dollars at STPs in Ontario.
- In Hamilton Harbour, at the Woodward STP, it has been demonstrated that $17 million can be saved by avoiding the use of clarifiers.
- At the Windsor West STP in the Detroit River AOC, biological aerated filters have been shown to be an effective, low-cost alternative to conventional processes, with a potential cost savings of over $33 million.
- High rate satellite CSO treatment technologies (a low-cost alternative to conventional storage tanks) are being demonstrated in Scarborough.
- Biological nutrient removal, which reduces the use of chemicals for phosphorus removal, is being demonstrated in Sudbury.

Other technologies are being demonstrated in support of COA targets related to habitat rehabilitation, capital works, contaminated sediment and groundwater.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Commentary and Discussion

COA Commitments 1.2.1. - 1.2.4

Sewage Treatment Plant Upgrades and Reducing Combined Sewer Overflows

Work in this area under COA is funded by municipalities with the assistance of the provincial government. Federal contributions to capital works have been limited to support for feasibility, design and technology development studies funded through the Great Lakes 2000 Clean-Up Fund.[36] Under previous Canada-Ontario Agreements, the federal government had provided substantial contributions to the costs of sewage treatment facility upgrades.[37]

Considerable progress has been achieved with the upgrading of municipal sewage treatment plants. Progress on combined sewer overflows has been slower. Only three AOCs have projects underway and only 7 of 15 AOCs have Pollution Prevention and Control Plans completed.

However, most of the projects reported by governments as progress were initiated prior to 1995. Progress in this area is being affected by a number of developments since then. These include:

Termination of the Municipal Assistance Program

The termination of the provincial Municipal Assistance Program (MAP), announced in the April 1996 provincial budget. The program provided approximately $140 million/year in provincial funding for the construction and upgrading of sewer and water infrastructure, including sewage treatment plants. The MAP contributed to a number of RAP capital works projects such as those in the Bay of Quinte.[38] Lack of adequate funding for sewage treatment facility upgrading and combined sewer overflow programs has also been identified as a significant problem with respect to the St. Clair River[39] and Hamilton Harbour RAPs.[40]

Transfer of Provincial Sewer and Water Facilities to Municipalities

Bill 107, The Water and Sewage Services Improvement Act, enacted in May 1997, provides for the transfer of responsibility for the operation and maintenance of provincially operated sewage treatment plants to municipal governments. The provincial Clear Water Agency currently operates approximately 25% of the existing sewer and water facilities in the province, mostly in rural areas. The Ministry of the Environment's current Business Plan calls for the transfer of 80% of the area and individual municipal water and sewage systems to municipalities in 1998-99 fiscal year.[41] The transfer of responsibility for the operation and maintenance of these facilities to municipalities without financial support from the province will likely further limit the resources available from municipalities for RAP implementation related projects.

In its May 1997 budget the provincial government announced the creation of a $200 million fund for municipal sewer and water infrastructure. However, this appears to be primarily intended to facilitate the transfer of provincially operated facilities to municipalities under the provisions of Bill 107. There is no specific allocation of funds for RAP related activities.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[42]

1.2.5 Restoration Technology Development

Projects (see box below) are under way or proposed which will demonstrate and implement new and innovative low-cost remediation technologies which have potential for significant capital expenditure savings. These technologies support attainment of COA targets related to habitat rehabilitation, capital works, contaminated sediment and groundwater.

Measures to demonstrate and implement environmental technologies

- Measures at the Woodward STP in Hamilton Harbour demonstrate the use of various innovative low-cost ammonia reduction technologies, which can result in savings of hundreds of millions of dollars at STPs in Ontario.
- In Hamilton Harbour, at the Woodward STP, it has been demonstrated that $17 million can be saved by avoiding the use of clarifiers.
- At the Windsor West STP in the Detroit River AOC, biological aerated filters have been shown to be an effective, low-cost alternative to conventional processes, with a potential cost savings of over $33 million.
- High rate satellite CSO treatment technologies (a low-cost alternative to conventional storage tanks) are being demonstrated in Scarborough.
- Biological nutrient removal, which reduces the use of chemicals for phosphorus removal, is being demonstrated in Sudbury.

Other technologies are being demonstrated in support of COA targets related to habitat rehabilitation, capital works, contaminated sediment and groundwater.
Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Commentary and Discussion

COA Commitment 1.2.5

Termination of Environmental Technology Development Programs

The development of environmental technologies has been heavily affected by budgetary reductions over the past three years. The Ministry of the Environment and Energy's $1.6 million/year Environmental Research Program was terminated in November 1995.

Two provincial initiatives may slightly offset the impact of this development. A Research and Development Challenge Fund was announced in the government's 1997 budget to provide tax credits and some direct support to industries conducting research and development primarily in advanced technology, including environmental sciences.[43] *In addition, it was announced that an environmental technology advisory project would be sponsored by the MoEE, through which, Ministry experts will be made available to provide written evaluations of new technologies for treating water and wastewater, air pollution control, site remediation and the handling and treatment of hazardous waste.*[44]

Conclusions

Unlike previous Canada-Ontario Agreements, no federal funding was committed to capital works activities under the 1994 Agreement. There was considerable progress in these areas involving projects initiated prior to 1995. However, this area has been affected by the termination of the provincial Municipal Assistance Program, and the transfer of provincial sewer and water infrastructure to municipalities without provincial financial support. Little or no provincial or federal funding appears to be available to complete the outstanding work in this area.

Species and Habitat Rehabilitation

COA Commitments:

1.3.1: Rehabilitate ecosystem function and structure of diverse self-sustaining native biological communities in 12 AOCs and other priority degraded areas.

1.3.2: Implement recovery plans for 6 threatened species.

1.3.3: Develop fish and wildlife goals and objectives for each of the Great Lakes and implement plans to rehabilitate degraded native fish and wildlife populations.

1.3.4: Increase the extent of productive aquatic habitats by rehabilitating and protecting 6000 ha of wetland habitat and 600 km of riparian habitats.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[45]

1.3.1 Restoration of Ecosystem Structure and Function in AOCs

COA partners along with other agencies and the private sector have increased the number of habitat related projects in AOCs and other priority areas, and are facilitating rehabilitation activities basin-wide. Strategies, databases and techniques are being developed and disseminated to guide and support activities at the community level (see box below). An important activity that facilitates achievement of this target is the development and dissemination of materials and techniques to guide and support community action.

Measures in support of the development and application of habitat strategies

- The 1995 publication of Guidelines for Collecting Baseline Aquatic Habitat Data in the Great Lakes Areas of Concern and Geographic Information System (GIS) mapping, which is nearing completion in selected watersheds in eight AOCs (Thunder Bay, Severn Sound, St. Clair River, Niagara River, Hamilton Harbour, Metro Toronto and Region, St. Lawrence River and Bay of Quinte).
- The Habitat Committee of the Lake Superior Binational Program has created a GIS-supported database for critical habitat in the Lake Superior basin.
- Information exchange on Great Lakes rehabilitation projects, endangered species, exotic species management, potential linkages between agricultural and habitat projects, aquatic restoration, fundraising, landowner contact and stewardship.
- Field-based training sessions involving field wetland restoration techniques are delivered by the Temperate Wetlands Restoration Consortium (MNR, EC and Ducks Unlimited Canada).

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Commentary and Discussion

COA Commitment 1.3.1

While the governments have undertaken a number of initiatives, such as information gathering, that may be supportive of the restoration of ecosystem function and structure, very little direct action has been taken to achieve this goal.

Furthermore, over the past three years, the governments have undertaken a number of initiatives that seem likely to impair or even undermine what progress has been made to date.

Federal

Department of Fisheries and Oceans Reductions in Great Lakes Programs

The Great Lakes programs of the Department of Fisheries and Oceans were heavily affected by the Department's February 1995 decision to withdraw from its freshwater responsibilities. The operating budget for its Great Lakes Research Program was reduced by 70% and scientific staff by 40%. The department reports the termination of its open lake monitoring of primary and secondary production, reductions to its Environmental Toxicology Program and the program's transfer to Environment Canada, and reductions in RAP toxicology and monitoring activities. The Department reports a restoration of some personnel in the area of habitat research, and that it will focus on research to support the Fish Habitat Management Program and the Great Lakes Sea Lamprey Control Program.[46]

Reductions in Great Lakes 2000 Clean-up Program

The 15% reduction to the budget of the Great Lakes 2000 program has also reduced the available budget for restoration activities.[47]

Provincial

MNR Withdrawal from RAP Implementation

As noted in ***sections 1.1.1-1.1.4****, the MNR's June 1996 business plan for fish and wildlife management, intended to deal with the consequences of "expenditure reduction and government downsizing" stated that the Ministry would "significantly" reduce its direct involvement in the delivery of Remedial Action Plans on the Great Lakes.*[48] *The Ministry's Great Lakes Branch was subsequently disbanded, and a $1 million/yr fund for RAP related work eliminated. In addition, the Department reports a 73% reduction in the operating budgets for its Great Lakes Management Units between 1992/93 and 1997/98.*[49] *There is no reference to COA obligations or RAP implementation in the Ministry's 1998-99 Business Plan.*[50]

Reductions in the Funding and Mandates of Conservation Authorities

Conservation Authorities had been identified as major actors in the implementation of RAPs, particularly with respect to habitat protection and restoration. Provincial capital and operating support to the Authorities declined by approximately 70% between 1995 and 1997. In addition, January 1996 amendments to the Conservation Authorities Act limited the mandate of the Authorities, facilitated their dissolution and the sale of their lands. The use of provincial funds by Authorities was limited to flood control activities and the payment of property taxes.[51]

A survey of Conservation Authorities by the Federation of Ontario Naturalists conducted in late 1996 indicated that they had typically lost between 20% and 50% of their staff as a result of the reductions in provincial support.[52]

MNR Withdrawal from the Enforcement of the Habitat Protection Provisions of the Federal Fisheries Act

On September 19, 1997, the Ministry of Natural Resources announced that it was withdrawing from a 1989 agreement with the federal Department of Fisheries and Oceans to enforce the habitat protection provisions of the federal Fisheries Act. The Ministry stated that it would take further no action to enforce the Act in Ontario.[53]

The Fisheries Act contains strong provisions related to the protection of fish habitat, such as wetlands, streams and shorelines. These include a prohibition on the alteration or destruction of fish habitat without the permission of the Minister of Fisheries and Oceans.[54] *Over the years, the Ministry of Natural Resources has undertaken numerous prosecutions under the Act.*[55]

The Ministry of Natural Resource's action was a result of a dispute with the federal government over the delegation of the power to authorize the alteration or destruction of fish habitat to the provinces. When it withdrew from the enforcement of the Act in September 1997, the Ministry of Natural Resources indicated that it would resume its enforcement activities if the federal government committed to the delegation of decision-making authority related to habitat alteration and destruction, and to provide financial resources to support the Ministry's activities in relation to the Act.[56]

The Ministry of Natural Resource's action created a situation in which no one was responsible for the enforcement of the habitat protection provisions of the Fisheries Act in Ontario. Environment Canada and the U.S. EPA's "State of the Great Lakes 1997" report had concluded that aquatic habitat and wetlands were in "poor" condition in the Great Lakes basin.[57] *The House of Commons Standing Committee on the Environment and Sustainable Development concluded that the Ministry of Natural Resource's action created a "huge hole in the Department's [Fisheries and Oceans] fish habitat program."*[58]

As a temporary measure, the federal Department of Fisheries and Oceans brought in four federal Fisheries Officers from the Maritimes to enforce the habitat protection provisions of the Act in Ontario. These officials were to deal with the work previously handled by 215 provincial enforcement officers.[59] *In May 1998, two of the four federal*

Fisheries Officers assigned to Ontario were withdrawn to their home regions.[60] At one point over the summer of 1998, only one official, the Director of Conservation and Protection for the Department's Central and Arctic Region, based in Yellowknife, was available to enforce the habitat protection provisions of the Fisheries Act in Ontario.[61]

Between September and November 1988, eight Fisheries Officers and one Supervisor were reassigned from a number of regions to Ontario to carry out enforcement functions with respect to the habitat protection provisions of the Fisheries Act. These arrangements are designed to remain in place until March 2000.[62] In addition, in April 1998 the Department announced its intention to restore the positions of some (25%) of the habitat biologists in Ontario cut through the February 1995 budget. These are to support the administration and enforcement of the habitat provisions of the Act. [63]

A report tabled by the House of Commons Standing Committee on Fisheries and Oceans in November 1998 encouraged the resolution of the dispute over habitat protection, and called for a structure to provide the Department of Fisheries and Oceans with the resources to adequately and efficiently complete the tasks associated with habitat management.[64]

MNR Implementation of Amendments to the Public Lands Act and Lakes and Rivers Improvement Act

In November 1996, the Ministry of Natural Resources announced new regulations to implement the January 1996 Bill 26 amendments to the Public Lands Act and the Lakes and Rivers Improvement Act. These regulations removed permit requirements for a wide range of activities likely to affect shorelines and fish habitat, including mineral exploration, the construction of shoreline structures like docks and boathouses, dredging, and the removal of aquatic plants.[65]

Changes to the Land Use Planning Process

Major amendments were made to the Planning Act through the enactment of Bill 20, the Land Use Planning and Protection Act, 1996 in March 1996. These changes repealed the structures put in place by the previous government in response to the report of the Commission on Planning and Development Reform in Ontario, and were largely seen to weaken environmental protection requirements.[66]

In particular, as is acknowledged in the governments' most recent progress report on COA, the Provincial Policy Statement regarding wetlands was amended to apply to a smaller area of the province, and to remove requirements for impact studies of proposed developments in or adjacent to wetlands.[67] The Provincial Policy Statement, also removed protection for significant ravine, river and stream corridors and adjacent lands, habitat for 'vulnerable species,' shorelines of lakes, rivers and streams, natural corridors and the references to the conservation of biological diversity.[68]

In addition, the Planning Act amendments also limited the role of the Ministries of

Environment and Energy and of Natural Resources in the municipal land-use planning process. In the past, the agencies had acted as voices for environmental protection and natural resources conservation in the planning process. Since the enactment of Bill 20, both agencies have effectively withdrawn from the land-use decision-making processes.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[69]

1.3.2. Recovery Plans for Six Threatened Species

Recovery plans have been completed for four species: Henslow's sparrow, loggerhead shrike, peregrine falcon and eastern spiny softshell turtle. A further eight are in progress. This target addresses species that are formally designated as vulnerable, threatened, endangered or extirpated by the National Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or those areas designated in provincial risk categories by MNR.

Recovery Activities and Approaches

- Recovery targets for the bald eagle have been established and recovery activities are being implemented;
- The plan for the Henslow's sparrow includes ecosystem habitat protection in a grassland recovery plan;
- The Acadian flycatcher and hooded warbler teams have combined to begin work on one of the first multi-species recovery plans in Canada;
- Recommendations from the recovery plan for the eastern spiny softshell turtle are now being implemented;
- Recovery plans are in preparation for the massasauga rattler and blue racer snakes; and,
- Populations of all designated bird species are monitored on an ongoing basis (even in the absence of recovery plans), through cooperative programs of EC, MNR and Long Point Bird Observatory's volunteer programs such as Birds at Risk.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Environment Canada has also supported: endangered species recovery projects at the community level; recovery activities for several fish species (Atlantic salmon, coaster brook trout, walleye and lake sturgeon) which do not have a formal designation; and research on the biodiversity of freshwater mussels (40 per cent of the 41 native mussel species fall under the extirpated, endangered or threatened risk categories).

In terms of legislative efforts, it is cited that: the federal government remains committed to passing endangered species legislation which had not passed by the end of the last parliamentary session; the Ministry of Natural Resources introduced *The Fish and Wildlife Conservation Act*, 1997 that proposes protection for non-game species currently unprotected by *The Game and Fish Act*.[70]

Commentary and Discussion

COA Commitment 1.3.2

With four recovery plans complete, and eight more under way, the total number of recovery plans will exceed the target (six species) for this action. However it is important to note that 'completion' of recovery plans does not mean their actual implementation.[71]

The effectiveness of species recovery plans may be compromised by the MNR's withdrawal of staff and funding from fish and wildlife conservation functions in RAPs and AOCs, and from the enforcement of the habitat protection provisions of the federal Fisheries Act. The withdrawal of the MoE and MNR from the land-use planning process may also have a negative effect. In the past, the MNR in particular, had played an important role in highlighting and ensuring the protection of critical habitat in the planning process.

At the federal level, recovery plans may be adversely affected by the reductions in the budget of the Great Lakes 2000 program, and in the Department of Fisheries and Oceans' Great Lakes Research Program.

Legislation to Protect Species At Risk

Progress on legislation to protect endangered species has been mixed to poor. The Ontario government enacted The Fish and Wildlife Conservation Act in December 1997. The new statute provides for the protection of non-game species. However, the Act has been characterized as being too weak to ensure adequate enforcement.[72] *In addition, the Province's Provincial Policy Statement made under the Planning Act in March 1996 removed references to the protection of the habitat of 'vulnerable' species and of biological diversity from the previous, May 1994, policy statement.*[73]

Bill C-65, the proposed Canada Endangered Species Protection Act died on the Order Paper with the call of the June 1997 federal election. As of October 1998, the Bill had not been reintroduced. The Bill had been the subject of widespread criticism that it failed to provide adequate protection for species at risk in Canada.[74]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[75]

1.3.3 Fish and Wildlife Goals and Objectives and Rehabilitation of Degraded Fish and Wildlife Populations

Fish community goals and objectives have been developed for Lakes Erie, Superior and Huron as required by the Strategic Great Lakes Fisheries Management Plan. Those for Lake Ontario are under development. Numerous initiatives have been undertaken throughout the Great Lakes to identify fish and wildlife goals and to implement projects to restore habitats and degraded populations in support of these goals (see box below)

Other initiatives by Environment Canada include: a resource manual which describes techniques for enhancing biodiversity; the development of the Framework for

Landbird Conservation in Canada in order to address the concern for long-term declines in population that have occurred over the last 30 years (programs under the framework aim to ensure the long-term viability of populations of native landbirds across their range of habitats); and science/technology transfer sessions in 1995.

Projects to Restore Habitats and Degraded Populations of Great Lakes Fish

- After an absence of more than 20 years, walleye reproduction has been confirmed in Nipigon Bay in each year from 1993 to 1997. Rehabilitation is the result of the introduction of 12 000 adult walleye, the Nipigon River Water Management Plan, and significant habitat restoration initiatives.
- To re-establish the species, re-introduction of muskellunge to Spanish Harbour was initiated in 1996 in partnership with local angler groups and Muskies Canada. The target is to stock 15 000 fingerlings in this AOC over a six-year period. Six hundred fingerlings were stocked in 1996.
- Michigan and Ontario scientists are working on fish community goals and objectives for Lake St. Clair and the St. Clair and Detroit Rivers.
- Lake trout restoration in Lake Superior has been a success due to efforts to reduce mortality, such as control of sea lamprey and restrictions on harvest and stocking. The cooperative program among federal, provincial and state agencies has resulted in the restoration of lake trout, that reproduce naturally in Lake Superior.
- After years of stocking, there is some evidence of natural reproduction in lake trout in Lake Ontario, but at very low levels. DFO and MNR are investigating the effects of predation, nutrition and habitat as potential factors that contribute to low recruitment. There is evidence that thiamine deficiency may be an important factor that contribute to the high mortality of lake trout fry.
- A rehabilitation guide for Lake Huron lake trout is in final review by Canadian and U.S. fish managers. Discussions have been launched to develop ecosystem objectives for Lake Huron.
- An interim lake trout rehabilitation plan was adopted by Ontario and New York for Lake Ontario in March 1997.
- The Sixth Fathom Bank, an important lake trout spawning shoal on Lake Huron, is now under special protection by Michigan and Ontario. This lake trout refuge excludes commercial fishing. Plans are under way to declare the area a sanctuary.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Commentary and Discussion

COA Commitment 1.3.3

There has been some progress in this area. Fish community goals and objectives have been completed for Lakes Erie, Superior and Huron, and are under development for Lake Ontario. There have also been some efforts to re-establish sport fish populations, particularly of lake trout and muskellunge.

However, both levels of government have also undertaken initiatives over the past three years that may negatively affect the rehabilitation of degraded fish and wildlife populations in the Great Lakes.

Federal

The Department of Fisheries and Oceans reductions in Great Lakes programs may

have a negative effect in this area, particularly the termination of open lake monitoring of primary and secondary production. The Department has indicated its intention to restore some funds to its habitat research program to support its regulatory role under the Fisheries Act,[76] particularly in the context of the Ministry of Natural Resource's withdrawal from the enforcement of the statute. In a November 1998 report, the House of Commons Standing Committee on Fisheries and Oceans expressed concern over the decline of the Department's fisheries research activities in the Great Lakes, and recommended increases in levels of funding for this work.[77]

Provincial

Reductions to MNR Great Lakes Programs

The MNR reports a 73% reduction in the operating budgets of the five Great Lakes Management Units for enforcement, fish community monitoring and fisheries management, between the 1992/93 and 1997/98 fiscal years, with a 40% reduction in staff. The areas of fish population monitoring, direct RAP funding and Great Lakes Basin policy and program development are reported to have been the most heavily affected areas.[78]

MNR Fish and Wildlife Programs

The Ministry of Natural Resource's continued stocking of the lakes with non-native species, particularly Atlantic Salmon, has also been heavily criticized, on the basis that the stocked species compete with native populations for habitat and food.[79]

These problems are being reinforced by the role given sport fishing and hunting interests in the province's fish and wildlife programs through the January 1996 Bill 26 amendments to the Fish and Game Act, and Fish and Wildlife Advisory Board, created in July 1996. The Board, whose membership is dominated by representatives of sport fishing and hunting interests, is mandated to oversee the Ministry's fish and wildlife programs.[80]

Provincial Auditor's Report

In November 1998 the Provincial Auditor tabled his Annual Report to the Legislature. The report was highly critical of the Ministry's fish and wildlife programs concluding that:

- *the Ministry had not developed proper effectiveness measures to assess the program's success in achieving the sustained development of the province's fish and wildlife resources;*
- *the Ministry did not have adequate policies in place for the management of big game species (moose, deer and bear); and*
- *information from the assessment of fish populations and other data were often not available to assist management in managing regeneration, stocking and harvesting.[81]*

Commercial Fisheries Management

In January 1998, the Minister of Natural Resources signed an agreement with the Ontario Commercial Fisheries Association that will see the industry adopt a larger role in the management of the province's commercial fisheries. The province's principal commercial fisheries are on the Great Lakes. Under the Agreement, the Association will compile data from commercial fish harvest reports, administer royalties, monitor compliance, and cooperate with MNR projects.[82] The arrangement appears to be partially a result of the reductions in fish population monitoring activities by the Ministry.

Other Provincial Program Changes Affecting Fish and Wildlife Population Restoration

The success of efforts to rehabilitate degraded fish and wildlife populations is likely to be further affected by the MNR's September 1997 withdrawal from the enforcement of the habitat protection provisions of the federal Fisheries Act, and the withdrawal of MNR and MoE from the land-use planning process.

Statement of Progress

Key Elements of the Government's Statement of Progress on COA Commitments[83]

1.3.4 Increase in Productive Aquatic Habitats

The rehabilitation of more than 2 000 hectares of wetland has been completed. Rehabilitation of an additional 1 428 hectares is under way. Almost 500 kilometres of riparian habitat have been rehabilitated and projects involving an additional 178 kilometres are in progress. In 1995, there were 54 habitat-related projects reported by EC. Now, 139 habitat rehabilitation projects are in progress or completed. As well, there are 16 rural non-point source control projects which have habitat components. Of these projects, 120 are located in AOCs. The remaining 35 support and facilitate rehabilitation activities basin-wide or in priority non-AOC areas. Rehabilitation techniques are being developed and applied, and habitat is being protected and monitored.

Other items cited as progress include: stewardship programs have been implemented in most AOC watersheds and in other priority areas; on-site contact has been made with landowners in order to assist them in their protection and enhancement of habitats on their properties; criteria for selection of priority sites for wetland rehabilitation were developed and a workshop held to select sites; and Environment Canada published the report Fish and Wildlife Habitat Rehabilitation Program - Project Highlights in January 1995.

Commentary and Discussion

COA Commitment 1.3.4

Some local successes are reported by the governments in this area, particularly with respect to the restoration of riparian habitat. However, efforts to increase productive aquatic habitats may be undermined by other recent initiatives as well. These include the following.

Federal

There have been major (70% operating budget, 40% personnel) reductions to the Department of Fisheries and Oceans' Great Lakes Research Program, including habitat research.[84] In addition, the 15% reduction in the budget of the Great Lakes 2000 Program, has limited resources for habitat protection and restoration available through the Great Lakes 2000 Clean-Up Fund.[85]

In April 1998, the Department of Fisheries and Oceans indicated its intention to restore 25% of its person year downsizing reductions to its Great Lakes Programs, primarily for habitat research to support regulatory functions under the Fisheries Act.[86]

Provincial

Provincial initiatives likely to adversely affect the restoration of productive habitat include the following:

- *major reductions to the MNR's Great Lakes Management Unit budgets;*
- *the disbandment of the Ministry's Great Lakes Branch and termination of the $1 million/yr fund for RAP implementation projects;*
- *the MNR's September 1997 withdrawal from the enforcement of the habitat protection provisions of the federal Fisheries Act;*
- *the withdrawal of the MNR and MoE from the land-use planning process;*
- *the March 1996 amendments to the Planning Act and the accompanying Provincial Policy Statements weakening environmental protection requirements, particularly with respect to wetlands protection in Southern Ontario;*
- *the removal of approval requirements for a wide range of activities on public lands, lakes and waterways under the Public Lands Act and the Lakes and Rivers Improvements Act in November 1996; and*
- *the reductions in resources and mandates of Conservation Authorities.*

A one-time expenditure of $10 million to improve fish and wildlife management by the MNR was announced in the province's May 1998 budget.[87] However, none of these funds were specifically targeted for habitat restoration in the Great Lakes region, and there is no reference to Great Lakes or COA commitments in the Ministry's 1998/99 Business Plan.[88]

Conclusions

There is some progress in the restoration of degraded populations of fish populations, habitat restoration, and the development of recovery plans for species at risk. However, activities in this area have been affected by the reductions in the habitat research activities of the Department of Fisheries and Oceans, and the Ministry of Natural Resources' disbandment of its Great Lakes Branch, withdrawal from virtually all of its RAP related activities and implementation of severe reductions to the budgets of its Great Lakes Management Units.

Other provincial initiatives, including the MNR's abandonment of the enforcement of the habitat protection provisions of the Fisheries Act, the weakening of Planning Act protection for ecologically significant areas, including wetlands, the withdrawal of MNR and MoE from land-use planning process, and reductions in resources and mandates of Conservation Authorities may also undermine species and habitat rehabilitation goals.

In response to the MNR's withdrawal from the enforcement of the habitat protection provisions of the Fisheries Act, the federal Department of Fisheries and Oceans is restoring some of its fish habitat science personnel and has established some enforcement capacity with respect to the Act.

The province has announced a one-time $10 million expenditure on MNR fish and wildlife programs in its May 1997 budget. However, none of these funds are specifically targeted at Great Lakes habitat restoration, and there is no reference to Great Lakes commitments in the Ministry's 1998-99 Business Plan.

In November 1998, the Provincial Auditor tabled a report highly critical of the Ministry of Natural Resource's fish and wildlife programs. The following month the House of Commons Standing Committee on Fisheries and Oceans tabled a report calling for significant increases in the Department of Fisheries and Oceans funding for Great Lakes fisheries science and research.

Contaminated Sites

COA Commitments:

1.4.1 Remediate contamination at: 10 priority federally-owned sites; 5 orphan sites under the National Contaminated Sites Remediation Program; an expected 20 sites under provincial jurisdiction.

1.4.2 Assess and prioritize closed landfill sites under provincial jurisdiction for potential problems.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[89]

1.4.1 Contaminated Site Remediation

The COA annex report cites an amendment to the *Auditor General Act*, as providing the impetus for federal departments to deal with their contaminated sites. The amendment requires each department to produce a Sustainable Development Strategy, one component of which is an Environmental Management System (EMS). Under the EMS, departments are required to identify and address land management practices, including the management and remediation of contaminated sites.

Orphan Sites:

- At the Smithville Site, the soil, groundwater, and bedrock had been contaminated with polychlorinated biphenyls (PCBs). Beginning in 1985, the MOEE initiated preliminary site clean up and secured PCB liquids in an adjacent storage facility. PCB-contaminated solids, liquids, and sludges were later destroyed on site using a mobile incinerator.
- At the Tyre King Fire Site, Hagersville, 50 000 tonnes of tire debris and contaminated soils were removed from the site and placed in a specially engineered, capped containment cell at the local Tom Howe municipal landfill site.
- At the National Hard Chrome Site, North York, a former chrome-plating facility which contaminated the soil and groundwater as well as a nearby stream, progress has been slow.
- At the Deloro Mine site, environmental monitoring of surface and groundwater continues. Approximately $9 million has been spent for improving the site.
- The site cleanup at Shamrock Chemicals, Port Stanley, originally an oil gasification site, took place from March 1994 to March 1996, under the management of the MOEE. The property has now been fully decommissioned.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

For federally owned sites, it is considered that the onus rests with the owner department to address their contaminated sites. Audits of progress on this and many other "environmental aspects" will be carried out by the Auditor General's Office. EC continues to provide technical advice and assistance to Federal Property Managers in the form of

Technical Assistance Bulletins (TABs) for contaminated sites, and is conducting research into in-situ methods of treatment which may significantly reduce difficulty and cost of remediation, thereby speeding progress towards achievement of this target.

Provincial Sites

Following further examination of the 20 sites, MOEE determined that only 13 were contaminated. Six of the 13 sites have been cleaned up, four by MOEE and two by responsible parties. Work continues at a further seven, with completion scheduled for 1999. Remediation activities include the cleanup of PCB wastes and contaminated soil, and the cleanup and removal of illegally buried wastes. Remediation costs at ten of these sites have been or will be paid for by the MOEE. Cleanup for three sites will be paid for by the responsible parties.

Provincial Contaminated Sites

- At the Township of Christie site, a pump and purge system was operated on-site by a Ministry contractor, from April to November 1996, to treat the gasoline-contaminated groundwater. Monitoring of domestic wells in the area continues. In addition, the need for further groundwater treatment and possible removal of any identified remaining contamination will be assessed and implemented, as required, in 1997 after completion of sampling programs.
- At Elmira Township, the detailed design of the on-site DNMA treatment facility will be completed in 1997. Construction and treatment operations are expected to follow by 1999.
- Cleanup efforts are continuing at the Maidstone Township site, and have been initiated at the Jaffray Melick and Kingston Townships, and at the Cities of Guelph and Kitchener contaminated sites.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Commentary and Discussion

COA Commitment 1.4.1

Little progress appears to be being made in this area, particularly at the federal level.

Federal Sites

No work at all is reported by the governments on federal sites. The National Contaminated Sites Remediation Program, which included funding for the remediation of federally-owned sites was terminated in 1995 Federal Budget. The termination of the program ended Environment Canada's leadership role in federal site remediation, and responsibility for site remediation work reverted to the Departments who owned the sites. Public Works and Government Services Canada reports that budgetary restraints have impacted the Department's environmental program, forcing adjustments in the scheduling and implementation of monitoring and remedial plans for contaminated properties and waterlots in the Great Lakes basin.[90]

More broadly, the Auditor-General of Canada[91] *has commented extensively on the*

federal government's failure to deal with contaminated sites on federal lands. Auditor-General of Canada has estimated that there are more than 5,000 contaminated sites on federal lands throughout Canada, with an estimated clean-up cost of more than $2.8 billion.[92]

A regulation requiring the registration of storage tank systems for petroleum and allied products on federal lands was adopted under the Canadian Environmental Protection Act in January 1997.[93]

Provincial Sites

Some progress is reported on provincial contaminated sites. However, there is also evidence that the Ministry of the Environment lacks the resources to complete the required remediation work, particularly in the context of the enormous reductions to the Ministry's operating and capital budgets which have taken place over the past three years.[94] *In the case of the Deloro Mine site, for example, the Ministry has requested financial assistance from an environmental non-government organization to complete the remediation of the site.*[95] *In November 1998, a private prosecution of the Ministry of the Environment was initiated under the Environmental Protection Act in relation to discharges of radioactive contaminants from the Deloro site.*[96]

In addition, in July 1996 the Ministry issued redrafted Contaminated Sites Remediation Guidelines that effectively lower the required clean-up standards for certain types of sites.[97] *The Ministry has also granted exemptions from liability for contaminated site remediation to specific sectors, such as financial institutions,*[98] *while failing to establish comprehensive policy for assignment of liability, funding or orphan site clean-up or registry of contaminated sites. Most other provinces have adopted legislation and policies to deal with these issues in a comprehensive manner.*[99]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[100]

1.4.2. Assess and Prioritize Closed Landfills

The MOEE has a comprehensive inventory of all known closed disposal sites (more than 2 000). The 377 closed sites which where considered to have the greatest potential for adverse environmental effects were assessed. While no significant impacts have been identified, a number of sites continue to be monitored.

Commentary and Discussion

COA Commitment 1.4.2

The Ministry of the Environment has not updated its published Inventory of Waste Disposal Sites, which includes operating and closed sites, since 1991. The data for the 1991 report was gathered in the late 1980s, and therefore may not include more recently closed landfills. The Ministry indicates that no significant impacts were identified in their survey, although a number of sites would continue to be monitored. The landfill assessment program has been in abeyance since 1995 and there is no indication of the date of its reactivation in the future.[101] *There is also no indication of when an update of the Waste Disposal Site Inventory might take place.*[102]

Since 1995, 27% of the staff in the regional offices, those most familiar with specific sites, have been declared surplus.[103] *Similar levels of staff reductions have taken place in the MoE's Environmental Monitoring and Reporting Branch. These reductions are likely to hinder future reviews and assessments as previous knowledge and replicability may be sacrificed.*

A number of problems involving closed landfills have emerged in the past year. Examples have included discharges of leachate from a municipal disposal site into the Cataraqui River,[104] *which resulted in the December 1998 conviction of the City of Kingston in a private prosecution under the Fisheries Act,*[105] *and discharges of leachate from a tire disposal site south of Owen Sound.*[106] *Concerns have also been raised regarding emissions of hazardous air pollutants, including vinyl chloride, from operating and closed landfills.*[107]

Landfill Approval Process Changes

Recent changes to the approvals for process for waste disposal sites seem likely to result in additional problems in the future. The level of scrutiny applied to the approval of new or expanded landfills has been significantly reduced over the past three years, both as a result of amendments to the Environmental Assessment Act adopted in December 1996,[108] *and policy changes in the administration of the approvals process. Examples of the impact of these changes include the following:*

- *the approval of a large industrial landfill in Stoney Creek in July 1996 without a public hearing;*[109]
- *the approval of a major expansion of the province's only commercial hazardous waste landfill in September 1997 without a public hearing;*[110]
- *the approval of the province's only permanent PCB incineration facility without a review under the Environmental Assessment Act in December 1997;*[111] *and*
- *the approval of a large landfill in an abandoned mine in Northern Ontario following a hearing before the Environmental Assessment Board whose scope was severely limited by the Minister of the Environment in August 1998.*[112]

Conclusions

No action is reported on federal sites under the Agreement and the federal National Contaminated Sites Remediation Program was terminated in February 1995. Some progress is reported on 'orphan' and provincial sites, although resources appear to be inadequate to complete clean-up work, particularly in light of the enormous reductions to the Ministry of the Environment's budget over the past three years. This has been especially evident in relation to the Deloro Mine site in Eastern Ontario.

The province's publicly available information on closed landfill sites is significantly out of date, and a number of problems involving leachate discharges and air emissions from both operating and closed landfills have emerged in the past few years. Finally, the province has adopted a number of policies, particularly in relation to the approval of new waste disposal sites, that seem likely to lead to the creation of more problem sites in the future.

Contaminated Sediments

COA Commitments:

1.5.1 Describe effects, demonstrate and implement the clean up of severely contaminated sediments, with emphasis on contamination at priority sites in AOCs.

1.5.2 Develop long-term strategies for remediation of areas of intermediate sediment contamination at 10 locations by year 2000.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[113]

1.5.1 Clean-up of Severely Contaminated Sediments

Sediment contamination has been characterized at seven priority sites in AOCs and a number of innovative technologies for remediating sediment contamination have been developed and demonstrated.

Contaminant Effects Characterized

The effects of contaminants on biota, and extent of spatial contamination have been established for the following sites and AOCs:

- Northern Wood Preservers site in Thunder Bay;
- Blackbird Creek in Jackfish Bay;
- Mercury deposits in Peninsula Harbour;
- Algoma Slip / Algoma River in St. Mary's River;
- Adjacent to Randle Reef in Hamilton Harbour;
- St. Lawrence River at Courtaulds (Cornwall);
- The Turning Basin in Port Hope Harbour.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Traditional methods to remove sediment were developed for navigational dredging. In severely contaminated sites, however, these methods would expose the water column to contaminants and could cause significant harm. New technologies are therefore being developed, demonstrated and used under the leadership of EC and in partnership with the provincial, municipal, and private sectors.

Projects to demonstrate the performance of innovative removal technologies

- Hamilton Harbour and Collingwood Harbour in 1992,
- Welland River (Niagara River AOC) in 1991. In 1995, a full-scale removal project was successfully undertaken in the Welland River.
- A demonstration project was completed in Port Hope Harbour in 1996.
- Following a successful demonstration project, a full-scale cleanup was undertaken in Collingwood Harbour in 1993, which contributed to the delisting of this AOC.
- A full-scale remediation project, utilizing innovative removal and treatment technologies, commenced at the Northern Wood Preservers site in Thunder Bay in August 1997.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Treatment options to reduce the volume of contaminated material or to render the material safe for alternate uses have been explored at St. Mary's River (1993 and 1995) and at Hamilton Harbour (1991). The evaluated treatment techniques contribute to long-term remediation strategies in AOCs. Remaining priority sites in AOCs require further effort to secure partners and necessary funding to proceed. Discussions for a multi-partied contaminated sediment remediation project at Hamilton Harbour including EC, MOEE and local industry are well under way. Although over 16 000 m^3 of contaminated sediment have been remediated at priority sites in AOCs to date, the uncertainty of corporate involvement may jeopardize long-term targets at some sites.

Commentary and Discussion

COA Commitment 1.5.1

The remediation of contaminated sediments has been identified as one of the most complex, and potentially costly aspects of the RAP process.

Some progress is reported in this area. However, much of the work cited by the governments under "Projects to demonstrate the performance of innovative removal technologies" took place or was initiated years ago. Only one new project has commenced since 1995. Sediment contamination has been characterized at many sites. This should allow cleanup to proceed at these sites.

However, actual clean-up efforts appear to be being impacted by the effects of reductions to the federal Great Lakes 2000 Clean-up Fund, and the budget of provincial Ministry of the Environment. A number of remediation projects now appear to be reliant on the commitment of private sector funds. Environment Canada has stated that "uncertainty over corporate involvement may jeopardize long-term targets" in this area.[114]

There has been a significant controversy over proposals by the federal and Ontario governments to rely on natural sedimentation processes to cover polluted deposits once source controls have" eliminated or drastically reduced" contaminant loadings, rather than undertaking the complex and potentially expensive process of actually removing contaminated sediments, at some sites.[115] *This approach has been strongly criticized by the Ontario RAP Public Advisory Committees.*[116]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[117]

1.5.2 Intermediate Sediment Contamination

Key elements of the government response include:

- A decision making framework for the assessment of sites has been developed and is being tested;
- Sediment has been characterized in order to develop long-term remedial strategies

at Nipigon Bay, Spanish Harbour, Severn Sound, Collingwood Harbour, St. Clair River, Wheatley Harbour, Niagara River, Hamilton Harbour, Metro Toronto and Region, and Bay of Quinte;

- Source control has been achieved at Nipigon Bay, Peninsula Harbour, Spanish Harbour, Severn Sound, Collingwood Harbour, Wheatley Harbour, and the Bay of Quinte. Partial source control has been achieved at St. Clair River, Hamilton Harbour, Metro Toronto and the St. Lawrence River;
- Remediation plans have been developed for 19 locations within AOCs.
- Physical, chemical and biological sediment assessments were recently completed for the St. Clair River at Sarnia, and similar assessments in the Detroit River downstream of Windsor are scheduled to commence in 1998.
- One long-term strategy to enhance the rate of sediment recovery is to treat the sediment in place with substances that accelerate the degradation of organic contaminants or alleviate metal toxicity. Small scale treatment experiments have been completed in St. Mary's River, Hamilton Harbour and the Welland River.
- No further action is required to restore sediment quality in Nipigon Bay, Severn Sound and Collingwood Harbour. Natural processes are to restore sediment quality in Nipigon Bay. In Collingwood Harbour and Severn Sound, sources of pollution are no longer active and full scale removal of sediment that impaired environmental quality has been completed. As a result, these ecosystems will continue to improve. At Spanish Harbour, the only remaining source is outside of the AOC and it is being controlled. Natural recovery is being measured.
- Successful full-scale clean up was completed at Severn Sound (Penetanguishene) in 1994, at Toronto's Bluffers Park in 1995, and at Toronto Pickering in 1993 and 1995. To date, over 51 000 m3 of material has been removed from sites of intermediate sediment contamination.
- An evaluation of the nature and extent of contamination is at various stages of completion for the following AOCs: St. Clair River - In progress; St. Lawrence - In progress; Detroit River - Proposed; Bay of Quinte - On hold, pending securing of additional partners and funding.

Commentary and Discussion

COA Commitment 1.5.2

Considerable progress appears to have been made in the area of sediment characterization, the control of pollution sources, and the development of remediation plans. However, no remediation projects have been completed since Bluffer's Park and Toronto Pickering in 1995, and there appears to be little progress on the implementation of remediation plans elsewhere, such as the Bay of Quinte, largely due to a lack of adequate funding.

*As noted under **1.5.1** the PACs for the Ontario RAPs have responded negatively to proposals by Environment Canada and the Ministry of the Environment to rely on natural sedimentation processes to 'remediate' contaminated sediment sites, rather than*

undertaking sediment removal.

Conclusions

Considerable work appears to have been completed on the classification of contaminated sediments. However, only limited clean-up action has taken place, particularly since 1995. The clean-up of contaminated sediments may present one of the most costly and complex aspects of the AOC remediation. The public funds available for clean-up work are extremely limited, and Environment Canada has indicated that, in some cases, further clean-up work may be dependant on private sector contributions.

The PACs for the Ontario RAPs have been very critical of proposals by Environment Canada and the Ministry of the Environment to rely on natural sedimentation processes to 'remediate' contaminated sediment sites, rather than undertaking sediment removal.

Groundwater

COA Commitments

1.6.1 Undertake hydrogeological investigations and demonstration of new approaches to remediate groundwater contamination at priority locations in the Great Lakes Basin Ecosystem.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[118]

1.6.1 Groundwater

The new provincial decommissioning guidelines are cited as "driving remedial activity"[119] through specific clean-up requirements. The remediation of groundwater contamination at many of these sites has proven to be a very costly and often unsuccessful endeavour. The objective of the work conducted under this target is to develop and demonstrate new and more efficient techniques for the clean up of contaminated groundwater at contaminated sites. Field-testing of these new techniques is now being undertaken or has been completed at several sites throughout the Great Lakes basin (see box below).

Field Testing of Remediation Techniques

- Geochemical techniques that involve the use of vitamin B-12 have been developed to assist in the dechlorination of recalcitrant organochlorine compounds in groundwater.
- A new method for the remediation of petroleum hydrocarbons (e.g., gasoline, diesel fuel) has been developed by EC. The method is based on the use of humic acid to aid in the dissolution of the petroleum products in place.
- Investigation of the pollution of groundwater by septic system effluent at the Point Pelee sand spit is nearing completion. The transport of septic contaminants has proven to be very complex, and original plans to remediate the groundwater using point-of-source treatment have been halted.
- A large-scale study has been undertaken by EC to investigate the influence of climate change on the groundwater resources of the Grand River drainage basin.
- EC is conducting a detailed groundwater study on overburden and bedrock materials contaminated by PCB and other organochlorines in the early 1980s.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Commentary and Discussion

COA Commitment 1.6.1

Few specific projects to remediate groundwater contamination appear to be under way. Work in the area may be impacted by the February 1995 termination of the federal National Contaminated Sites Remediation Program and reductions to the Great Lakes 2000 Clean-up Fund, the loss of more than 50% of the Ministry of the Environment

groundwater related staff and programs due to budgetary reductions,[120] and the November 1995 termination of the Ministry's Environmental Research Program. In his November 1998 Annual Report to the Legislature, the Provincial Auditor highlighted the Ministry's failure to complete a groundwater management strategy. The development of such a strategy had been recommended in the Auditor's 1996 report. [121]

Provincial Initiatives Affecting Groundwater Contamination

Several provincial initiatives seem likely to exacerbate groundwater contamination in the future. These include the reduced scrutiny for approvals of landfill sites outlined in section ***1.4.2.*** *Landfills are potentially major sources of groundwater contamination and, additionally, the changes to septic system regulation.*

Septic Systems

The parties acknowledge that the "transport of septic contaminants has proven to be very complex, and original plans to remediate the groundwater using point-of-source treatment have been halted."[122] Septic systems have been associated with serious environmental and human health problems in the province.[123] However, the province has taken a number of steps to weaken the oversight of the approval of septic systems in the province in the past two years.

Bill 107, the Water and Sewerage Services Improvements Act, enacted in May 1997, transferred responsibility for the approval and regulation of most septic systems under the Environmental Protection Act from the Ministry of the Environment to municipalities, or the Ministry of Municipal Affairs and Housing in areas without municipal organization. Bill 152, the Services Improvement Act, enacted in December 1997, then transferred authority for regulating small, on-lot septic systems from Part VIII of the Environmental Protection Act to the Building Code Act. The Ministry of Municipal Affairs and Housing promulgated requirements regarding the approval of septic systems into the building code through a regulation made under the Building Code Act in April 1998.[124]

In her Annual Report to the Legislature, the Environmental Commissioner expressed concern that these arrangements appeared to be more concerned with expediting the approval of septic systems, than ensuring the protection of human health and the environment. The Commissioner also questioned whether municipalities had adequate investigative and enforcement capabilities to deal with the cumulative and growing environmental and public health threats due to improperly functioning septic systems.[125]

Conclusions

Little work appears to be taking place on groundwater contamination remediation, and a number of key funding programs for remediation work have been terminated or significantly reduced. In addition, the province has undertaken a number of regulatory 'reform' initiatives likely to make groundwater problems worse. The Provincial Auditor's

most recent report to the Legislature was critical of the Ministry of the Environment's continuing failure to develop an overall groundwater strategy.

Human Health

COA Commitments:

1.7.1 By 2000, reduce the risk of exposure to specific environmental contaminants in 6 known high risk populations by 50%.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[126]

Health Canada has supported community risk and exposure assessments by publishing handbooks which provide guidance for assessing health and environment issues in Great Lakes communities. Groups at health risk through exposure to persistent pollutants from sport fish and wildlife consumption are being identified in five AOCs and the risks, perceptions and benefits of eating Great Lakes fish are being quantified. Research studies examining the effects of persistent pollutants on reproduction, endometriosis, breast cancer and neurobehaviour have been undertaken. Seven research studies on the exposure and susceptibility of targeted populations are either complete or in progress (see box below).

Exposure and Susceptibility Studies in Progress or Complete

- Assessing the potential decline in semen quality in men living in the Great Lakes basin and the other regions of Canada in relation to environmental pollutants;
- The relationship between environmental contaminants and time for women to become pregnant;
- The role of dioxins in endometriosis in women; The effects of PCB/DDT (Dichloro-diphenyl-trichloroethane) mixtures and the development of breast cancer;
- The interactive toxicological effects of mixtures of PCBs and dioxins;
- The neurobehavioural effects of exposure to PCBs during development; and,
- The amount of lead released from bones during old age.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Activities in Support of Community Risk / Exposure Assessments

- two handbooks have been published which provide guidance to Great Lakes basin communities for assessing issues of health and environment. Based on this approach, two community-directed health and environment assessments have been supported in Port Hope and Windsor-Sandwich.
- A Health and Environment Handbook for Health Professionals has been developed for health professionals in public / community health centres and other health agencies. This handbook is being distributed to health professionals within the 17 AOCs and within other degraded areas.
- Reports on the incidence of disease morbidity (cancer, birth defects and hospital admission for a variety of diseases) and mortality, between 1986 and 1992, are being prepared for each of the 17 AOCs. The report for the Metro Toronto and Region AOC has already been completed.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Activities undertaken to evaluate Health Risks in AOCs

- Health risk assessments from skin exposure to PAHs in the St. Mary's River at the Sault Ste. Marie AOC, and in waters of Hamilton Harbour and Metro Toronto and Region AOCs;
- A shoreline survey to identify groups at high risk through exposure to persistent toxic contaminants from sport fish and wildlife consumption in the Detroit River, St. Clair River, Hamilton Harbour, Niagara River and Metro Toronto and Region AOCs;
- Quantification of the health risks, perceptions and benefits of eating large amounts of Great Lakes fish in five AOCs; and,
- Incorporated into this study are strategies to help those who consume high quantities of fish, reduce their risk of exposure to persistent toxic contaminants.

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Commentary and Discussion

COA Commitment 1.7.1

A number of research studies are underway. However, no specific actions have been taken to actually reduce the risk of exposure to specific environmental contaminants among high risk populations.

Federal

Health Canada's Great Lakes Health Effects Program has been heavily affected by the Program Review process. The Department reports a 40% reduction in program resources since 1994, from $20 million over the six year life of the program, to $11-13 million over seven years, and the reduction of the extent of most of its activities.[127] *Existing initiatives have been maintained. However, no new projects have been initiated.*

The Department's biomonitoring and community level activities have been particularly affected. Shoreline surveys of angling populations in the Northern Areas of Concern, for example, were not completed due to budgetary reductions. Surveys were completed for the Toronto, Niagara River, Hamilton, St. Clair River and Detroit River AOCs.[128]

Health Canada continues to play an advisory role in the development of RAPs and LaMPs. However, the Department has become less "intimately" involved in RAP work, and no longer conducts research specific to individual RAPs.[129] *Health Canada has compiled, but has yet to release to the public, health data for each of the AOCs.*[130]

*As is discussed in detail under **2.1.1.** and **2.1.2.**, the federal government has taken no specific regulatory action to reduce the exposure of the public to priority contaminants since the adoption of new discharge regulations on the pulp and paper sector under the Canadian Environmental Protection Act and the Fisheries Act in 1992.*

Provincial Initiatives

The provincial government has undertaken a number of actions likely to increase the risk of exposure to environmental contaminants targeted in the COA Agreement, such as ***dioxins, furans****,* ***mercury****, and* ***cadmium*** *over the past three years. These actions, which include the repeal of a ban on the construction of new municipal waste incinerators, the implementation of Ontario Hydro's Nuclear Asset Optimization Plan, the introduction of competition in the electricity market without adequate environmental protection measures, and the proposed weakening of controls on industrial water pollution are outlined in* ***2.1.1.,*** *and* ***2.1.2.***

Conclusions

Health Canada has undertaken numerous studies on health impacts of Great Lakes Contaminants. However, the Great Lakes Health Effects Program has lost 40% of its budget since 1994, which has limited the Department's ability to carry out biomonitoring and community level activities. Health Canada has compiled, but has yet to release to the public, health data for each of the AOCs.

There has been no direct action by federal government to reduce the risk of exposure of high risk populations to contaminants since the adoption of new discharge regulations for the pulp and paper sector in 1992.

The provincial government has also failed to take any direct action to reduce exposure to specific contaminants. The Ministry of the Environment has yet to move forward on proposed revisions to its air pollution control standards. In addition, the province, has taken many actions that seem likely to increase the exposure of the public to COA priority pollutants such as ***dioxins****,* ***furans****,* ***mercury*** *and* ***cadmium****. These include the repeal of the ban on new municipal waste incinerators, the introduction of competition into the electricity market without adequate environmental standards, and the proposed weakening of industrial water pollution control regulations.*

Summary and Conclusion

Objective One:
Restore Degraded Areas.

The development and implementation of Remedial Action Plans (RAPs) for the 43 heavily degraded Areas of Concern (AOCs) in the Great Lakes Basin was one of the core elements of the 1987 Protocol to the Great Lakes Water Quality Agreement, and of the 1994 COA. In 1991, the Auditor General of Canada estimated the cost of remediating Areas of Concern to be "in the billions of dollars." There are 14 AOCs on the Canadian side of the Lakes and three Binational AOCs.COA committed the governments to the restoration of 60% of the impaired uses in these AOCs, and the delisting of nine AOCs by 2000, estimating the cost of this work at $1.7 billion.

There has been some progress on the development and implementation of RAPs, particularly in such locations as Nipigon Bay, Thunder Bay Harbour, Spanish Harbour, Wheatly Harbour, the Niagara River and Hamilton Harbour. However, RAP work in many other AOCs, including the St. Mary's River, Toronto Harbour, Port Hope, Bay of Quinte and St. Lawrence River has been significantly disrupted, or stalled completely. Overall progress in this area is limited and falls well short of the goals established through the COA Agreement. The government of Ontario indicated in May 1998, that only the Nipigon Bay, Spanish Harbour, Wheatly Harbour and Canadian side of the Niagara River AOCs were close to meeting the year 2000 delisting target. Collingwood Harbour was delisted in 1994. However, concerns have been raised that this step was premature.

Where progress has occurred, it has tended to be in relatively non-complex and inexpensive areas like habitat restoration, rather than the more complex and costly aspects of the RAP work, such as the remediation of contaminated sediments. Pre-1995 regulatory initiatives, such as the province's Municipal Industrial Strategy for Abatement (MISA) and the introduction of new federal discharge regulations on the pulp and paper sector, have also made a significant contributions to reducing the amounts of pollution entering many of the AOCs from industrial sources, particularly in the Lake Superior and Spanish Harbour RAPs.

RAP efforts have been hampered by budgetary reductions, both directly to RAP programs, and indirectly through reductions to programs that contributed to RAP implementation, since 1995. These reductions have been particularly severe at the provincial level. The Ministry of Natural Resources has effectively abandoned its RAP commitments, and the involvement of the Ministry of the Environment has been significantly reduced, including the withdrawal of funding for RAP coordinators and Public Advisory Committees in many provincially-led RAPs. Federal Programs, such as the Great Lakes research activities of the Departments of Fisheries and Oceans and of Health, have also been heavily affected by budgetary reductions.

Environment Canada has intervened in some areas where provincial or other federal agencies have abandoned RAP commitments and activities. Examples of such actions include the provision of interim funding for the RAP coordinator positions in some provincially-led RAPs, and toxicology research in AOCs previously conducted by Department of Fisheries and Oceans. The implementation framework for many of the RAPs remains in flux as a result of the province's reduced role, and the sources of funding for the actual implementation of many RAPs elements remains uncertain.

The Ministry of the Environment has established a Great Lakes Renewal Foundation, and provided the Foundation with a $5 million seed grant. The Foundation is intended to attract private sector contributions to RAP work. However, the province has been severely criticized by some RAP participants for its withdrawal from many RAP-related activities, and its apparent lack of commitment to the RAP process. There is no reference at all to RAPs or COA commitments in the Ministry of Natural Resources' current Business Plan. In addition, many of the regulatory 'reform' initiatives undertaken by the Ontario Ministries of the Environment and of Natural Resources seem likely to undermine the restorative goals of COA and, indeed, the Water Quality Agreement itself.

Concerns also exist regarding the direction of the future implementation of RAPs, illustrated by the Severn Sound Association model and Great Lakes Renewal Foundation. This approach may be seen to download responsibility for the financing and carrying out of RAP implementation to municipal governments and the private sector by the province and federal governments. The International Joint Commission has stressed the problems associated with the downloading of RAP responsibilities with no associated increases in local capacity

There has been considerable progress with capital works projects related to RAPs that were initiated prior to 1995. Unlike previous Canada-Ontario Agreements, the 1994 COA did not include federal funding commitments for the upgrading of sewage treatment facilities. This area has been affected by the termination of the provincial Municipal Assistance Program, and the transfer of provincial sewer and water infrastructure to municipalities without provincial financial support. Little or no provincial or federal funding appears to be available to complete the outstanding work in this area. The lack of funding for sewage treatment upgrading and combined sewer overflows has been identified as a significant problem in a number of RAPs, including the Bay of Quinte, Hamilton Harbour and the St. Clair River.

There is some progress in the restoration of degraded populations of fish populations, habitat restoration, and the development of recovery plans for species at risk. However, activities in this area have been affected by the reductions in the habitat research activities of the Department of Fisheries and Oceans, and the Ministry of Natural Resources', disbandment of its Great Lakes Branch, withdrawal from virtually all of its RAP related activities and the implementation of severe reductions to the budgets of its Great Lakes Management Units.

Other provincial initiatives, including the Ministry of Natural Resources'

abandonment of the enforcement of the habitat protection provisions of the Fisheries Act, the weakening of Planning Act protection for ecologically significant areas, including wetlands, the withdrawal of the Ministries of Environment and Natural Resources from the land-use planning process, and reductions in resources and mandates of Conservation Authorities, may also undermine species and habitat rehabilitation goals.

The province announced a one-time $10 million expenditure on MNR fish and wildlife programs in its May 1997 budget. However, none of these funds are specifically targeted at Great Lakes habitat restoration.

No action is reported on federal contaminated sites under the Agreement. The federal National Contaminated Sites Remediation Program was terminated in February 1995. Some progress is reported on 'orphan' and provincial contaminated sites, although resources appear to be inadequate to complete clean-up work, particularly in light of the enormous reductions to the Ministry of the Environment's budget over the past three years. This has been particularly evident with respect to the Deloro Mine site in Eastern Ontario.

The province's publicly available information on closed landfill sites is significantly out of date, and a number of problems involving leachate discharges and air emissions from both operating and closed landfills have emerged in the past few years. Furthermore, the province has adopted a number of policies, particularly in relation to the approval of new landfills, that seem likely to lead to the creation of more problem sites in the future.

Considerable work has been completed on the classification of contaminated sediments. However, only limited clean-up action has taken place, particularly since 1995. The clean-up of contaminated sediments may present one of the most costly and complex aspects of the AOC remediation. The public funds available for clean-up work are extremely limited, and Environment Canada has indicated that, in some cases, further clean-up work may be dependant on private sector contributions. There has been a significant controversy over proposals by the federal and Ontario governments to rely on natural sedimentation processes to cover polluted deposits once source controls have "eliminated or drastically reduced" contaminant loadings, rather than undertaking the complex and potentially expensive process of actually removing contaminated sediments, at some sites.

Little work appears to be taking place on groundwater contamination remediation, and a number of key funding programs for remediation work have been terminated or significantly reduced by the Ministry of the Environment. In addition, the province has undertaken a number of regulatory 'reform' initiatives likely to worsen groundwater contamination problems. The Provincial Auditor's most recent report to the Legislature was critical of the Ministry of the Environment's continuing failure to develop an overall groundwater strategy.

Health Canada has undertaken numerous studies on health impacts of Great Lakes contaminants. However, the Great Lakes Health Effects Program has lost 40% of its budget since 1994. This has limited the Department's ability to carry out biomonitoring and

community level activities. Health Canada has compiled health data for each of the AOCs, but has yet to release this information to the public. There has been no direct action by federal government to reduce the risk of exposure of high risk populations to contaminants since the adoption of new discharge regulations for the pulp and paper sector in 1992.

The provincial government has also failed to take any direct action to reduce exposure to specific contaminants. The Ministry of the Environment has yet to move forward on proposed revisions to its air pollution control standards affecting COA priority pollutants. In addition, the province has taken many actions that seem likely to increase the exposure of the public to COA priority pollutants such as ***dioxins****,* ***furans****,* ***mercury*** *and* ***cadmium****. These include the repeal of the ban on new municipal waste incinerators, the introduction of competition into the electricity market without adequate environmental standards, and the proposed weakening of industrial water pollution control regulations.*

Remedial Action Program Status Summary Table

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
Thunder Bay	Provincial (EC/MoE/MNR/DFO MOU)	Draft Stage 2 Report to RAP Steering Committee June 1998	Coordinator Terminated by MoE January 1997 DFO withdrawal from MOU Health Canada angling population surveys not completed.	Unable to contact PAC members.	Clean-up of effluent from Provincial Papers, Abitibi Price and Thunder Bay Packaging pulp mills a major factor. Work on Northern Wood Preservers site underway.
Nippigon Bay	Provincial (EC/MoE/MNR/DFO MOU)	Stage 2 Report Complete September 1995	DFO withdrawal from MOU Health Canada angling population surveys not completed.	Unable to contact PAC members	Clean-up of effluent from Domtar Packaging Ltd. a major factor.
Jackfish Bay	Provincial (EC/MoE/MNR/DFO MOU)	Stage 2 Report being revised in response to RAP SC review Winter 1996	DFO withdrawal from MOU Termation of DFO toxicology research/transfer to EC. Health Canada angling population surveys not completed.	Unable to contact PAC members	Clean-up of effluent from Kimberly Clark Canada pulp mill a major factor.

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
Peninsula Harbour	Provincial	Draft Stage 2 Complete, under review by RAP Steering Committee Winter 1996.	Termination of DFO toxicology research/transfer to EC. Health Canada angling population surveys not completed.	Process slowed by provincial cutbacks, particularly to research activities. With clean-up of paper mill effluent major focus is on monitoring. Pleased with progress.	Clean-up of effluent from James River Marathon pulp mill a major factor.
St. Mary's River	Binational RAP Provincial/State of Michigan	Stage 2 Document under development Binational PAC continues to meet and push for action.	Put under Ubrella of Lake Superior RAPs with amalgamation of MoE NE and NW Regions. MoE SSM Office downgraded to suboffice. Supported through Thunder Bay based coordinator (Coordinator never had continuity) Provincial cuts general. Federal funding for Coordinator withdrawn September 1998. No supported with provincial funds.	No Staff, No specific resources, no municipal support. Provincial cutbacks "very frustrating"	Major sources of contaminants include Algoma Steel, two Ontario Water pollution control plants, St. Mary's Paper, one Michigan wastewater treatment plant.

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
Spanish Harbour	Provincial	Stage 2 Document complete.	Coordinator Terminated by MoE January 1997 DFO toxicology research terminated/transferred to EC. Thunder Bay Coordinator now responsible for Spanish River.	No perceived impacts of provincial reductions RAP "Almost Complete"	Clean-up of Espanola pulp mill a major factor. Friends of the Spanish River have taken on role of PAC with federal, provincial and industry funding.
Severn Sound	Provincial	Stage 2 Complete.	Termination of Urban and Rural Beach Clean-up Program. MNR reductions affected trapnetting program. Provincial reductions - general.	Impact of provincial reductions "severe" although alternative s were arranged by coordinator, particularly for monitoring.	Federal government has backed Severn Sound Association. Has taken on role of PAC. Coordinator has continued on secondment from MoE Close to $30 million spent on infrastructure (STP) upgrading.

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
Collingwood Harbour	Provincial	Complete. De-listed November 1994.		De-listed pre: 1995 so not affected. Happy with results. Would like to see monitoring to ensure area stays restored which province is unwilling to fund.	De-Listing Considered Premature by PAC members.
St. Clair River	Provincial Binational RAP. EC MOU with MoE SW Region.	Stage 2 Report Submitted to Governments March 1995. Implementation Annex submitted September 1997.	Coordinator Terminated by MoE January 1997 Funding for PAC and public involvement coordinator terminated January 1997 Windsor MoE District Office downgraded to sub-office. Termination of Urban and Rural Beach Clean-up Program. Termination of Municipal Assistance Program (funding for Sarnia STP upgrade). Provincial cutbacks - general.	Situation "frustrating" but outlook more positive.	History of heavy contamination from petroleum and chemical industries. Significant improvements in discharges since 1980's Historically contaminated sediments. PAC intervention with Premier saved Coordinator Position.
Detroit River	Provincial/State of Michigan. I	Stage 2 Report to IJC 1996.	Coordinator terminated by MoE January 1997	Unable to contact PAC members.	One of the most heavily degraded

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
	Binational RAP. EC MOU with MoE SW Region.				AOCs. New implementation framework lead by Detroit River Canadian Clean-up Committee. Secretariat functions provided by Essex Region CA, with EC and MoE Funding. Major investments (approx. $100 million since 1989) in Windsor municipal infrastructure studies and upgrades. Major problem appears to be lack of leadership from State of Michigan. Has downloaded responsibility for RAP from Dept of Env. Quality to local PACs.
Wheatly Harbour	Provincial	Stages 1 & 2 complete.		No PAC established.	Clean-up of discharges from

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
					Olmstead Foods major factor. MoE Coordinator existed "on Paper" N.B. Federal Grant for habitat restoration announced December 1998.
Niagara River	Federal	Federal Response to Stage 2 Report June 1996. Provincial Response to Stage 2 Report December 1996.	Coordinator Terminated by MoE January 1997.	Unable to contact PAC members	MISA regulations have had major impact on Ontario point source discharges. EC continuing funding of public involvement facilitators. PAC has incorporated as Niagara River Restoration Council.
Hamilton Harbour	Federal	Stage 2 Report to IJC 1996.	Termination of Urban and Rural Beach Clean-up program. DFO toxicology research terminated/transferred to EC.	Lack of political will from the province shows low priority attributed to RAPS. Cutbacks mean more resources diverted from clean-up work to	One of most heavily degraded AOCs. RAP cost estimates $800-$900 million, mostly for combined sewer overflows and STP

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
			Lack of Funding for Combined Sewer overflow program.	fundraising.	upgrading. Point and non-point pollution, contaminated sediments, combined sewer overflows. Bay Area Restoration Council (BARC) has taken role of PAC. Hamilton Harbour RAP form forms RAP Team. Randle Reef remediation to begin late spring/early summer.
Metro Toronto	Provincial	Federal Response to Stage 2 Report January 1997. Provincial Response July 1996.	Coordinator terminated by MoE January 1997. DFO toxicology research terminated/transferred to EC.	Note impact of "drastic" cutbacks in provincial funding and lack of commitment by province to the process. Most serious obstacle is "zero commitment" to RAP process at senior levels of government.	Major problems include STP discharges, combined sewer overflows, storm sewers, urbanization. 4 Party MOU stated to have evolved to replace coordinator (WRT/MTRCA/Mo

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
				Federal government has tried to re-organize the RAP process. Future role of PAC unclear.	E/EC with WRT/MTRCA lead roles.
Port Hope	Federal	Stage 1 Report to IJC January 1990.		Unable to contact PAC.	Radioactive sediments in Port Hope Harbour. "A different process." No evidence of progress.
Bay of Quinte	Provincial EC MOU with MoE Eastern Region.	Stage 2 Report to governments September 1993.	MoE Terminated Coordinator January 1997. Termination of Urban and Rural Beach Clean-up Program. Termination of Municipal Assistance Program. Termination of Provincial LaMP coordinator. Removal of MoE, MNR, CA from planning process. MNR Reductions in Monitoring and	Financial Cutbacks estimated to have "set RAP back five years." Political will need for regulatory changes and funding commitments lacking.	Agricultural inputs, sediments, STPs, industrial discharges, urban runoff, and atmospheric deposition. Bay of Quinte Restoration Council (fed/prov/CA reps) has replaced RAP team. Quinte Watershed Clean-up is new PAC.

Area of Concern	Lead Jurisdiction	RAP Status	Program Losses Affecting RAP	PAC Member Comments	Comment
			Surveillance (DFO and MoE too). Provincial cutbacks in general.		
St Lawrence River	Federal EC MOU with MoE Eastern Region.	Draft Stage 2 Report to RAP Steering Committee Winter 1997.	Coordinator Terminated by MoE January 1997. MoE Cornwall Office downgraded to Sub-Office. Provincial termination of positions, particularly monitoring. MNR reductions result in no local presence, no involvement of MNR in RAP, and an end to monitoring.	See comments re: provincial program losses.	"Unofficial" coordinator provided by EC. Cornwall and Distirect Environmental Committee. St. Lawrence Restoration Council is RAP team (Fed/prov/municipal reps)

Information from RAP PAC member interviews and GLIMR Web site (URL: http//www.cciw.ca/glimr/raps/intro.html)

The Great Lakes Water Quality Agreement Identifies three stages for RAPs:

Stage 1: Problem Definition

Stage 2: Remedial Action Plan Developed

Stage 3: Beneficial Uses Restored

Endnotes

1. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

2. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

3. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

4. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

5. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

6. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

7. Office of the Auditor General, *Report of the Auditor-General of Canada to the House of Commons* (Ottawa: Minister of Supply and Services, 1991), pg.274.

8. *The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem 1994,* Article 6.

9. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

10. S.Billups, Fe de Leon, et.al, *Treading Water: A Review of Government Progress Under the Great Lakes Water Quality Agreement: A Report to the International Joint Commission* (Toronto and Ann Arbor: Canadian Environmental Law Association, Great Lakes United and the National Wildlife Federation, October 1997), pg.90.

11. B.McAndrew, "Ontario fails in cleaning lakes," *The Toronto Star*, May 20, 1998.

12. International Joint Commission, *Ninth Biennial Report on Great Lakes Water Quality*, 1998, pg.27.

13. Pers.comm., John Shaw, Environment Canada, November 13, 1998.

14. Great Lakes Water Quality Board, "Review of Government Resources and Changing Program Thrusts as They Relate to Delivery of Programs under the Great Lakes Water Quality Agreement," (International Joint Commission, 1998) Canada - Environment Canada, URL:http://www.ijc.org/boards/wqb/govres/review.html.

15. Pers. comm., John Shaw, Environment Canada, November 13, 1998.

16. Great Lakes Water Quality Board, "*Review of Government Resources and Changing Program Thrusts as they Relate to Delivery of Program under the Great Lakes Water Quality Agreement*" (International Joint Commission, 1998), Canada - Department of Fisheries and Oceans.

17. Pers. comm., Remi Kalinuskas, Environment Canada, December 8, 1998.

18. Great Lakes Water Quality Board, "*Review of Government Resources and Changing Program Thrusts as they Relate to Delivery of Program under the Great Lakes Water Quality Agreement*" (International Joint Commission, 1998), Canada - Department of Fisheries and Oceans.

19. Pers. comm., Doug Haines, Health Canada, December 7, 1998.

20. See letter to D.Haines, Health Canada, from Keith Sherman, Coordinator, Severn Sound RAP, November 20, 1998.

21. Transitional support was provided to those Public Advisory Committees that indicated desire to become self sufficient, such as Severn Sound. Pers. comm., Carol Sackville-Davidoff, Ministry of Environment, November 10, 1998.

22. Jonathan Sher, "Mayor fails to get more cash to build sewage plant," *The London Free Press*, December 15, 1998.

23. Rick Hughes, "Harbour cleanup under threat: Underground tanks built to store untreated sewage face budget chop," *The Hamilton Spectator*, January 8, 1999.

24. *Fish & Wildlife Management Business Plan: Overview of Fish & Wildlife Management Review* (MNR June 1997).

25. *Ibid.*, pp.7-8.

26. Pers. comm., Doug Dodge, Ministry of Natural Resources, December 11, 1998.

27. Great Lakes Water Quality Board, "*Review of Government Resources and Changing Program Thrusts*," Ontario Ministry of Natural Resources.

28. Pers.comm., Environment Canada staff, November 10, 1998.

29. Pers. comm., Remi Kalinushas, Environment Canada, December 8, 1998.

30. "$35 million for environment," *The Toronto Star,* May 6, 1998.

31. Ministry of the Environment, *Business Plan 1998-1999*. URL:http://www.gov.on.ca/MBS/english/press/ plans98/env.html.

32. Ministry of Natural Resources, *Business Plan 1998-99 URL: http://www.gov.on.ca/MBS/english/press/ plans98/mnr.html.*

33. Pers. comm. Carol Sackville Dusyldoff, Ministry of the Environment, November 10, 1998.

34. International Joint Commission, *Remedial Action Plan Beacons in the Great Lakes Basin*, URL: http:\\www.ijc.org/boards/annex/beacon/beacon.htlm.

35. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

36. Pers. comm., Remi Kalinuskas, Environment Canada, November 10, 1998.

37. P.Botts., "Great Lakes Water Quality Agreement: Its Past Successes and Uncertain Future" (Hanover (NH): Institute for International Environmental Governance, April 1997), pg.8.

38. Pers. comm., Carol Sackville-Davidoff, Ministry of the Environment, November 10, 1998.

39. Jonathan Sher, "Mayor fails to get more cash to build sewage plant," *The London Free Press*, December 15, 1998.

40. Rick Hughes, "Harbour cleanup under threat: Underground tanks built to store untreated sewage face budget chop," *The Hamilton Spectator*, January 8, 1999.

41. Ministry of the Environment, *Business Plan 1998-99.*

42. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

43. News Release "Sterling announces new green technology pilot project", Ministry of Environment and Energy, May 14, 1997.

44. *Ibid.*

45. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

46. Great Lakes Water Quality Board, "*Review of Government Resources and Changing Program Thrusts as they Relate to Delivery of Programs under the Great Lakes Water Quality Agreement*" (International Joint Commission, 1998), Canada - Department of Fisheries and Oceans.

47. Pers. comm., John Shaw, Manager, Great Lakes 2000 Clean-up Fund, Environment Canada, November 13, 1998

48. *Ibid*., pp.7-8.

49. Great Lakes Water Quality Board, "*Review of Government Resources and Changing Program Thrusts*," Ontario Ministry of Natural Resources.

50. Ministry of Natural Resources, *Business Plan 1998-99*

51. Winfield and Jenish, *Ontario's Environment and the Common Sense Revolution: A Second Year Report* 1997 pp-29-30.

52. *Ibid*.

53. See EBR Registry Number: PB7E4004.P, August 18, 1997, and EBR Registry Number: **????**, September 19, 1997.

54. Fisheries Act, s.35.

55. J..Swaigen and M.Winfield, "Water," in J.Swaigen and D.Estrin, eds., *Environment on Trail: A Guide to Ontario Environmental Law and Policy* (Toronto: Emond-Montgomery Publishers and CIELAP, 1993).

56. See memorandum to staff from Ron Vancart, Deputy Minister, "*MNR's Role in Fish Habitat Management under Section 35(2) of the* Fisheries Act," August 14, 1997.

57. United States Environmental Protection Agency and Environment Canada, *State of the Great Lakes, 1997.*

58. Standing Committee on Environment and Sustainable Development, *Enforcing Canada's Pollution Laws; The Public Interest Must Come First!* (Ottawa: House of Commons, May 1998), pg.16.

59. Ibid.

60. Standing Committee on Environment and Sustainable Development, Enforcing Canada's Pollution Laws, pg. 16.

61. Pers. comm., Byril Kurtz, Department of Fisheries and Oceans, November 24, 1998.

62. Ibid.

63. Great Lakes Water Quality Board, "Review of Government Resources," Canada- Department of Fisheries and Oceans.

64. Standing Committee on Fisheries and Oceans, Central Canada's Freshwater Fisheries Report, Recommendation 14.

65. Ministry of Natural Resources, Press Release and Fact Sheets, "New Regulations Guide Activities on Crown Lands," November 5, 1996.

66. See Winfield and Jenish, *Ontario's Environment and the Common Sense Revolution: A First Year Report,* 1996, pp.11-16.

67. Report, 3.2.1.

68. See, Ministry of Municipal Affairs, Comprehensive Set of Policy Statements (Toronto: May 1994), A: Natural Heritage, Environmental Protection and Hazard Policies; and Ministry of Municipal Affairs and Housing, Provincial Policy Statement (Toronto: March 1996), 2.3 Natural Heritage.

69. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

70. The Bill was enacted in December 1997.

71. Pers. comm., Simon Llewellen, Director, Environmental Conservation Service, Environment Canada, November 17, 1998.

72. See, for example, D.McClaren, "*Comments on Bill 139, the* Fish and Game Conservation Act, *1997*" (Toronto: Canadian Environmental Law Association, December 1997).

73. See, Ministry of Municipal Affairs, Comprehensive Set of Policy Statements (Toronto: May 1994), A: Natural Heritage, Environmental Protection and Hazard Policies; and Ministry of Municipal Affairs and Housing, Provincial Policy Statement (Toronto: March 1996), 2.3 Natural Heritage.

74. A. Thompson, "Ottawa called flop at saving species," *The Toronto Star*, September 30, 1997.

75. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

76. Great Lakes Water Quality Board " *Review of Government Resources,*" Canada- Department of Fisheries and Oceans.

77. Standing Committee on Fisheries and Oceans, Central Canada's Freshwater Fisheries Report (Ottawa: House of Commons, November 1998), Recommendations 9 and 16.

78. Great Lakes Water Quality Board, "*Review of Government Resources*," Ontario Ministry of Natural Resources.

79. R.Avery, "Salmon stocking dangerous say zoologist, Indian chief," *The Toronto Star*, August 26, 1997.

80. Winfield and Jenish, *Ontario's Environment and the Common Sense Revolution: A Second Year* Report, 1997 pg.90.

81. *1998 Annual Report of the Provincial Auditor of Ontario to the Legislative Assembly* (Toronto: Queen's Printer, Fall 1998), pp.175-193.

82. Ministry of Natural Resources, *News Release* "Snobelen Signs Commercial Fishing Agreement", January 12, 1998.

83. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

84. Great Lakes Water Quality Board, *"Review of Government Resources*," Canada- Department of Fisheries and Oceans.

85. Pers. comm, John Shaw, Manager, Great Lakes 2000 Clean-up Fund, Environment Canada, November 13, 1998.

86. Great Lakes Water Quality Board, "*Review of Government Resources*," Canada - Department of Fisheries and Oceans.

87. "$35 million for environment," *The Toronto Star*, May 6, 1998.

88. Ministry of Natural Resources, 1998-99 Business Plan, Key Performance Measures.

89 Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

90. Great Lakes Water Quality Board, "*Review of Government Resources*," Canada- Public Works and Government Services Canada.

91. *Report of the Auditor General of Canada to the House of Commons - Chapter 22 Federal Contaminated Sites - Management Information on Environmental Costs and Liability* (Ottawa: Minister of Supply and Services, November 1996). See also, S.McCarthy, "Waste Cleanups to cost billions," The Globe and Mail, October 29, 1997.

92 Auditor-General, *Ch.22 - Federal Contaminated Sites*. See also S.McCarthy, "Waste cleanups to cost billions more, auditor says," *The Globe and Mail,* October 29, 1997.

93. The Registration of Storage Tank Systems for Petroleum Products and Allied Products on Federal Lands Regulations, January 1997.

94. Between the 1994/95 and 1998/99 fiscal years the Ministry of the Environment's operating budget will have fallen by 45% and its capital budget by 81%.

95. B.McAndrew, "Tories ask activists for mine clean-up aid," *The Toronto Star*, November 20, 1997.

96. T.Spears, "Ontario charged under own pollution law," The Ottawa Citizen, November 26, 1998.

97. Ministry of Environment and Energy, *Guideline for Use at Contaminated Sites in Ontario* (July 1996).

98. Ministry of Environment and Energy, *News Release* "New standard agreement clarifies liability of financial lenders", December 18, 1995.

99. National Round Table on Environment and Economy, Financial Services Task Force, *Backgrounder: Contaminated Sites Issues in Canada* (Ottawa: NRTEE, 1997).

100 Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

101. Personal Communications with Jim Mulira Standards Development Branch, Ministry of the Environment, December 1998.

102. Ibid.

103. See Winfield and Jenish, *Ontario's Environment and the Common Sense Revolution : A Third Year Report*, 1998, Appendix A, Table 5.

104. *The Toronto Star* March 15, 1997.

105. "City guilty of polluting river," The Globe and Mail, December 12, 1998.

106. Mittlelstaedt M., Rusk J., " Ontario to dig up tire dump contaminating ground water "*, The Globe and Mail* , February 26, 1998.

107. M.Mittelstaedt, "Public may be exposed to harmful chemicals," The Globe and Mail, November 26, 1998.

108. Bill 76, *The Environmental Assessment Consultation and Improvement Act, 1996*.

109. J.Nichol, "Dangerous Deliveries," *McLeans*, October 26, 1998.

110. Winfield, M. *Hazardous Waste Management In Ontario: A Review and Recommendations*, CIELAP, 1998, pp.IV 16-17.

111. Environmental Assessment Board, "*Gary Steacy Dismantling Limited: Reasons for Decision and Decision*," December 1997 (file no.:EP97-03).

112 J.Rusk and M.Mittelstaedt, "Ontario approves Kirkland Lake dump," *The Globe and Mail*, August 26, 1998.

113 Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

114 Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

115. Ministry of the Environment and Environment Canada, *Policy Regarding Change in RAP Status to "Areas of Natural Recovery," September 1997.*

116. S.Billups et. al. *Treading Water: A Review of Government Progress Under the Great Lakes Water Quality Agreement: A Report to the International Joint Commission* (Toronto/Buffalo/Ann Arbor: Canadian Environmental Law Association, Great Lakes United, and National Wildlife Federation, October 1997), pp.94-95.

117 Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

118 Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

119 *Ibid*.

120. See Ontario Public Service Employees Union, *Nothing Left to Cut: Field Report on Activities of the Ontario Ministry of the Environment* (Toronto: January 1997), which reports a 53% reduction to Groundwater and Hydrogeology staff as of December 1996.

121. Office of the Provincial Auditor, 1998 Annual Report (Toronto: Queen's Printer for Ontario, November 1998), pp.273-274.

122 Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

123 See, for example, Environmental Commissioner of Ontario, *1996 Annual Report.* See also Commission on Planning and Development in Ontario, *New Planning News*, Vol.1, No.3, (December 1991).

124 Ontario Regulation 122/98.

125 Environmental Commissioner of Ontario, *1997 Annual Report*, pg.25.

126. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 1: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

127. Great Lakes Water Quality Board, "*Review of Government Resources*," Canada- Health Canada.

128. Pers. comm., Doug Haines, Health Canada, Great Lakes Health Effects Program, December 7, 1998.

129. Ibid.

130. See letter to D.Haines, Health Canada from Keith Sherman, Coordinator, Severn Sound RAP, November 20, 1998.

Objective Two:

Prevent and Control Pollution

Objective Two: Prevent and Control Pollution

Priority Toxic Substances

COA Commitments:

2.1.1 For Tier I substances, Canada and Ontario agree to seek a 90 per cent reduction in the use, generation or release of the remaining seven substances **(benzo(a)pyrene**, **hexachlorobenzene**, **alkyl-lead**, **mercury**, **octachlorostyrene**, **PCDD** (**dioxins**) and **PCDF** (**furans**) by the year 2000.

2.1.2 For Tier II substances and other pollutants, Canada and Ontario agree to collaborate with, and provide support for, voluntary programs by industry and others to reduce the use, release or generation of Tier II substances (**cadmium**, **hexachlorocyclohexane**, **1,4-dichlorobenzene**, **3,3'-dichlorobenzidine**, **4,4'-methylene bis(2-chloroaniline**), **pentachlorophenol**, **tributyl tin**, and a group of **PAHs** including anthracene and dinitropyrene), and establish specific timelines and targets for achieving their virtual elimination.

2.1.3 Provide essential knowledge on the fate and effects of Tier II substances from industrial, municipal and other sources.

2.1.4: For Tier I, Tier II and other polluting substances:

i) Work with industry to attain commitments to achieve the targets stated herein through such formal arrangements as Memoranda of Understanding (MOUs), and through informal arrangements as appropriate.

ii) Implementation by 1998 of pollution prevention programs will be promoted and encouraged at targeted industrial facilities discharging to the Great Lakes, through a variety of instruments, including the Ontario Pollution Prevention Pledge Program (P^4) and the national ARET initiative.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[1]

2.1.1 90% Reduction in Use, Generation and Release of Seven Priority Substances

Total releases of these seven substances are estimated to be 22 tonnes per year, dominated by releases of **benzo(a)pyrene** and **mercury**. Some reductions have occurred with respect to **alkyl-lead** (85 per cent), **octochlorostyrene** (18 per cent), **dioxins** and **furans** (66 per cent) and **B(a)P** (20 per cent), mainly under the ARET program.

Some highlights in relation to reductions of Tier I substances include:

° Members of the Ontario Forest Industry Association have achieved major reductions in **dioxin/furan** releases to water (1988-eight grams; 1995-0.4 grams; 1996-release close to zero) in anticipation of Municipal Industrial Strategy for Abatement and

Canadian Environmental Protection Act regulations.

° Trace levels of **dioxin** and **furan** (less than one gram per day) in the effluent discharge from DuPont Canada's Kingston plant were eliminated after a sampling study pin-pointed the use of a biocide as the source.

° The Toronto Hospital for Sick Children, the Toronto Hospital and the Centenary Health Centre signed an agreement in April 1996 to reduce **mercury** use that will see the hospitals adopt plans and timetables for the reduction or elimination of mercury. Other hospitals have since signed on as well.

° Under the Agricultural Pesticides Container Collection Program. One million containers have been collected over the last two years.

° The Ontario Waste Agricultural Pesticides Collection Program was initiated in August 1995 by OMAFRA and MOEE to dispose of unwanted or unregistered pesticide products that originate in the agricultural sector.

° A **mercury** and waste reduction initiative is being developed between the Ontario Dental Association and the Regional Municipality of Hamilton- Wentworth.

° The City of Thunder Bay launched a two year trial project to collect the small "button" batteries used in watches. Sault Ste. Marie may follow.

"Significant reductions in dioxin and furan emissions from Ontario Kraft pulp and paper mills into Lake Superior are one of many indicators that progress is being made in improving water quality in the Great Lakes. The discharges have been dramatically reduced as a result of enforcement of Ontario's regulation under the province's Municipal/Industrial Strategy for Abatement."

Source : *News Release:* "Ontario playing a major role in Great Lakes cleanup" Ontario Ministry of the Environment, October 21, 1997.

° Metropolitan Toronto is in the process of revising its sewer use by-law, and is considering a requirement for pollution prevention planning, along with compliance requirements for industries which use or release Tier I and Tier II substances.

° In 1996, Dow Chemical Canada Inc. installed a barrier wall in the area of its former landfill site at Scott Road (Sarnia) that prevents approximately 50 grams per day of chlorinated organic chemicals from reaching the St. Clair River.

Commentary and Discussion

COA Commitments 2.1.1

Reductions in Releases

The governments' claims of reductions in releases of Tier I substances are largely based on results of ARET program. Data from program are unreliable and incomplete.

Participation in the ARET program is voluntary, and therefore the program does not capture all sources of the generation, use or release of ARET listed substances. One hundred of the 287 facilities enrolled in ARET are in Ontario. However, some 885 facilities in Ontario filed reports of releases or transfers of pollutants under the National Pollutant Release Inventory in 1996.[2] The Ontario Waste Generator Registry System, for its part, reports the registration of 32,000 generators of hazardous or liquid industrial wastes in Ontario.[3] Furthermore, reductions in releases of pollutants claimed under ARET are not subject to independent verification.[4]

In addition, the program only requires reporting of releases of substances to the environment. It does not account for transfers of ARET substances in waste. This is a serious gap. An analysis of the 1994 and 1995 NPRI data by the North American Commission for Environmental Cooperation found that while releases of ARET substances reported under the NPRI had declined 13% between 1994 and 1995, reported transfers of ARET substances in waste had grown by 82%, indicating a net increase of 21% in total generation of ARET substances reported under the NPRI.[5]

A review of the ARET program was initiated by the federal government in the spring of 1998.[6]

*Reporting of releases and transfers of COA Tier I and II substances under the National Pollutant Release Inventory is very limited, as only **mercury**, **cadmium, anthracene** and some **PAHs** are NPRI reported substances, and the reporting thresholds are so high as to exempt most generators of these substances as waste.*

Government Actions on Tier I Substances

Federal

***Lead** and **Mercury** were included in the list of toxic substances under the Canadian Environmental Protection Act (CEPA) when it was enacted in 1988.[7] **Hexachlorobenzene**, **PCDD** and **PCDF** were been found to be 'toxic' substances as defined through the Act through the first Priority Substances List (PSL1) assessment process, completed between 1993 and 1995. However, to date the only action taken by the federal government to reduce the use, generation or release of these substances has been the adoption of regulations to control discharges of **PCDD** and **PCDF** discharges from pulp and paper mills in 1992.[8]*

A Strategic Options Process (SOP) was established in 1994 to consider options to reduce the use, generation and release of the substances found 'Toxic' under CEPA through the PSL1 assessment process. Nine multi-stakeholder "issues tables" (dry cleaning, benzidine and dichlorobenzidine, ceramic fibre, base metal smelting, electric

power generation, metal finishing, steel manufacturing, short chain chlorinated paraffins, solvent degreasing, and wood preservatives) were established for this purpose. The federal government indicated its intention to establish new regulations on the use of trichloroethylene, benzidine and dichlorobenzidine, and percloroethylene as a result of the SOP process in February 1997.[9] 1997. However, no further action has been taken by the federal government to date to deal with the PSL "toxic" substances since that date.[10]

In June 1995 the federal government adopted a Toxic Substances Management Policy, outlining how it would deal with substances determined to be "toxic" for the purposes of CEPA.[11] The policy has been strongly criticized as undermining the concept of 'virtual elimination' of persistent toxic substances contained in the Great Lakes Water Quality Agreement and articulated by the International Joint Commission.[12] The Policy defines 'virtual elimination' in terms of eliminating the release of substances to the environment, rather than ending their generation or use, and states that naturally occurring substances, elements and radionuclides, such as ***mercury*** *and* ***lead****, cannot be candidates for 'virtual elimination.' This approach is also inconsistent with the 1994 COA goal of reducing the use, generation and release of Tier I and II substances. Under the policy, the COA Tier I substances* ***hexachlorobenzene****,* ***PCDD*** *(****dioxins****) and* ***PCDF*** *(****furans****) are targeted for 'virtual elimination.'*

The following month, the federal government adopted a Policy Framework on Pollution Prevention which defined pollution prevention as

> *"the use of processes, practices, materials, products or energy that avoid or minimize the creation of pollutants and waste, and reduce overall risk to human health or the environment."[13]*

This definition is widely regarded as being more consistent with the 'virtual elimination' concept which underlies the Water Quality Agreement.

A revised Canadian Environmental Protection Act (Bill C-74)was introduced into the House of Commons in December 1996. However, this Bill died on the Order Paper with the call of the June 1997 federal election. A new CEPA reform Bill (Bill C-32) was introduced in February 1998. The Bill is currently before the House of Commons Standing Committee on Environment and Sustainable Development for clause by clause review. The Bill has been heavily criticized for its failure to deal effectively with persistent toxic substances, such as ***dioxins*** *and* ***furans****. It has been argued that, in following the direction of the June 1995 Toxic Substances Management Policy, the Bill's provisions may undermine concept of the "virtual elimination" of these substances, as defined by the Great Lakes Water Quality Agreement and the International Joint Commission.[14]*

Provincial

Ministry of the Environment Business Plan

The Ministry of the Environment's 1998-99 Business Plan proposes discharge

*reductions for some of the COA Tier I Substances. These include 30% reduction for **benzo(a)pyrene**, 26% reduction for **mercury**, 37% reduction for **PAH's** (excluding **benzo(a)pyrene**) and a 71% reduction in **dioxins and furans**.[15] These goals are well below the COA commitment of a 90% reduction in the generation, use and release for these Tier I substances by the year 2000.*

The MISA Program

The governments' response[16] refers specifically to progress under the Municipal Industrial Strategy for Abatement (MISA) program with respect to reductions in toxic organic pollutants from the Pulp and Paper sector:

> *"Since 1993, nine regulations under the Municipal Industrial Strategy for Abatement (MISA) have been promulgated. Since 1994, toxic organic pollutants associated with pulp and paper mill discharges have been reduced by 82 per cent. The ministry will be adding five industry sectors to those whose effluent limits are enforced under MISA, while continuing to track progress towards the virtual elimination of lethal effluents."*

However, the Ministry has proposed a number of changes that would weaken the MISA program:

- *In July 1996, the Ontario Ministry of Environment and Energy proposed[17] the removal of the requirement in the Municipal-Industrial Strategy for Abatement's Pulp and Paper Regulation for pulp and paper sector facilities to submit reports on how they plan to reach zero discharge of AOX (organochlorines, including **dioxins** and **furans**) by 2002. The Ministry also proposed to remove of the reference to the goal of zero discharge of AOX from the Regulation. Reducing monitoring frequency was also proposed for facilities in all sectors surpassing the discharge limits set in the MISA regulations.*

- *In November 1997 the Ministry re-iterated its July 1996 proposals to amend the MISA Regulations to:*
  - *reduce the frequency of chronic toxicity testing semi-annually to annually;*
  - *remove effluent limits for substances that are not used, produced or stored on site;*
  - *reduce daily monitoring requirements for some parameters if a site's performance surpasses permitted limits for 12 consecutive months;*
  - *permit the transmittal of data in alternative formats; and*
  - *amend the Pulp and Paper Sector Regulation to remove the requirement that facilities submit plans on the elimination of AOX from their discharge and, at the same time, advance the date for the achievement of an AOX discharge limit of 0.8kg/tonne from December 1999.*

These proposals were posted on the Environmental Bill of Rights Registry in December

1997.[18] As of January 1999 the amendments had not been adopted by the Ministry.

Introducing Electricity Market Competition

The government of Ontario announced its intention to introduce competition into the province's electricity market in November 1997. A Bill to establish a competitive market was enacted in October 1998.[19]

Serious concerns have been raised that the introduction of competition into the electricity market without significant new environmental requirements may lead to major increases in air pollution, particularly acid rain and smog precursors, and heavy metals, including ***mercury****.[20] To date the government of Ontario has failed to specify what measures it intends to take to address this issue.*

The United States Environmental Protection Agency has embarked on an initiative to require coal combusting and other mercury sources to report their emissions of mercury and to strengthen regulatory restrictions in order to reduce mercury emissions by 50% of their 1990 levels by 2005.[21]

Ontario Hydro Nuclear Asset Optimization Plan

In August 1997 Ontario Hydro's Board of Directors approved the Nuclear Asset Optimization Plan (NAOP). The plan relies heavily on the use of fossil fuel powered generating facilities to replace the utility's nuclear facilities while they are under repair. The implementation of the plan led to a 47% increase in emissions of sulphur and nitrogen oxides from Ontario fossil fuel generating facilities in the first six months of 1998, compared with the same period in 1997.[22] Although specific data is not publicly available, emissions of ***mercury****, arsenic and* ***cadmium*** *are likely to have risen with those of conventional pollutants.*

Incineration Ban Repeal

In December 1995, a ban on the construction of new municipal waste incinerators established in 1992 was repealed by the provincial government. This action was specifically criticized as being likely to result in increases in the presence of priority pollutants in the Great Lakes Basin by the International Joint Commission in its 8th[23] and 9th[24] Biennial Reports on Great Lakes Water Quality. Municipal waste incinerators have been identified as major sources of a wide range of contaminants, including ***dioxins*** *and* ***furans****, various heavy metals including* ***mercury****,* ***lead*** *and* ***cadmium****, and sulphur dioxide and nitrogen oxides.[25]*

Weakening Controls on the use of 'Waste Derived Fuel.'

In June 1998 the government of Ontario placed proposals for extensive changes to its regulations on the management of hazardous wastes on the Environmental Bill of Rights registry.[26] The proposals include the amendment of the definition of waste-derived fuel to

permit the burning of non-hazardous solid waste. The previous definition only permitted the burning of hazardous and liquid industrial wastes which meet specific criteria for heavy metal, PCB and halogen content, flash points, and value as fuel. The proposed change would permit the burning of non-hazardous solid wastes in cement kilns and industrial boilers. The burning of supplemental fuels in cement kilns has been strongly associated with emissions of a wide range of contaminants, including ***dioxins*** *and* ***furans****.*[27]

Pesticides

A discussion of the situation with respect to waste pesticides is provided under ***2.5.1.***

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[28]

2.1.2 Reductions in Use, Release or Generation of Tier II Substances

Reductions have occurred in the release of four of the eight Tier II substances, primarily as a result of actions by ARET members: **cadmium** (20%), **1,4-dichlorobenzene** (40%), **PAHs** (30%) and **pentachlorophenol** (5%).

Total releases of Tier II substances are estimated to be over 550 tonnes, dominated by **PAHs** and **1,4-dichlorobenzene**.

Commentary and Discussion

COA Commitment 2.1.2

Reductions in Releases

The bulk of the governments' claims regarding Tier II substances are based on the results of the ARET program. The problems regarding the reliability of these claims under the ARET program are outlined under ***2.1.1.***

The governments are reliant on voluntary measures by industry to reduce the use, generation or release of Tier II substances. Reliance on such measures has been subject to widespread criticism on the basis that voluntary measures are non-enforceable, involve no independent verification of results, do not provide for public participation in their development, may pre-empt potentially more effective regulatory measures, and are not cost-effective.[29]

As noted under ***2.1.1.*** *reporting of releases and transfers of COA Tier I and II substances under the National Pollutant Release Inventory is very limited, as only*

***mercury**, **cadmium**, **anthracene** and some **PAHs** are NPRI reported substances, and the reporting thresholds are so high as to exempt most generators of these substances as waste.*

The Governments' Actions on Tier II Substances

Federal

Priority Substances Under CEPA

***Cadmium**, **PAHs** and **3,3 Dichlorobenzidine** were determined to be 'toxic' for the purposes of the Canadian Environmental Protection Act through the Priority Substance List (PSL 1) assessment process. However, as outlined under **2.1.1.** no action has been taken under the Act to reduce the use, generation or release of the PSL1 "toxic" substances through the Strategic Options Process (SOP) to date. A regulation to reduce the **Benzene** content of gasoline was adopted by the federal government in November 1997.[30]*

Provincial

The Ministry of the Environment Business Plan

*With the exception of **PAH's,** for which there is a discharge reduction target of 37% against the 1993 base year, the Ministry of the Environment's 1998-99 Business Plan contains no goals for reductions in the use, generation or release of COA Tier II substances.[31]*

*Provincial Air Standards Revisions for **Cadmium** and other Heavy Metals*

*In January 1997, the Ontario Ministry of the Environment proposed to strengthen its ambient air quality and "point of impingement" standards for emissions of **cadmium** to the atmosphere by a factor of approximately 100 times as part of a wider project to revise the province's standards for hazardous air contaminants.[32] Proposals for revised air standards for 10 substances posted on the EBR registry in March 1998.[33] However, these did not include new standards for the four heavy metals (**cadmium**, nickel, chromium IV, and arsenic), that had been proposed in January 1997. There have been indications these changes were the result of very strong lobbying from industry, which had been given opportunities to 'preview' the proposed standards.[34]*

In his November 1998 Annual Report to the Legislative Assembly, the Provincial Auditor highlighted the Ministry of the Environment's failure to move forward on its proposed air standards revisions. The Provincial Auditor had recommended the updating and strengthening of the province's standards for hazardous air pollutants in his 1996 report.[35] Revisions for some standards, excluding the heavy metals were finalized in

December 1998.

Introducing Electricity Market Competition

*As noted under **2.1.1.** legislation to establish a competitive market was enacted in October 1998.[36] Serious concerns have been raised that the introduction of competition into the electricity market without significant new environmental requirements may lead to major increases in air pollution, particularly acid rain and smog precursors, and heavy metals. The latter includes increases in emissions of **cadmium** as well as **mercury**.[37] To date the government of Ontario has failed to specify what measures it intends to take to address this issue.*

Ontario Hydro Nuclear Asset Optimization Plan

*As noted under **2.1.1.,** in August 1997 Ontario Hydro's Board of Directors approved the Nuclear Asset Optimization Plan (NAOP). The implementation of the plan led to a 47% increase in emissions of sulphur and nitrogen oxides from Ontario fossil fuel generating facilities in the first six months of 1998, compared with the same period in 1997.[38] Although specific data has not been made publicly available, emissions of **mercury**, arsenic and **cadmium** are likely to have risen with those of conventional pollutants.*

Removal of the Ban on New Municipal Waste Incinerators

*As noted under **2.2.1**, in December 1995, a ban on the establishment of new municipal waste incinerators established in 1992 was repealed by the provincial government. This action was specifically criticized as being likely to result in increases in the presence of priority pollutants in the Great Lakes Basin by the International Joint Commission in its 8th[39] and 9th[40] Biennial Reports on Great Lakes Water Quality. Municipal waste incinerators have been identified as major sources of a wide range of contaminants, including **dioxins** and **furans**, various heavy metals including **mercury**, **lead** and **cadmium**, and sulphur dioxide and nitrogen oxides.[41]*

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[42]

2.1.3 Knowledge of Fate and Effects of Tier II Substances

EC is involved in over 25 research projects to provide knowledge on the occurrence, fate and effects of Tier II substances in the waters of the Great Lakes basin (see examples in boxes below):[43]

Research projects on the occurrence, fate and effects of Tier II substances in the Great Lakes

- The physical and chemical properties of bottom sediment in four storm water treatment ponds in the Toronto Area of Concern (AOC) were assessed. Artificial wetlands were used to polish pond effluent, and achieved significant reductions in nutrient and metal concentrations. The toxicity of storm water and combined sewer overflows (CSOs) was examined through extensive field studies to investigate the effects of best management practices on toxicity mitigation, and the effect of disinfection on effluent toxicity.
- A Great Lakes Toxic Chemical Decision Support System is being developed in order to integrate all of the available information on Tier I and Tier II chemicals in support of designing, implementing and post-auditing zero discharge and virtual elimination strategies. The system is based on EC's decision support system software, RAISON, with the addition of air transport models in 1997. Available emissions, loadings and background data, with emphasis on Tier I substances in Lakes Ontario and Superior, were ranked according to their level of uncertainty. Statistical methods must be developed so that "error bars" can be applied to output from the decision support system. A number of regional air transport models were tested as candidates to be incorporated into the decision support system in 1997/98. Air transport remains an area of high uncertainty, but it warrants considerable attention, given it is the major source for many Tier I substances.
- EC's efforts also focus on the identification of emerging issues (such as the presence and identification of potential endocrine disruptors in effluents, and implications to fish reproduction) and on research to support appropriate response and remediation actions (such as the mitigation of effects on urban runoff).

Source : *COA 2nd REPORT / Objective 2: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Research projects on the occurrence, fate and effects of Tier II substances in the Great Lakes

- Organotin compounds continue at high levels in harbour sediments and in marinas as confirmed in 1994 and 1995 surveys. The presence of tributyl tin and its degradation products was also identified in three species of freshwater mussels in the Great Lakes basin. Concentrations were found to be much higher in the zebra mussel than in the two other species analyzed. In 1995/96, EC completed the development of a supercritical fluid extraction method to analyze for Trialkyl/Aryl Phosphates (TAPs) in sediments. Analysis of samples of water, sediment, STP effluent and digested sludge in 1997 will determine if the extensive use of TAPs by industry produces high levels in the environment.
- The suspected endocrine disruptor nonylphenol and its ethoxylates were quantified in 1995 by analyzing samples from municipal sewage treatment facilities in Southern Ontario, and from streams, rivers, and harbours in the Great Lakes basin and the St. Lawrence River. Measurable quantities were found in almost all raw sewage and sludge samples, although natural waters in southern Ontario showed substantially lower concentrations. High sludge concentrations are removed by standard sewage treatment systems to reduce the threat to aquatic ecosystems, but in turn pose sludge management issues. In 1996, field studies that used caged rainbow trout and wild fish downstream from STPs found no endocrine disruption (vitellogenin induction) in male fish despite detection of steroids in the water. Further work is currently under way to develop and apply toxicity identification evaluation procedures (including reproductive endpoints) to evaluate real-life steroid impacts.
- An evaluation of cyanazine, a selective herbicide used widely in Ontario, showed that it is persistent in water. Extensive use of cyanazine may have a long-lasting impact on Canadian aquatic ecosystems. The ultimate fate of cyanazine in the aquatic environment warrants further investigation.
- Preliminary experiments suggest that the new anti-fouling compound Irgarol 1051 is persistent in natural waters. Again, further investigation is warranted.

Source : *COA 2nd REPORT / Objective 2: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

Health Canada has completed multimedia exposure assessments of the Great Lakes basin population for Dichloro-diphenyl-trichloroethane (DDT), hexachlorobenzene, dioxins/furans, toxaphene, benzo(a)pyrene, PCBs, aldrin/dieldrin, chlordane, octachlorostyrene, mirex and mercury. Eighty to ninety-nine per cent of human exposure to these substances is through consumption of contaminated foods; overall levels of exposure are well below established guidelines. Contaminant levels in human tissues are being monitored in studies on fish consumers, as well as in a baseline study of blood samples collected throughout Canada, including the Great Lakes region.

Commentary and Discussion

COA Commitment 2.1.3

Substantial progress appears to be being made by Environment Canada in investigating the fate and effects of Tier II substances from industrial, municipal and other sources.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[44]

2.1.4 Memoranda of Understanding (MOUs), Pollution Prevention and ARET.

According to the governments, some success has been achieved in attaining industry commitments and implementation of pollution prevention programs. Reductions reported through MOUs include:

- 1 600 tonnes volatile organic compounds;
- 1 500 tonnes hydrocarbons;
- 660 tonnes wastewater treatment sludges;
- 450 tonnes metal working fluids; and,
- 330 tonnes paints/paint sludges.

Both the federal and provincial governments have established voluntary pollution prevention partnerships with industries, municipalities, government departments and others.[45]

The Canadian Chemical Producers Association (CCPA) and participating companies are continuing to develop pollution prevention and reduction plans and have already reported reductions of 12 000 tonnes per year since 1995 in the generation and release of toxic substances and wastes.

EC and other federal departments are establishing pollution prevention demonstration sites that are representative of the variety of federal facilities in Ontario.

The MOEE's P4 encourages public reporting of commitments and achievements by

individual facilities from industry, business and institutions. A public record of facilities' commitments and achievements with respect to use, emission and discharge of liquid industrial and hazardous wastes beyond the requirements of regulatory compliance serves to promote the value of pollution prevention planning. As of December 1996, 195 facilities have enrolled in the program and reported reductions beyond regulatory limits of 30 000 tonnes per year in the use and generation of toxic chemicals and the emission and discharge of hazardous wastes.

Under the ARET challenge, a total of 287 organizations across Canada have responded, over 100 of which are located in Ontario. Together, these facilities have committed to voluntary reductions in emissions of toxic substances of nearly 17 500 tonnes nationally (as of year-end 1995). ARET's second status report, *Environmental Leaders 2*, was released in January 1997.

Commentary and Discussion

COA Commitment 2.1.4

i) MOUs

Over the past four years the Ministry of Environment and Energy and Environment Canada have entered into a series of memoranda of understanding with specific industrial sectors, including automotive parts manufacturing, chemical production, metal finishing, automotive manufacturing, and printing and graphics. The principle goal of the agreements is the development of voluntary pollution planning projects to reduce the use, generation and/or release of toxic substances.[46]

Significant reductions in the generation of hazardous wastes have been reported in some sectors participating in these agreements, particularly automotive manufacturing.[47] *However, the agreements have been heavily criticized on the basis that such arrangements represent a return to closed, bilateral industry-government policy-making practices, are unenforceable, are unlikely to be cost-effective, and are being employed as substitutes for, rather than supplements to, regulatory frameworks for environmental protection.*[48]

ii) ARET and the Pollution Prevention Pledge Program

ARET

The major weaknesses in the ARET program are outlined under ***2.1.1.*** *A review of the ARET program was initiated by Environment Canada in the spring of 1998.*

P4 Program

Ontario's Pollution Prevention Pledge Program (P4) was established in October 1993. The program is voluntary in nature, and its reach has been extremely limited. As of December 1996 only 195 sites had registered under the program.[49] This included a significant number of non-industrial public sector sites, such as schools.[50] As noted under ***2.1.1.*** *885 facilities in Ontario filed reports of releases or transfers of pollutants under the National Pollutant Release Inventory in 1996.[51] The Ontario Waste Generator Registry System reports 32,000 generators of hazardous or liquid industrial waste in Ontario.[52]*

Conclusions

The major achievements with respect to COA Tier I and II pollutants flow from pre-1995 initiatives, particularly the introduction of new discharge control regulations on the pulp and paper sector by the federal and provincial governments in 1992 and 1995, respectively. Since 1995, the governments have relied heavily on voluntary measures to achieve reductions in the use, generation and release of the Tier I and Tier II priority pollutants. Serious questions have been raised regarding the likely effectiveness of voluntary measures for this purpose, particularly in the absence of a framework of baseline regulatory requirements.

The governments also depend significantly on reporting by industry under the voluntary ARET program to assess progress on reductions in the generation, use and release of priority pollutants. Concerns have been raised regarding the reliability of data gathered under ARET. The program also suffers from a serious weakness in that it only gathers information on releases of substances to the environment. Information is not gathered on transfers of ARET substances in waste. An analysis of 1994 and 1995 NPRI data indicates that the transfer of ARET substances in waste is rising dramatically, at a rate well in excess of reported reductions in releases. This suggests that the total generation of ARET substances in Canada, which include a number of COA Tier I and II substances, may actually be increasing significantly.

Some progress has been made in investigating the fate and effects of COA Tier II substances. However, the federal government has failed to take action regarding the bulk of the Tier I and II substances found to be "toxic" for the purposes of the CEPA. These include ***hexachlorobenzene****,* ***cadmium****,* ***PAHs****, and* ***3,3, Dichlorobenzidine****. Action has only been taken to limit releases of* ***dioxins*** *and* ***furans*** *from one sector, pulp and paper. The 1992 federal pulp and paper mill discharge regulations, in combination with discharge regulations made under the provincial MISA program, have resulted in major reductions in discharges of organochlorines from Ontario pulp and paper mills.*

The federal government adopted a Toxic Substances Management Policy in June 1995. The policy is reflected in the Canadian Environmental Protection Act reform Bill (C-

32) currently before the House of Commons. The policy has been strongly criticized as undermining the concept of 'virtual elimination' of persistent toxic substances through the elimination of their use, generation or release, contained in the Great Lakes Water Quality Agreement, articulated by the International Joint Commission, and reflected in COA.

The targets in the Ministry of the Environment's current Business Plan fall far short of the COA goals for Tier I and II pollutants. The province has also failed to move forward on proposals to strengthen its standards for heavy metal air pollutants, including ***cadmium****, and has undertaking a number of measures that are likely to increase generation and release of priority pollutants, particularly* ***dioxins*** *and* ***furans****, and the heavy metals* ***mercury****,* ***cadmium****, and lead. These include the repeal of a ban on the establishment of new municipal waste incinerators in December 1995. This action that has been specifically criticized by the International Joint Commission as being likely to increase the deposition of priority pollutants within the Great Lakes basin.*

The Ministry has also proposed to weaken the MISA water pollution control regulations, including those which apply to the pulp and paper sector, and controls on the burning of municipal wastes as 'waste derived fuel.' The proposed introduction of competition into the electricity market is likely to result in major increases of emissions of priority pollutants, particularly heavy metals. The province has yet to establish environmental standards to address this problem. In the meantime, the implementation of Ontario Hydro's Nuclear Asset Optimization Plan appears to have resulted in major increases of emissions of priority pollutants.

PCBs, Hazardous Waste and Spills Reduction

COA Commitments

2.2.1: Seek to decommission 90% of high-level PCBs in Ontario, to destroy 50 % of the high level PCBs now in storage, and accelerate the destruction of stored low-level PCB waste by the year 2000.

2.2.2: Actions to address both Tier I and Tier II pollutants will include significant, measurable reductions in the generation and release of hazardous wastes from all sources, and will focus on cooperative activities with waste generators.

2.2.3 Actions to address the prevention and control of spills by improving federal, provincial and industrial spill prevention, preparedness and response programs in priority areas such as the St. Clair River, will further reduce pollutant loadings.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[53]

2.2.1 Decommissioning and Destruction of PCBs

The government response notes that 46% of high level PCBs have been decommissioned. 30% of high level PCB wastes and 20 % of low level PCB wastes have been destroyed.[54]

The governments state that the support of several major PCB owners continues to hasten progress in the destruction of PCBs, and demonstrates that, given a range of options, owners will choose to reduce their liability from PCB use or storage. Unfortunately, when the United States Environmental Protection Agency (U.S. EPA) decided not to appeal a court decision that required closure of the U.S. border to Canadian PCBs reduces the number of options available to PCB owners was reduced.

Decommissioning of High-Level PCBs

To date, PCB owners have taken action so that 4 948 tonnes, or 46 per cent of Ontario's 1994 baseline quantity of 10 650 tonnes, of in-service high-level PCBs have been decommissioned.

Destruction of High-level PCB Wastes

A total of 5 543 tonnes, or 30 % of the high-level PCB wastes in storage, have been destroyed. The governments state that the opening of the Alberta destruction facility to out-of-province PCBs, along with and the emergence of destruction technologies such as the ECO LOGIC and Ontario Hydro processes, have had a major impact in moving this target forward and providing for further progress.

Low-level PCB Destruction

When the present COA was signed, an estimated 98 000 tonnes of low-level PCBs were in storage in Ontario. In 1995 and 1996, the destruction of PCB waste was 1 592 tonnes and 2 765 tonnes, respectively. To date, a total of 22 514 tonnes, or 20 per cent of the baseline stockpile of low-level PCBs, have been destroyed by non-incineration technologies (chemical dechlorination or chemical reduction) in Ontario, or at incineration

PCB Destruction Highlights

- In 1995, the Alberta Special Waste Management Corporation (now Bovar Waste Management) facility in Swan Hills was permitted to receive PCB wastes from across Canada. As of December 31, 1996, 6 800 tonnes of PCBs (both high- and low-level wastes) from Ontario had been exported to the facility.
- The federal government of Canada promulgated the PCB Waste Export Regulations in February 1997. The intent of this regulation, and the decision by the U.S. EPA to accept Canadian PCBs, was to provide owners with the opportunity to export their PCB wastes to the U.S. (where they had been manufactured) for disposal. However, since August 1997, U.S. EPA regulations have again prohibited the export of PCB waste to the U.S. from Canada.
- In 1995 and 1996, Ontario Hydro destroyed over 850 tonnes of high and low level PCB wastes using Hydro developed destruction technology.
- The Toronto Transit Commission has sent the bulk of the PCBs from its subway system to Alberta for destruction.

The ECO LOGIC technology, which uses a closed loop chemical reduction process to destroy PCB wastes, has been used, or is to be used, at several Ontario facilities:

- The General Motors of Canada Glendale Avenue facility in St. Catharines destroyed 29 tonnes of PCB fluid, 100 tonnes of contaminated concrete/backfill, and 370 tonnes of obsolete electrical equipment, along with approximately 80 tonnes of miscellaneous PCB wastes from the City of St. Catharines.
- In November 1996, General Electric Canada Inc. received approval from Ontario's Environmental Assessment Board to destroy PCB waste materials stored at its former plant in Toronto, which includes 7 000 tonnes of soil, railway ties, concrete, ballasts, capacitors, transformers, liquids and sludges. This approval follows a public hearing and an extensive assessment by interveners.
- Toronto Hydro announced an agreement in April 1997 with ELI Eco Logic Inc. for the destruction of more than 2 000 tonnes of PCB wastes within the City of Toronto. The stored PCBs are owned by Toronto Hydro, the City of Toronto, and other private and public companies.

Source : *COA 2nd REPORT / Objective 2: Annex Report*, Environment Canada & Ontario Ministry of the Environment, December 1997.

facilities in Swan Hills, Alberta, or shipped to secure landfill in Quebec.

MOEE states that it is working to reduce red tape and to clarify PCB regulations by consolidating and simplifying existing waste regulations and by standardizing approval requirements to accommodate new technologies. The focus is to encourage consolidation for the treatment/destruction of PCBs and to move away from long-term storage.

The federal and provincial governments are jointly sponsoring PCB Owner Outreach Programs across Ontario, targeting small-quantity (less than one tonne) PCB owners. Out of the 1 700 PCB storage sites in Ontario, 1 300 contain small quantities. The outreach

program is designed to ensure that owners are aware of COA targets and their options for managing PCBs to the year 2000 and beyond.

By March 1997, the federal government had destroyed 728 tonnes, or 85%, of its stored PCB wastes in Ontario. The Ontario Realty Corporation has eliminated 38 of its PCB storage sites in central and eastern Ontario which represents over half of the provincial sites.

Commentary and Discussion

COA Commitment 2.2.1

Some progress is reported with respect to PCB destruction. However, there is cause for serious concern in a number of areas.

The Federal PCB Destruction Program.

The federal government's PCB destruction program terminated in the February 1995 'Program Review' budget. The Auditor-General of Canada was highly critical of this decision in his May 1995 report to the House of Commons, noting that the federal government had no plan beyond March 31, 1995 to complete the destruction of federal PCBs.[55] The termination of the program meant that individual federal agencies would have to arrange for the destruction of PCBs through their own operating budgets, rather than through the Environment Canada program.[56]

PCB Disposal Practices.

The availability of PCB disposal options that may undermine the market for effective mobile, non-incineration PCB destruction technologies, such as the ELI Eco Logic Inc. system approved by the Ontario Environmental Assessment Board in November 1996, is growing.[57] These options include the following.

Ontario PCB Disposal at Swan Hills, Alberta

The Swan Hills hazardous waste facility, a significant destination for PCB exports from Ontario[58] has been the subject of major controversy. The opening of the facility to hazardous wastes generated outside of Alberta in November 1994 was seen to contradict commitments made by the Alberta government, at the time of the facility's approval in 1987, that it would not accept out-of-province wastes.[59] Concerns have been expressed regarding the risks associated with the long-distance transport of PCBs and other hazardous wastes from Ontario and elsewhere to the facility for disposal.[60]

Furthermore, in October 1996 there was a leak of toxic substances, including PCBs, from the facility, resulting in significant contamination of the surrounding environment.[61] This was followed by a serious explosion at the facility's incinerator, again resulting in releases of PCBs and other toxic substances in July 1997.[62]

Shipments of federal PCB wastes to the facility were suspended in August 1997 as a result of these incidents.[63] In October 1998, the Swan Hills facility was fined $625,000 for the October 1996 leaks. This was the highest fine ever imposed for an environmental offence in Alberta.[64] Federal shipments of PCB wastes to Swan Hills resumed in January 1999.

Ontario PCB Exports to Quebec

There is also evidence of growing exports of PCB wastes from Ontario to landfill[65] and incineration facilities in Quebec.[66] This has included PCB waste materials stored at General Electric Canada's former facility in Ontario, which the ELI ECO Logic system had been approved to destroy by the Environmental Assessment Board in November 1996.[67] Quebec weakened its standards regarding the handling of PCB contaminated soil in the fall of 1997.[68] The import of PCB contaminated soil from Ontario for incineration has prompted significant controversy in Quebec.[69]

New PCB Incineration Facilities in Ontario

In November 1997, the Ontario Environmental Assessment Board approved a permanent PCB incineration facility in Cramahe Township, outside of Colborne, Ontario, to be operated by Gary Steacy Dismantling Ltd. The facility, which is a metals reclamation furnace, is to be permitted to bring up to 18,000 tonnes of waste transformers, 700 tonnes of waste fluorescent light ballast and 1.8 million litres of transformer fluids, containing up to 500 parts per million of PCBs, to the site each year.[70]

However, in its decision regarding the facility, the Environmental Assessment Board questioned why it had not been designated under the Environmental Assessment Act, particularly in light of the approval of ELI ECO Logic's non-incineration PCB destruction technology the previous year.[71] The Board also noted the absence of public interveners in its hearings regarding the project, apparently due to the lack of intervener funding, and expressed concerns regarding the adequacy with which health risk issues regarding the facility had been addressed, and the proponent's lack of previous experience in the handling and disposal of hazardous wastes.[72]

PCB Exports to the United States

In October 1995, the United States instituted an interim relaxation of its ban on the import of PCBs for destruction. This was followed by a permanent amendment in March 1996. In response, in November 1995 the federal Minister of the Environment made an Interim Order under the CEPA prohibiting PCB waste exports to the United States for disposal. This Interim Order was extended in February 1996,[73] but was then withdrawn, under intense pressure from Canadian firms with PCBs in storage and U.S. disposal companies[74] in February 1997. This was despite concerns about the environmental safety of some of the U.S. destruction facilities that wished to import Canadian PCBs. The Interim Order was replaced with a regulation permitting exports for incineration or chemical

destruction.[75]

However, in July 1997, a U.S. Court overturned the Environmental Protection Agency's decision to permit PCB imports for destruction.[76] *A U.S. based PCB destruction firm, S.D. Myers Inc., is currently seeking compensation from the federal government under the North American Free Trade Agreement for Canada's November 1995 to February 1997 prohibition of PCB waste exports for destruction to the U.S.*[77]

PCBs and Regulatory Reform

In June 1998, the Ministry of the Environment proposed extensive revisions to the province's regulatory framework for waste management, including the handling of PCB wastes.[78] *These proposals would eliminate Certificate of Approval requirements for the collection, production, handling and storage of hazardous wastes generated on-site or brought legally to a site, including PCB wastes;*[79] *remove requirements for public hearings for the approval of mobile PCB destruction or processing systems;*[80] *and remove Certificate of Approval requirements for uses of such systems after their first use.*

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[81]

2.2.2 Hazardous Waste Reduction

The governments report that the total hazardous and liquid industrial waste quantities manifested in Ontario have increased by approximately 25% to over 1.8 million tonnes from 1994 to 1996, based on data from Ontario's manifest tracking system. According to the governments, the increases in hazardous waste generation and subsequent safe and economic disposal of these wastes and/or their re-use/recycling likely reflect increased productivity in the economy of Ontario. The governments note that the quantity of wastes disposed of by incinerators and in out-of-province facilities that handle hazardous wastes has shown a decrease, which may be due to material reuse or recovery.

Commentary and Discussion

COA Commitment 2.2.2

The Growth in Hazardous and Liquid Industrial Waste Generation

The governments acknowledge a growth in hazardous and liquid industrial waste quantities manifested and transferred off-site for disposal of approximately 25% from 1.4 million tonnes in 1994 to a total of 1.8 million tonnes in 1996. As shown in Table 2, the 1997 waste manifest data indicate a total of 2.1 million tonnes for that year, or a 50% growth since 1994. Table 1 indicates that transfers of off-site of NPRI substances in waste

in Ontario reported under the NPRI nearly doubled, from 22,000 tonnes in 1994, to nearly 43,000 tonnes in 1996.

Table 1 National Pollutant Release Inventory Pollutant Transfers in Waste: Ontario 1994-1996

Year	***Transfers of Toxic and Carcinogenic Pollutants*** *(Tonnes)*	***Transfers of All Pollutants*** *(Tonnes)*
1994	*N/A*	*22,222*[82]
1995	*5,218*	*33,922*
1996	*4,595*[83]	*42,643*[84]

Although total estimates of hazardous waste generation are not available due to gaps in the provincial waste generator registration system and the NPRI, they suggest a dramatic growth in the generation of hazardous wastes. Although the governments attribute this expansion to the increase in economic activity in the province, the growth in waste generation exceeds growth in the province's gross domestic product by a factor of more than three to one.[85]

Table 2: Off-Site Hazardous and Liquid Industrial Waste Disposal in Ontario

Year	***Total Manifest Datafile Information (Tonnes)***
1990	*1,579,798.997*
1991	*1,516,271.601*
1992	*1,478,087.533*
1993	*1,476,661.146*
1994	*1,447,448.133*
1995	*1,646,382.400*
1996	*1,800,000.000*
1997	*2,125,000.000*

Ontario Ministry of the Environment Proposals for the "Reform" of Hazardous Waste Regulations

Despite the dramatic growth in the generation of hazardous wastes in Ontario, on June 2, 1998, the Ministry of the Environment posted proposals to significantly weaken the province's regulatory framework for waste management, including the management of hazardous and liquid industrial wastes.[86]

The Ministry's specific proposals included the removal of current fire and spill protection, site security, staff training and other requirements for 'selected waste depots,' including depots handling hazardous wastes, the elimination of approval requirements for

the on-site handling, collection, storage, or processing of wastes, including 'subject' (i.e. hazardous, liquid industrial and PCB) wastes, the elimination of approval requirements for the 'field operations' involving the handling of 'subject' wastes, the expansion of the 'recycling' exemption for certain types of wastes, including hazardous wastes, and the removal of approval requirements for the burning of off-site sourced 'subject' wastes as 'waste derived fuel,' and the disposal of waste, including 'subject' wastes, as dust suppressants.[87]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[88]

2.2.3 Spills

The governments state that they continue to undertake actions to meet this target. In 1995, 329 spills occurred in the Great Lakes system. This represents a 14 per cent decrease from 1994.

A Canada-Ontario examination of the feasibility of integrating reporting components of environmental emergency programs operated by EC and MOEE has indicated that a "one window" approach is feasible. This approach is presently being implemented on a trial basis.

Similarly, agreement has been reached on a federal-provincial-industrial framework (Regional Environmental Emergency Team, or REET) for the coordination and cooperative provision of environmental protection advice and expertise for spill preparedness and response throughout Ontario. It will involve a "core" REET of region-wide members that is supplemented by seven area REETs. REETs have been developed for the St. Clair, St. Mary's and St. Lawrence Rivers, and Erie/Niagara areas.

To identify sensitive shoreline areas, the federal government has produced maps of environmental sensitivity information for the Great Lakes.

Commentary and Discussion

COA Commitment 2.2.3

Spill Rates and Significance

The governments report a small decrease in the number of spills in the Great Lakes basin between 1994 and 1995. However, the total number of spills of hazardous materials, including hazardous and other 'subject' wastes, throughout the province is reported to the Ministry of Environment and Energy is reported to have been "roughly static," at a rate of 5,000/yr over the period 1990-1995, the most recent for which statistics are available.[89] *The Ministry's most recent report noted that 69% of spills are significant enough to have*

either a possible or confirmed impact on the environment,[90] the most common effect being soil contamination.[91]

Reductions in Spills and Emergency Response Capacity

The capacity of both the Ontario and federal governments to respond to environmental emergencies, such as spills, has suffered significantly since 1995.

Provincial

The Plastimet Fire

The Plastimet PVC 'Recycling' site fire in Hamilton in July 1997 highlighted the need for effective coordinated environmental emergency response in the Province. The fire burned for four days, and is believed to have produced large amounts of highly toxic combustion products, including dioxins[92] as well as releasing chromium, lead and cadmium. Water entering Hamilton Harbour from the fire site was reported as having 2000 times the normal level for zinc. 650 persons needed to be evacuated due to smoke hazard, primarily the immediate threat from benzene.[93]

Serious concerns have been raised regarding the Ministry of the Environment's slow response to the fire, and its implications for the Ministry's ability to deal with environmental emergencies in the future.[94]

Bill 57, the Environmental Approvals Process Improvements Act, 1997

In June 1997, Bill 57, The Environmental Approval Process Improvement Act, 1997 was enacted. Among other things, the Bill disbanded the Environmental Compensation Corporation, created through the 1979 'Spills' Bill. The Corporation provided compensation to innocent victims of spills and assisted them in dealing with insurance claims. Bill 57 also included Crown Immunity Clauses, preventing any person who is harmed as a result of an approval exemption granted through the Bill's provisions, such as those outlined under ***2.2.2.*** *regarding the management of hazardous wastes, from suing the provincial government for damages.[95]*

Spills Reporting Requirements

In July 1996, the Ministry of the Environment proposed to reduce reporting requirements for 'minor' spills as part of its regulatory 'reform' proposals.[96] The Ministry reiterated its intention to 'clarify' spill reporting requirements and eliminate notification of 'insignificant' spills under the Environmental Protection Act in November 1997,[97] and a proposal was posted in the EBR Environmental Registry on April 3, 1998.[98]

Under the Ministry's April 1998 proposals, spills of up to 100 litres of fluids from motor vehicle, non-PCB spills of up to 100 litres from electrical utilities and within the petroleum sector (25 litres if there is public access to the spill location), and spills of

refrigerants, would not be required to be reported, and spills would be required to be reported to only one government agency, which would not necessarily be the Ministry of the Environment.

Federal

Emergency preparedness and response by the federal government was heavily affected by Program Review process leading up to the February 1995 federal budget. A 40% reduction in the department's emergency preparedness program was announced as part of that budget.[99]

Conclusions

There is evidence of serious problems in this area. The province is apparently experiencing a dramatic growth in the generation of hazardous wastes, well in excess of the corresponding growth in the provincial economy, and in contradiction to the COA commitment to seek reductions in hazardous waste generation. Despite this development, the Ministry of Environment has proposed to significantly weaken its regulatory controls on hazardous waste management.

With respect to PCBs, the federal government terminated its PCB destruction program in 1995, despite the fact that the process of destroying federally owned PCBs was incomplete. Within Ontario there is evidence of movement away from recently approved non-incineration PCB destruction technologies to cheaper, and less environmentally sound disposal options both inside and outside of Ontario. The province has proposed to significantly weaken its regulatory oversight of PCB handling and disposal activities.

The number of spills of hazardous materials and wastes in the province is reported to be 'roughly' static. The Ministry of the Environment has proposed to weaken the reporting requirements related to spills, and the Environmental Compensation Corporation, established to assist innocent victims of spills, has been dissolved.

The July 1997 Plastimet Inc. fire has raised serious concerns over the Ministry's emergency response capacity. At the federal level, a 40% reduction in Environment Canada's emergency preparedness program was announced in the February 1995 budget.

Binational Initiatives

COA Commitments

2.3.1: Establish with U.S. Federal and State governments, a common strategy by 1996 to eliminate the discharge of persistent, bioaccumulative and toxic substances to the entire Great Lakes Basin Ecosystem.

2.3.2: Reduction targets will be pursued under the Niagara River Toxics Management Plan (NRTMP) and Lakewide Management Plans (LaMP). Toxic reduction plans for major industrial sectors will be incorporated into LaMPs for Lakes Ontario and Superior by 2000.

2.3.3 The role of zero discharge in achieving the virtual elimination of persistent, bioaccumulative and toxic substances will be demonstrated, bearing in mind social and economic factors, primarily through the Lake Superior Binational Program.

2.3.4: Jointly declare the waters of Lakes Superior and Nipigon under a designation such as the Canada Water Act (CWA) Part I, and investigate this mechanism for other exceptional waters.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[100]

2.3.1 Binational Toxics Strategy

This target is described by the governments as having been achieved through the signing of the Great Lakes Binational Toxics Strategy on April 7, 1997. The importance of the Strategy is the clear definition of quantified goals and objectives for pollutant releases within the U.S. and to the Great Lakes basin, consistent with the COA approach.

The Strategy sets forth a collaborative process by which EC and the U.S. EPA will work, with other parties, toward the goal of virtual elimination of persistent toxic substances resulting from human activity, particularly those which bioaccumulate.

According to the governments, the result is a level playing field for both countries and a means to track progress in the reduction of loadings to the basin. In recognition of the different legislative, regulatory and voluntary programs of each country, actions to achieve these goals will be developed in whatever manner is consistent with the programs of each region, as well as the sources of substances within each region. An additional component is information sharing and cooperative initiatives between the countries sharing these Great Lakes.

A discussion paper on the implementation framework for the Strategy was tabled at a stakeholders meeting in Detroit, Michigan in June 1997.

Commentary and Discussion

COA Commitment 2.3.1

The April 1997 Great Lakes Binational Toxics Strategy was the subject of criticism by environmental organizations on both the Canadian and U.S. sides of the Great Lakes at the time of its signing. The major points of concern included the following:

- *the strategy's failure to commit to the banning or phasing-out of the use and generation of the most dangerous substances, including **dioxins** and **furans**.*
- *the strategy's reliance of the strategy on voluntary action by industry; and*
- *the strategy's lack of a comprehensive consultation framework for the implementation of the strategy.[101]*

*Progress on even the limited goals of the Strategy has been very slow. Only the U.S. workgroup on **Mercury** reports any significant progress. The US EPA has announced it will commence on action to reduce mercury emissions by 50% by the year 2005 relative to 1990 levels.[102] The workgroups on **Dioxins** and **Furans**, **PCBs**, **Octochlorostyrene**, **HCB** and **B(a)P**, **pesticides**, and **Alkyl Lead** are reported to have not met or conferred since March 1998.[103] Some measures have proceeded with respect to these substances in the interim period. However, these steps have often been independent of the workgroups established through the Strategy.*

*Environmental organizations have highlighted a lack of commitment to the Strategy in both countries. This is seen to be manifested by shortages in staffing; lack of leadership, accountability, agenda setting and communications within all of the workgroups except **mercury**; lack of basic information and lack of funding for toxic reduction initiatives. In addition, there continues to be serious concern that the Strategy is undermining the concept of 'virtual elimination' of persistent toxic substances articulated in the Great Lakes Water Quality Agreement, and replacing it with a much weaker voluntary regime.[104]*

In November 1998, the binational environmental organization Great Lakes United presented a series of recommendations on the Strategy to the governments responsible for its implementation.[105] These included:

- *providing the strategy with stronger, higher-level commitment;*
- *clarifying the strategy's commitment to virtual elimination and zero discharge;*
- *strengthening information gathering, workgroup leadership and mission; and*
- *committing funds to community-based virtual elimination activities.*

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[106]

2.3.2 NRTMP and LaMPs

The NRTMP has reported progress on the reduction of 18 toxic substances. The Stage 2 Lake Superior LaMP has identified load reduction schedules for nine substances. Reduction targets for Lake Erie will not be developed until the Stage 1 LaMP identifies pollutants of concern and a Stage 2 is developed. The toxic reduction plan for Lake Ontario incorporates commitments from the former Lake Ontario Toxics Management Plan (LOTMP). Additional reduction measures will be identified during the Stage 2 process.

The governments report that, since 1986, Ontario point sources have reduced the discharges of the NRTMP's 18 toxics by 95 per cent. Studies have determined that Canadian landfills have not contributed to these loadings. The commitment of the New York Department of Environmental Conservation, U.S. EPA, MOEE and EC to the NRTMP was reiterated in 1997. Canada will continue to support the upstream/downstream monitoring of pollutant levels to track load reductions.

Although preparation of the Stage 1 Lake Erie LaMP (Problem Definition) is still in progress, the following contaminants have been identified as impairing beneficial uses: PCBs, mercury, dioxins, furans, DDT and metabolites, chlordane, and mirex. Other factors that affect beneficial uses are habitat alteration, exotic species introduction, and nutrient management. A Stage 1 LaMP report is anticipated to be released for public review in early 1999.

The Lake Superior Stage 2 LaMP (Reduction Schedules) has been released for public review, and discussions with major point sources and other stakeholders have taken place. The Stage 2 document provides schedules for basin-wide emissions reduction and basin loadings reduction schedules for the nine zero discharge demonstration chemicals, and provided environmental objectives for the remaining critical pollutants. The major point sources have been challenged to indicate a commitment to toxic loading reduction schedules. The schedules are consistent with the targets under COA and the Great Lakes Binational Toxics Strategy.

The Lake Ontario Stage 1 LaMP document, which defines six binational lakewide critical pollutants (all Tier I) was released for public review in 1997. The final Stage 1 document, which incorporates public comments, will be available in early 1998. Elements of Stages 2 and 3 (load reduction schedules and remedial activities) have been included, as have been the ongoing commitments from the former LOTMP. Ecosystem objectives and indicator development will continue during the LaMP Stage 2 process. Plans to address substances of Canadian concern are being developed outside of the binational LaMP program.

Commentary and Discussion

COA Commitment 2.3.2

LaMPS

Progress on the LaMPs is moving forward very slowly. No action has been taken on the Lake Huron LaMP, the Lake Erie stage 1 LaMP is still in under development, the Lake Superior Stage 2 LaMP has yet to be adopted by the governments and the Lake Ontario Stage 2 LaMP is to be released in 1999.

The Lake Ontario LaMP Coordinator was laid off by the Ontario Ministry of the Environment in January 1997, as part of the overall personnel reductions accounted at the Ministry at that time. However, Environment Canada has intervened to support this position. All other LaMP Coordinators are federal employees.[107]

A detailed discussion of progress on the LaMPs is provided in ***3.1.1.***

NRTMP

Substantial progress has been made on reducing discharges of contaminants into the Niagara River from Canadian sources The Ministry of the Environment reports an estimated 99% reduction in loadings of the 18 chemicals of concern, from 1986 to 1995. Provincial Water Quality Objectives have been set for 14 of the 18 substances. Since 1993, effluent from Ontario point sources has met all 14 PWQOs.[108] *The reductions are a result of a number of factors, including the implementation of the MISA discharge control regulations on point sources on the River.*[109]

As a result, the Ministry states that it has discontinued NRTMP-specific monitoring of the Niagara River, and focused its resources towards the province's biomonitoring program for the River. Regulatory monitoring and reporting of Ontario point sources required by Certificates of Approval and MISA regulations are to continue.[110]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[111]

2.3.3 Zero Discharge of PBTs in Lake Superior

In cooperation with the Lake Superior Binational Forum, the U.S. Environmental Protection Agency, and the States of Michigan, Wisconsin and Minnesota, an Economic Sustainability Analysis is being undertaken to strategically evaluate the economic implications of zero discharge. The governments state that all the dioxin and furan discharges to Lake Superior from Ontario Kraft pulp and paper mills have been eliminated as a result of Ontario's MISA Pulp and Paper regulation and the 1992 federal regulations under CEPA and the *Fisheries Act*.

Two years of pollution prevention initiatives have produced several pilot projects and demonstrations. The zero discharge demonstration program is strategically targeting sectors of the economy that are receptive to pollution prevention. Awareness in the

business and municipal sectors of the effectiveness of pollution prevention should result in further actions.

Discussions with basin industries and major municipalities in pursuit of the zero discharge goal identified several area mines that have achieved "small zeros" of potential mercury releases from gold mining. The use of a mercury extraction stage by area gold mines to capture mercury before it is released to the environment has substantially reduced mercury releases from these facilities, essentially eliminating it from gold extraction activities completely.

Ontario Hydro is investigating options to reduce mercury releases from the Thunder Bay and Atikokan coal-fired generating stations. A partnership between Thunder Bay 2002 and the Lake Superior Programs Office is being pursued, in part to investigate municipal implementation of actions consistent with zero discharge.[112]

Commentary and Discussion

COA Commitment 2.3.3

Discharge Reductions

*Significant progress has been made in reducing discharges of **dioxins** and **furans** from pulp and paper mills in Ontario. This is a result of new federal discharge regulations adopted in 1992 under CEPA and the Fisheries Act, and provincial discharge regulations adopted under the MISA program in 1995.*

Ontario Initiatives Affecting the Lake Superior Zero Discharge Goal

Over the past three years, the government of Ontario has undertaken a number of initiatives are likely to undermine the zero discharge goal for Lake Superior. These initiatives include the following:

MISA Program Revisions

In July 1996, the Ontario Ministry of Environment and Energy proposed[113] the removal of the requirement in the Municipal-Industrial Strategy for Abatement's regulation for the pulp and paper sector that facilities submit reports on how they plan to reach zero discharge of AOX by 2002 and to remove the reference to the goal of zero discharge of AOX from the regulation. In addition, the Ministry proposed to reduce the frequency of monitoring required for facilities in all sectors that surpass their MISA discharge limits.

In November 1997 the Ministry re-iterated its July 1996 proposals to amend the MISA Regulations to:

- *reduce the frequency of chronic toxicity testing semi-annually to annually;*
- *remove effluent limits for substances that are not used, produced or stored on site;*

- *reduce daily monitoring requirements for some parameters if a sites performance surpasses permitted limits for 12 consecutive months;*
- *permit the transmittal of data in alternative formats; and*
- *amend the Pulp and Paper Sector Regulation to remove the requirement that facilities submit plans on the elimination of AOX, and to advance the date for the AOX limit of 0.8kg/tonne from December 1999.*

These proposals were posted on the Environmental Bill of Rights Registry in December 1997.[114] They had not been adopted as of January 1999.

Introducing Electricity Competition

Legislation to establish a competitive electricity market in Ontario was enacted in October 1998.[115] Serious concerns have been raised that the introduction of competition into the electricity market without significant new environmental requirements may lead to major increases in air pollution, particularly acid rain and smog precursors, and heavy metals, including ***mercury****,* ***cadmium*** *and* ***lead****.[116] To date, the government of Ontario has failed to specify what measures it intends to take to address this issue.*

Incineration Ban Repeal

In December 1995, a ban on the establishment of new municipal waste incinerators established in 1992 was repealed by the provincial government. This action was specifically criticized as being likely to result in increases in the presence of priority pollutants in the Great Lakes Basin by the International Joint Commission in its 8th[117] and 9th[118] Biennial Reports on Great Lakes Water Quality. Municipal waste incinerators have been identified as major sources of a wide range of contaminants, including ***dioxins*** *and* ***furans*** *and heavy metals such as* ***mercury****,* ***lead*** *and* ***cadmium****.[119]*

Weakening Controls on the use of 'Waste Derived Fuel'

In June 1998 the government of Ontario placed proposals for extensive changes to its regulations for the management of hazardous wastes on the Environmental Bill of Rights registry.[120] The proposals include the amendment of the definition of waste-derived fuel to permit the burning of non-hazardous solid waste. The previous definition only permitted the burning of hazardous and liquid industrial wastes which meet specific criteria for heavy metal, PCB and halogen content, flash points, and value as fuel. The proposed change would permit the burning of non-hazardous solid wastes in cement kilns and industrial boilers. The burning of supplemental fuels in cement kilns has been strongly associated with emissions of a wide range of major contaminants, including ***dioxins*** *and* ***furans****.[121]*

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[122]

2.3.4 Lake Superior Designation under the *Canada Water Act*

Discussions regarding the designation of Lakes Superior and Nipigon under the CWA are stated to be under way.

To ensure a level playing field, and to provide a long-range plan for stakeholders, "special designations" are being considered as planning and management tools. In the U.S. this is being considered under the Great Lakes Water Quality Guidance; in Canada, they are being considered under the CWA.

Efforts to provide protection through a Canadian designation are under way. The principal focus of this activity is to ensure "no net increase in the annual use, generation and release of designated persistent toxic and bioaccumulative substances from anthropogenic sources in the Lake Superior basin, consistent with the social, economic and physical well-being of the basin and its inhabitants, so as to protect the basin from such threats in the future." [123]

Commentary and Discussion

COA Commitment 2.3.4

*Little progress is apparent towards the designation of Lake Superior under the Canada Water Act. Furthermore, the achievement of "no net increase in the annual use, generation and release of designated persistent toxic and bioaccumulative substances from anthropogenic sources in the Lake Superior basin" appears unlikely in light of the developments outlined under **2.1.1, 2.1.2** and **2.3.3.***

Conclusions

Little progress appears to be occurring under the Canada-U.S. Binational Toxics Strategy and progress on the Lakewide Management Plans (LaMPs) has been very slow. The April 1997 Binational Strategy itself has been the subject of the criticism that it is stepping backwards from the requirements of the Great lakes Water Quality Agreement regarding the "virtual elimination" of persistent toxic substances from the Great Lakes Basin.

Considerable progress has been made in reducing discharges of priority toxic substances into the Niagara River, and in reducing discharges of persistent toxic substances from pulp and paper mills into Lake Superior. The latter is the result of the implementation of new federal and provincial discharge regulations for the sector in the early and mid-1990s. The provincial MISA regulations have also been a major factor in the reduction of Ontario-side point source discharges of priority substances into the Niagara River.

However, the province has undertaken a series of initiatives that seem likely to

undermine the goals of the virtual elimination of persistent, bioaccumulative and toxic substances from the Great Lakes Basin Ecosystem and the achievement of zero discharge in Lake Superior. These include proposals to weaken the MISA industrial pollution control regulations for the pulp and paper and other sectors, the introduction of competition into the electricity market without adequate environmental protection measures, the repeal of a ban on the establishment of new municipal solid waste incinerators, and proposals to weaken regulatory controls on facilities burning wastes as 'fuel.'

Atmospheric Deposition

COA Commitments

2.4.1: The identification of atmospheric inputs of toxic chemicals, and their impacts, derived from worldwide sources, will provide a basis for supporting international negotiations to reduce loadings in the Great Lakes Basin Ecosystem.

2.4.2: Improvements in and integration of existing air toxics data networks and management systems to track the deposition of contaminants within the Great Lakes Basin Ecosystem will support these international negotiations.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[124]

2.4.1 Identification of Atmospheric Inputs of Toxic Chemicals and the Impacts

A number of programs are being proposed and developed at the regional, national and international levels, as many pollutants are not restricted to a geographic area and so are of concern outside the country of origin. Canada's involvement in these endeavours is in part aimed at reducing loadings to the Great Lakes. Monitoring and surveillance data collected in support of COA is used to demonstrate the effects of long-range transport of pollutants. These programs include:

° The Canadian Global Emissions Inventory Centre was established as a component of the International Global Atmospheric Chemistry Project of the United Nations Environment Program. The Centre will compile information on the global emissions of pollutants such as sulphur and nitrogen oxides, as well as data on the use, production and release of pesticides. Information relating to the Great Lakes basin is included in this compilation.

° A pesticide emissions inventory is being prepared for ten pesticides used across Canada. Information gathered on pesticide usage in the Great Lakes basin is a key component of this effort. The inventory will be published in 1997.

° Canada hosted the Seventh Global Emission Inventory Activity (GEIA) Workshop in May 1996. The intent is to continue developing the standardization of the methodology for reporting inventories and to discuss the status of various global emission inventories to which Canada and Ontario contribute information.

° As part of the GEIA, a global inventory of lead emissions has been completed, finding that 374 000 kg were emitted world-wide in 1989. North America accounts for 12 per cent of this figure. Of the 12 per cent, Canada accounts for 3 per cent

and Ontario, 1.3 per cent.

° Atmospheric loadings of 11 organochlorine compounds, four PAHs and four trace elements have not decreased appreciably. Hexachlorocyclohexane (lindane), lead and possibly PCBs and arsenic have however decreased markedly. The decrease in lead concentrations is clearly due to the elimination of fuel additives and is a major success story in the elimination of lead from the environment. Research has shown that organochlorine compounds transfer from the air to the water as gases. This work is of particular importance because of the predictions of chemical loadings under various climate change scenarios that it provides.

° In March 1996, EC, MOEE and U.S. EPA sponsored a toxaphene expert's workshop to seek consensus on why toxaphene levels, which contribute to widespread fish consumption advisories in the upper Great Lakes, have not declined as expected. The workshop concluded that atmospheric transport from the southern United States and Central America (where the application of this pesticide continues) is the major continuing source. The experts suggest that cold temperatures and long retention times of the upper lakes contribute to the slow decline in fish contaminant levels and that the large surface area of the lakes is an effective scavenger of toxaphene from the air. Chlorine or chlorine dioxide bleaching of wood pulp does not appear to be a past or present source of the toxaphene that contributes to fish consumption advisories. As a follow-up, EC has completed two years of sampling to assess the movement of toxaphene and other chemicals in the Lake Superior ecosystem.

Commentary and Discussion

COA Commitment 2.4.1

Some progress, is reported in this area. However little information on the sources of contaminants appears to be being generated. In addition, environmental monitoring programs have been heavily affected by major budgetary reductions, particularly at the federal Department of Fisheries and Oceans and Health Canada. [125]

Canada's Role in International Negotiations Regarding Toxic Air Contaminants.

Serious concerns are being raised over Canada's role in international negotiations regarding toxic air contaminants which the COA work is to support. Canada played a major role in weakening United Nations Economic Commission for Europe Convention on Long Range Transport of Air Pollutants Protocols on Heavy Metals ***(mercury****,* ***cadmium****, and* ***lead****) and Persistent Organic Pollutants (POPs - including* ***PCBs****,* ***dioxins*** *and* ***furans****, and* ***hexachlorobenzene)****, signed in June 1998.*[126] *Canada has also failed to provide leadership expected of it in negotiations on the Proposed United Nations Environment Program/World Health Organization Convention on Persistent Organic Pollutants.*[127]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[128]

2.4.2. Air Toxic Networks

MOEE and EC continue to support the Integrated Atmospheric Deposition Network (IADN), developed under the GLWQA, which provides the basis for understanding the major sources to the Great Lakes of many COA Tier I and Tier II substances.

A protocol for data quality assurance for the IADN has been established. All Canadian agencies in the IADN are using the protocol for quality assurance purposes, which means comparable data are available for unified interpretation efforts. This protocol will eliminate debate over data quality so attention can focus on source control.

Atmospheric release has been identified as a major contributor of COA substances to the environment. Since 1996, the Ontario portion of the National Air Pollution Surveillance (NAPS) network has been expanded to monitor the levels of all non-pesticide substances under COA in the urban and rural atmosphere.

As part of the program to estimate the exchange of pesticides and other organochlorines between the atmosphere and the Great Lakes, a large buoy has been refurbished, outfitted and placed at a mid-lake site in Lake Ontario, south of Toronto. Within the hull are collectors for pesticides in air and water. The buoy represents a new measurement capability that uses recent advances in sensors, computer systems and communication and that will improve the accuracy of deposition estimates.

In order to better assess human exposure to five chemicals transported over long distances, Health Canada has completed a study that characterizes people's activities at particular times of the day. Another project has developed computer models to estimate air pollution exposure of the population, and includes infants and the elderly in its sample. Health Canada has completed a study that shows a clear relationship between increasing ozone and sulphate levels and increasing hospitalization for respiratory and cardiac illness in the Ontario Great Lakes basin area. An additional study looks at the costs related to health problems caused by ground level ozone and airborne particles.[129]

Commentary and Discussion

COA Commitment 2.4.2

There are claims of some progress in this area. For example, the Integrated Atmospheric Deposition Network (IADN) has been effective at delineating distant sources of pesticide loadings to the Great Lakes.

The Province of Ontario claims a $3 million expenditure to upgrade its air monitoring network over the past few years.[130] *However, the Ontario Public Service Employees Union (OPSEU) reports a reduction in number of air quality monitoring stations from 55 to 40*

between May 1996 and December 1996 and a 45% reduction in technical staff for monitoring since 1992.[131]

In her 1996 report to the Legislature, the Environmental Commissioner for Ontario noted a reduction in the number of sites monitoring acid rain deposition from 39 to 16. The Commissioner noted that ten years of deposition data have yet to be analyzed, and quality assurance procedures have been reduced as a result of budget cuts. This may compromise the completeness and integrity of the data collected.[132]

The International Joint Commission,[133] *North American Commission on Environmental Cooperation*[134]*, and the Provincial Auditor*[135] *have also expressed serious concerns over the deterioration of the atmospheric contaminant monitoring network in Ontario and Eastern Canada over the past two years.*[136]

Conclusions

Some significant progress is reported in this area. However, there is also evidence of significant reductions to air pollution monitoring capacity, especially at the provincial level. A number of provincial, and international agencies, including the Provincial Auditor, Environmental Commissioner, International Joint Commission and North American Commission for Environmental Cooperation have expressed concern over the deterioration of air pollution monitoring capacity in Eastern North America, including Ontario, over the past three years.

There are serious concerns over positions being taken by Canada in international negotiations on the long-range transport of Persistent Organic Pollutants, such as, ***PCBs****,* ***dioxins*** *and* ***furans****, and* ***hexachlorobenzene****, and Heavy Metals, including* ***mercury****,* ***cadmium****, and* ***lead,*** *which monitoring activities under COA are intended to support. Canada is seen to have failed to strongly support to principle of 'virtual elimination' for priority pollutants, as articulated in the Great Lakes Water Quality Agreement, in these negotiations.*

Pesticides

COA Commitments

2.5.1 : For Tier I Substances, Canada and Ontario agree to confirm by 1996 that zero discharge has been achieved for five priority substances.

2.5.2 For Tier II substances and other pollutants, Canada and Ontario agree to a coordinated review and evaluation of registered and scheduled pesticides.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[137]

2.5.1 Zero Discharge of Priority Pollutants

The joint federal-provincial response in 1997 indicated that "aldrin/dieldrin, chlordane, DDT, toxaphene and mirex, all pesticides, are no longer commercially available or in use in Ontario."[138] Based on a comprehensive review, zero use and availability within Ontario's commercial sectors of the five priority substances (**aldrin/dieldrin**, **chlordane, DDT**, **toxaphene** and **mirex**) is stated to have been confirmed.

To document zero discharge, a report on the manufacture, import, export, distribution and application of these priority pesticides, entitled *Canada-Ontario Agreement Objective 2.1: Priority Pesticides Confirmation of No Production, Use, or Import in the Commercial Sector in Ontario*, has been prepared. Despite zero discharge from the commercial sector, old stocks of COA priority pesticides are being retained by homeowners as household hazardous waste (HHW).

In 1991 and 1992, a major initiative to collect the majority of the agricultural stocks of orphan pesticides was undertaken. This effort collected 35 000 kilograms and 55 000 litres. A depot has been established and ongoing efforts are in place to encourage farmers to dispose of remaining stocks. In March 1997, the MOEE's Southwestern Regional Office and Laidlaw Environmental Service Ltd. set up a two-day collection program in London for chlorinated hydrocarbon pesticides. During this pilot project to determine the quantities of unwanted or unregistered pesticides that originated in the agricultural sector, the pesticides collected included 670 kilograms and 135 litres of DDT and 90 litres of lindane. The fact sheet on the importance of not using these priority pesticides will be included in the federal and provincial Pesticides Use Survey and Ontario's Vendors and Growers Certification Program.[139]

Commentary and Discussion

COA Commitment 2.5.1

Canada and Ontario confirmed in 1997 that the five banned or de-registered pesticides are no longer commercially available for use in Ontario. However, this does not mean that emissions of these substances into the Great Lakes basins ecosystem have ceased. Previous applications, processing or storage of these substances have resulted in the contamination of soils which still act as sources of environmental releases. In addition, stocks of these substances are likely to still exist in agricultural areas and these could end up in the natural environment. Furthermore, these substances may still be in use in the United States and are in use elsewhere in the world where they are subject to transport by prevailing winds into the Great Lakes.

As noted in the government response, quantities of the five priority pesticides were collected in 1991 and 1992 collection programs, and continue to be collected in municipal Household Hazardous Waste (HHW) programs.[140] The province eliminated its funding for municipal HHW programs in November 1995.

There has been no major effort to collect banned, deregistered, or waste pesticides from agricultural sources since the 1991-92 program. Current efforts are limited to the single Ministry of the Environment/Laidlaw Environmental Services site in London, Ontario. The April 1997 Great Lakes Binational Toxics Strategy contained a commitment by Environment Canada to support Great Lakes watershed "clean sweeps."[141] A February 1998 review of hazardous waste management in the Province of Ontario, noted that there was virtually no information available regarding the management of waste pesticides from agricultural operations in the province.[142]

In response to a Request for the Review of the need for the province to support further "Clean Sweep" programs to collect waste agricultural pesticides filed under the Environmental Bill of Rights in February 1998, the Ontario Ministry of the Environment stated:

> *"The stated commitments in the 1997 Binational strategy are made by the two federal governments, and responsibility for meeting this particular commitment rests with the Government of Canada.[143]*

Standardized Approvals for Waste Pesticide Collection Depots

In June 1998, the Ministry of the Environment proposed a "Standardized" Approval system for waste pesticide collection depots as part of its proposals for revisions of the province's waste management regulations.[144] The proposal has been criticized in terms of the adequacy of the proposed environmental and safety standards for such facilities, lack of appropriate reporting requirements, the Ministry's capacity to enforce what standards are established, and the implications of "standardized" approvals for the legal rights of persons who may be adversely affected by activities and facilities approved in this way.[145]

Long Range Transport

*To address the issue of long range transport of pesticides, Canada needs to provide leadership in such forums as the UNEP/WHO Persistent Organic Pollutants Convention negotiations. As noted under **2.4.1.**, such leadership has been lacking to date.*

In addition, Canada and Ontario need to confirm that the pesticides that are replacing those which have been discontinued are not likely to have similar environmental impacts over time as these have. Some pesticides which continue to be commercially available, for example, involve reformulations of banned pesticides (i.e. Dicofol contains a small concentration of DDT). ***Furthermore, Environment Canada and the Ministry of the Environment need to ensure that overall pesticide use is contracting not expanding.***

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[146]

2.5.2 Review of Tier II Pesticides

A multi-agency Pesticide Review Committee (PRC) has been established that includes all relevant agencies: Agriculture Canada, EC, Health Canada, Pest Management Regulatory Agency, MOEE, Ontario Ministry of Agriculture, Food and Rural Affairs, and Ministry of Natural Resources (MNR). A new business plan to address pesticides of concern in the Great Lakes Basin Ecosystem is being developed by the PRC to encompass the use of pesticide alternatives and a risk reduction approach to resolving documented environmental issues. Stakeholder review of the "Business Plan" for the pesticide review process and a stakeholder consultation meeting on June 6, 1996 clearly indicated a desire for integrated pest management practices rather than a "chemical-by-chemical" reduction approach. Under the business plan, the PRC will provide an ongoing mechanism for the consideration of environmental data and risk reduction strategies among all interested parties.[147]

Commentary and Discussion

COA Commitment 2.5.2

There is no evidence of progress in this area. The process is reported to have never moved beyond the development of a draft business plan for the review.[148] Closely related to this COA commitment was a commitment, under the April 1997 Binational Toxics Strategy, to conduct a regulatory and policy review of Tier II pesticide substances. Though technically a commitment in addition to the COA commitment in this area, Environment Canada and the U.S. EPA (the lead Canadian agencies) have indicated that they are to commence work on this review in early 1999.

The Ontario Ministry of Environment's capacity to deal with pesticides related issues

has been heavily affected by the budgetary reductions of the past three years. The Ministry's staff assigned to the regulation of pesticide use has fallen by 55% over the period 1995-1997, from 31 positions to 17.[149]

Conclusions

There is little progress on programs to collect waste pesticides. The province is currently offering only one small program in London Ontario and has stated that the provision of such programs in the context of the Binational Toxics Strategy is a federal responsibility.

Progress on the review of Tier II pesticides by a multi-agency Pesticide Review Committee appears to have stalled significantly.

Summary and Conclusion

Objective Two:
Prevent and Control Pollution

The 'virtual elimination' of priority pollutants, particularly persistent toxic substances, from the Great Lakes, was one of the key goals of the 1978 Great Lakes Water Quality Agreement. 'Virtual elimination' has been defined by the International Joint Commission to mean the elimination of the generation, use or release of substances to the environment.

Progress in this area under COA has been extremely limited. The major achievements result from the implementation of new discharge control regulations on the pulp and paper sector by the federal and provincial governments in 1992 and 1995, respectively. More recently however, the province and federal government have undertaken a number of initiatives which seem likely to undermine the Goals of COA and the Great Lakes Water Quality Agreement with respect to priority pollutants.

Under COA, the governments rely on voluntary efforts by industry to achieve reductions in the use, generation and release of the Tier I and Tier II priority pollutants. Serious questions have been raised regarding the likely effectiveness of voluntary measures for this purpose, particularly in the absence of a framework of baseline regulatory requirements.

The governments also rely heavily on reporting by industry under the voluntary Accerated Reduction/Elimination of Toxics (ARET) program, which includes a number of COA Tier I and II substances, to assess their progress in reducing the use, generation and release of priority pollutants. Concerns have been raised regarding the reliability of data gathered under ARET. The program also suffers from a serious weakness in that it only gathers information on releases of substances to the environment. Information is not gathered on transfers of ARET substances in waste. An analysis of 1994 and 1995 National Pollutant Release Inventory (NPRI) data conducted by the North American Commission for Environmental Cooperation indicates that the transfer of NPRI reported ARET substances in waste is rising dramatically. This increase is well in excess of reported reductions in releases of ARET substances to the environment. The finding suggests that the total generation of ARET substances may actually be rising significantly.

Some progress has been made in investigating the fate and effects of COA Tier II substances by the federal government. However, the federal government has failed to take action regarding the bulk of the Tier I and II substances found to be "toxic" for the purposes of the CEPA. These include ***hexachlorobenzene****,* ***cadmium****,* ***PAHs****, and* ***3,3, Dichlorobenzidine****. Action has only been taken to limit releases of* ***dioxins*** *and* ***furans*** *from one sector, pulp and paper. The 1992 federal pulp and paper mill discharge regulations, in combination with discharge regulations made under the provincial MISA*

program, have resulted in major reductions in discharges of organochlorines from Ontario pulp and paper mills.

The federal government adopted a Toxic Substances Management Policy in June 1995. The policy is reflected in the Canadian Environmental Protection Act reform Bill (C-32) currently before the House of Commons. The policy has been strongly criticized as undermining the concept of 'virtual elimination' of persistent toxic substances through the elimination of their use, generation or release, contained in the Great Lakes Water Quality Agreement, articulated by the International Joint Commission, and reflected in COA.

The province has failed to move forward on proposals to strengthen its air pollution standards for heavy metals, including ***cadmium****, and has undertaken a number of measures that are likely to increase the generation and release of priority pollutants, particularly* ***dioxins*** *and* ***furans****, and the heavy metals* ***mercury****,* ***cadmium****, and lead. These include the repeal of a ban on the establishment of new municipal waste incinerators in December 1995. This action that has been specifically criticized by the International Joint Commission as being likely to increase the deposition of priority pollutants within the Great Lakes basin.*

The Ministry has also proposed to weaken the MISA water pollution control regulations, including those which apply to the pulp and paper sector, and controls on the burning of municipal wastes as 'waste derived fuel'. The proposed introduction of competition into the electricity market is likely to result in major increases of emissions of priority pollutants, particularly heavy metals. However, the province has yet to establish environmental standards to address this problem. In the meantime, the implementation of Ontario Hydro's Nuclear Asset Optimization Plan appears to have resulted in major increases of emissions of priority pollutants.

There is evidence of serious problems in the area of hazardous waste management. The province is experiencing a dramatic growth in the generation of hazardous wastes, well in excess of the corresponding growth in the provincial economy, and in contradiction to the COA commitment to seek reductions in hazardous waste generation. Despite this development, the Ministry of Environment has proposed to significantly weaken its regulatory controls on hazardous waste management.

With respect to PCBs, the federal government terminated its PCB destruction program in 1995, despite the fact that the process of destroying federally owned PCBs was incomplete. Within Ontario, there is evidence of movement away from recently approved non-incineration PCB destruction technologies to cheaper, and less environmentally sound disposal options both inside and outside of Ontario. The province has proposed to significantly weaken its regulatory oversight of PCB handling and disposal activities.

The number of spills of hazardous materials and wastes in the province is reported to be 'roughly' static. The Ministry of the Environment has proposed to weaken the reporting requirements related to spills, and the Environmental Compensation Corporation, established to assist innocent victims of spills, has been dissolved.

The July 1997 Plastimet Inc. fire has raised serious concerns over the Ministry's emergency response capacity. At the federal level, a 40% reduction in Environment Canada's emergency preparedness program was announced with the February 1995 budget.

Little progress appears to be occurring under the Canada-U.S. Binational Toxics Strategy and progress on the Lakewide Management Plans (LaMPs) has been very slow. The April 1997 Binational Strategy itself has been the subject of the criticism that it steps backwards from the requirements of the Great lakes Water Quality Agreement regarding the "virtual elimination" of persistent toxic substances from the Great Lakes Basin.

Considerable progress has been made in reducing discharges of priority toxic substances into the Niagara River, and in reducing discharges of persistent toxic substances from pulp and paper mills into Lake Superior. The latter is the result of the implementation of new federal and provincial discharge regulations for the sector in 1992 and 1995. The implementation of the province's MISA regulations has also been a significant factor in the reduction of discharges to the Niagara River. More recently however, many of the province's regulatory 'reform' initiatives seem likely to undermine the goals of the virtual elimination of persistent, bioaccumulative and toxic substances from the Great Lakes Basin Ecosystem and the achievement of zero discharge in Lake Superior.

Some significant progress is reported in the area of monitoring atmospheric deposition of priority toxic substances. However, there is also evidence of significant reductions to air pollution monitoring capacity, especially at the provincial level. A number of provincial and international agencies, including the Provincial Auditor, Environmental Commissioner, International Joint Commission and North American Commission for Environmental Cooperation have expressed alarm over the deterioration of air pollution monitoring capacity in Eastern North America, including Ontario, over past three years.

There are also serious concerns over positions being taken by Canada in international negotiations on long-range transport of Persistent Organic Pollutants, such as ***PCBs****,* ***dioxins*** *and* ***furans****, and* ***hexachlorobenzene****, and Heavy Metals, including* ***mercury****,* ***cadmium****, and* ***lead,*** *which monitoring activities under COA are intended to support. Canada is seen to have failed to strongly support the principle of 'virtual elimination' for priority pollutants, as articulated in the Great Lakes Water Quality Agreement, in these negotiations.*

There is little progress on programs to collect waste pesticides. The province is currently offering only one small program in London Ontario, and has stated that the provision of such programs in the context of the Binational Toxics Strategy is a federal responsibility.

Progress on the review of Tier II pesticides by a multi-agency Pesticide Review Committee appears to have stalled completely.

Endnotes

1. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective2.html

2. *National Pollutant Release Inventory Summary Report 1996* (Ottawa: Environment Canada, September 1998), Table 2.

3. Office of the Provincial Auditor, 1996 Annual Report (Toronto: Queen's Printer for Ontario, 1996), pg.120.

4. William Leiss and Associates, Final Report ARET Voluntary Codes Project (June 1997).

5. Commission for Environmental Cooperation, Taking Stock: North American Pollutant Releases and Transfers 1995 (Montreal: Commission on Environmental Cooperation, October 1998), Table 5-15.

6. Review Branch, Accelerated Reduction/Elimination of Toxics: Draft Evaluation Plan (Ottawa: Environment Canada, October 1998).

7. *The Canadian Environmental Protection Act, 1988,* Schedule 1.

8. *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations* (SOR/92-267, May 2, 1992).

9. M.Grange, "Dry cleaners facing cost of equipment upgrades," The Globe and Mail, February 11,

10. For a summary of the SOP process see S.Gingras, "Managing or Preventing Release of Toxic Substances in Canada: The Strategic Option Process Outline of 8 Completed Consultation Processes" (Montreal: Great Lakes United, March 1997).

11. *Toxic Substances Management Policy* (Ottawa: Government of Canada, June 1995).

12. B.Mausberg, P.Muldoon, and M.Winfield, *Comments on the Government of Canada's Proposed Toxic 13Substances Management Policy* (Toronto: Canadian Environmental Law Association and Canadian Institute for Environmental Law and Policy, 1995).

13. National Office of Pollution Prevention, *Pollution Prevention: A Federal Strategy for Action* (Ottawa: Government of Canada, July 1995), pg.4.

14. See for example, P.Muldoon and M.Winfield, Submission on Bill C-32: the *Canadian Environmental Protection Act* (Toronto: Canadian Environmental Law Association and Canadian institute for Environmental Law and Policy, October 1998).

15. Ministry of the Environment, 1998-99 Business Plan, Key Performance Measures. URL:http:/www.gov.on.ca/MBS/english/press/plans98/env.html.

16. *News Release:* "2nd Report of Progress under the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem" Environment Canada and the Ontario Ministry of the Environment, October 31, 1997.

17. Ontario Ministry of Environment and Energy, *Responsive Environmental Protection: A Discussion Paper*, July 1996.

18. See EBR Registry No: RA7E0018.P - RA7E0026.P, December 30, 1997.

19. Bill 135 - *The Electricity Competition Act, 1998*.

20 .See, for example, J.Gibbons and S.Bjorkquist, Electricity Competition and Clean Air (Toronto: Ontario Clean Air Alliance, April 1998).

21. United States Environmental Protection A*gency A Multimedia Strategy for Priority Persistent,*

Bioaccumulative, and Toxic (PBT) Pollutants (Draft)) November 16, 1998.

22 .B.McAndrew, "Ontario Hydro pumping up air pollution, papers reveal," The Toronto Star, September 9, 1998.

23. International Joint Commission, 8th Biennial Report on Great Lakes Water Quality (Washington and Ottawa: 1996).

24. International Joint Commission, 9th Biennial Report on Great Lakes Water Quality (Washington and Ottawa, 1998).

25. See M.Winfield, Response to Incineration Information Package (Toronto: CIELAP, (Brief 95/3), September 1995).

26. EBR Registry No. RA8E0023, June 2, 1998.

27. See, for example, M. Cohen et.al. *Quantitative Estimation of the Entry of Dioxins, Furans, and Hexachlorobenzene into the Great Lakes from Airborne and Waterborne Sources* (Flushing, NY: Centre for the Biology of Natural Systems, Queen's College CUNY, May 1995).

28. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

29. See generally, P.Muldoon, and J.Jackson, "Keeping the Zero in Zero Discharge," Alternatives, Vol.20, No. 4, pp.14-20; and K.Clark, The Use of Voluntary Instruments in Canadian Environmental Policy (Toronto: Canadian Institute for Environmental Law and Policy, 1995).

30. The Benzene in Gasoline Regulations, November 1997.

31. Ministry of Environment, 1998-99 Business Plan, Key Performance Measures.

32. "Proposed Standards Information Package Information Overheads," January 1997, Standards Development Branch, Ministry of Environment and Energy.

33. EBR Registry Notices PA8E0009-PA8E0017, March 31, 1998.

34. M.Mittelstaedt, "Firms get first say on levels of toxics," The Globe and Mail, December 17, 1996.

35. Office of the Provincial Auditor, 1998 Annual Report, pp.272-273.

36. Bill 135 - *The Electricity Competition Act, 1998*.

37. See, for example, J.Gibbons and S.Bjorkquist, Electricity Competition and Clean Air (Toronto: Ontario Clean Air Alliance, April 1998).

38. B.McAndrew, "Ontario Hydro pumping up air pollution, papers reveal," The Toronto Star, September 9, 1998.

39. International Joint Commission, 8th Biennial Report on Great Lakes Water Quality (Washington and Ottawa: 1996).

40. International Joint Commission, 9th Biennial Report on Great Lakes Water Quality (Washington and Ottawa, 1998).

41. See M.Winfield, Response to Incineration Information Package (Toronto: CIELAP, (Brief 95/3), September 1995).

42. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

43. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

44. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

45. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

46. Ibid. pp.10-20.

47. Ibid., pg.17.

48. See, for example, P.Muldoon, "Drawbacks to voluntary pollution prevention agreements in Canada," The Great Lakes United, Vol. 9., No.2, Fall 1994. See also K.Clark, The Use of Voluntary Environmental Agreements in Canada.

49. Ministry of Environment and Energy, Ontario's Progress on Pollution Prevention, Appendix 1.

50. Ibid.

51. National Pollutant Release Inventory Summary Report 1996 (Ottawa: Environment Canada, September 1998), Table 2.

52. Office of the Provincial Auditor, 1996 Annual Report (Toronto: Queen's Printer for Ontario, 1996), pg.120.

53. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

54. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

55. Report of the Auditor-General of Canada to the House of Commons/Chapter 2: Environment Canada: Managing the Legacy of Hazardous Wastes (Ottawa: Minister of Supply and Services Canada, May 1995), pg. 2-19 - 2-25.

56. Pers.comm., Dale Cameron, Environmental Protection Service - Ontario Region, Environment Canada, November 13, 1998.

57. Environmental Assessment Board General Electric Canada Inc/Eli Eco Logic International Inc: Destroying and Decontaminating PCB Waste Using ECO LOGICS Mobile PCB Destructor/ Reasons for Decision and Decision ((Toronto Environmental Assessment Board, November 25, 1996).

58. 6,800 tonnes of high and low-level wastes as of December 1996.

59. S.Feschuk, "Alberta plant to accept province's hazardous waste, The Globe and Mail, November 23, 1994.

60. D.Westell, "Trans-Canada faces more toxic traffic," The Globe and Mail November 24, 1994.

61. Erin Kenny, "Tests confirm humans exposed to poisons near waste plant," CP Wire, May 15, 1997.

62. Ed Struzick and Larry Johnsrude, "Toxins found after explosion: Environment officials find PCB's at Swan Hills but consider results inconclusive," The Edmonton Journal, July 24, 1997.

63. CP, "Safety concerns halt toxic shipments," The Calgary Herald, August 13, 1997.

64. D.Hryciuk, "Applause for heavy fine against Swan Hills operator," The Edmonton Journal, October 25, 1998.

65. "A toxic mess in LaSalle," The Montreal Gazette, October 28, 1997.

66. B.McAndrew, "Toxic soil to be moved by March," The Toronto Star, November 20, 1997. A mobile PCB incineration new facility at St.Ambroise, was granted a Certificate of Approval in October 1997. Pers. comm., Daniel Green, Executive Director, SVP, January 22, 1998.

67. Ibid.

68. B.McAndrew, "Toxins to move through city," The Toronto Star, November 6, 1997.

69. Presse Canadienne, "la Commission Munger recommende un moratoire," January 19, 1998.

70. Environmental Assessment Board, Gary Steacy Dismantling Ltd: Reasons for Decision and Decision (EP97-03) (Toronto, December 1997).

71. Ibid., pg.28.

72. Ibid., pg.29.

73. "Ban on PCB waste exports extended," The Globe and Mail, February 28, 1996.

74. B.McKenna, "Canada warned about PCB rules," the Globe and Mail, February 7, 1997.

75. COA Stream 2 Report (November 1996), pg.25, and CP, "PCB-export ban lifted," The Globe and Mail, February 7, 1997.

76. J.Gerstenzang, "U.S. Court retains ban on PCB imports" The Montreal Gazette, July 8, 1997.

77. H.Scoffield, "PCB export ban breached NAFTA, firm says," The Globe and Mail, September 1, 1998.

78. EBR Notice RA8E0023, June 2, 1998.

79. Ministry of the Environment, Draft Regulation: Waste Management, s.405.

80. Ibid., ss.527-529.

81. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

82. Figure corrected for 2-ethylhexyl Phthalate reporting error.

83. Corrected for chromium reporting error.

84. Corrected for chromium reporting error.

85. Ministry of Finance*, The Ontario Economy, Annual Chance, 1994-99* URL: WWW.gov.on.ca/FIN/english/Tab2htm.htm.

86. EBR Notice RA8E0023, June 2, 1998.

87. For a detailed commentary on the Ministry's proposals see R.Nadarajah, T.McClenaghan, and M.Winfield, Submission to the Minister of the Environment Re: EBR Notice RA8E0023 Draft Waste Management Regulation (Toronto: Canadian Environmental Law Association and Canadian Institute for Environmental Law and Policy, September 1998).

88. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

89. Canada Ontario Agreement Respecting the Great Lakes Basin Ecosystem 1994: Stream 2 Progress Report (Toronto: Environment Canada, MoEE, November 1996), pg.30.

90. Ministry of Environment and Energy, Spills Action Centre: Summary Report of 1995 Spills, (Toronto: December 1996), Figure 5.

91. Ibid., Figure 6.

92. See, for example, J.Wilkes and K.Kilpatric, "Toxic fumes force 4,000 to flee fire sites," The Toronto Star, July 12, 1997.

93. G.Abbate and K.McArthur, "650 told to flee 3-day fire," The Globe and Mail, July 12, 1997.

94. See, for example, B.McAndrew, "Sifting the ashes," The Globe and Mail, April 11, 1998.

95. *The Environmental Approvals Process Improvement Act, 1997*, ss. 5 & 8.

96. Ministry of Environment and Energy, Responsive Environmental Protection: Technical Annex (Toronto: July 1996), pp.65-66.

97. Ministry of Environment and Energy, Better, Stronger, Clearer Environmental Regulations for Ontario (Toronto: November 1997), pg. 28.

98. EBR Registry Posting RA8E0017, April 4, 1998.

99. Environment Canada Business Plan 1995/96 - 1997/98 (Ottawa: June 1995) pg.28.

100. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

101. See, for example, letter to The Hon.S.Marchi, Minister of the Environment, and Carol Browner, Administrator, United States Environmental Protection Agency, April 7, 1997, from the Canadian Environmental Law Association and Greenpeace U.S. See also Letter to Val Adamkus, Great Lakes National Program Manager, USEPA, and Ron Shimizu, Environment Canada, April 7, 1997 from Great Lakes United.

102. United States Environmental Protection A*gency A Multimedia Strategy for Priority Persistent, Bioaccumulative, and Toxic (PBT) Pollutants (Draft))* November 16, 1998.

103. "Final Report: A First Year Evaluation of Progress under the Great Lakes Binational Toxics Strategy" USEPA Great Lakes National Program Office No. GL 985524-01 (Buffalo: Great Lakes United, October 1998).

104. Great Lakes United, Toxics Watch, Vol.3, No.7., November 1998.

105. See *Eliminating Long-Lived Poisons from the Great Lakes: Recommendations for Year 2 Under the Binational Toxics Strategy,* submission by Great Lakes United, November 1998.

106. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

107. Pers. comm., Environment Canada, Environment Conservation Service, Ontario Region, November 10, 1998.

108. Niagara River Toxics Management Plan: Progress Report and Work Plan (Niagara River Secretariat, February 1998) pg.W-14.

109. Pers. comm, Wally Rozenberg, West Central Region, Ministry of the Environment, December 17, 1998.

110. Niagara River Toxics Management Plan: Progress Report and Work Plan, pg. W-14.

111. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

112. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

113. Ontario Ministry of Environment and Energy, *Responsive Environmental Protection: A Discussion Paper*, July 1996.

114. On the Pulp and Paper sector see EBR Registry Notice RA07E0025.P, December 30, 1997.

115. Bill 135 - *The Electricity Competition Act, 1998*.

116. See, for example, J.Gibbons and S.Bjorkquist, Electricity Competition and Clean Air (Toronto: Ontario Clean Air Alliance, April 1998).

117. International Joint Commission, 8th Biennial Report on Great Lakes Water Quality (Washington and Ottawa: 1996).

118. International Joint Commission, 9th Biennial Report on Great Lakes Water Quality (Washington and Ottawa, 1998).

119. See M.Winfield, Response to Incineration Information Package (Toronto: CIELAP, (Brief 95/3), September 1995).

120. EBR Registry No. RA8E0023, June 2, 1998.

121. See, for example, M. Cohen et.al. *Quantitative Estimation of the Entry of Dioxins, Furans, and Hexachlorobenzene into the Great Lakes from Airborne and Waterborne Sources* (Flushing, NY: Centre for the Biology of Natural Systems, Queen's College CUNY, May 1995).

122. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

123. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

124. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

125. Great Lakes Water Quality Board, "Review of Government Resources," Canada - Department of Fisheries and Oceans, Health Canada.

126. Environment Canada, "Summary Report: working Group on Strategies for the UN ECE LRTAP Convention Protocol on Heavy Metals, February 9-11, 1998" (March 1998).

127. C.Boljkovac, "A UN Treat on Persistent Organic Pollutants," (Toronto: Canadian Environmental Law Association, 1998).

128. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

129. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-

objective1.html

130. Ministry of the Environment, Media Backgrounder "Ontario's Ministry of the Environment: Key Initiatives," June 22, 1998.

131. Ontario Public Service Employees Union, Nothing Left to Cut, pp.2-3.

132. Environmental Commissioner for Ontario, Annual Report 1996 (Toronto: ECO, April 1997), pg.20.

133. The IJC and the 21st Century (Washington and Ottawa: International Joint Commission, October 1997).

134. Continental Pollutant Pathways: An Agenda for Cooperation to Address Long-Range Transport of Air Pollution in North America (Montreal: Commission on Environmental Cooperation, September 1997) and Long-Range Transport of Ground-Level Ozone and its Precursors: Assessment of Methods to Quantify Transboundary Transport within the Northeastern United States and Eastern Canada (Montreal: Commission on Environmental Cooperation, October 1997).

135. Office of the Provincial Auditor, 1996 Annual Report: Accounting/Accountability/Value for Money (Toronto: Queen's Printer, October 1996), pp.113-128.

136. D.Bell, et. al., "The Urgent Need to Sustain *Long-Term Ecological Research and Monitoring* in Canada," a paper resulting from A Workshop on Environmental Science Research, Faculty of Environmental Studies, York University, Toronto, May 22, 1997.

137. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

138. *News Release:* "Canada and Ontario announce Great Lakes cleanup successes" Environment Canada and the Ontario Ministry of the Environment, October 31, 1997.

139. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

140. M.Winfield, Hazardous Waste Management in Ontario, pg. IX-9.

141. The Great Lakes Binational Toxics Strategy: Canada-United States Strategy for Virtual Elimination of Persistent Toxic Substances in the Great Lakes, pg.15.

142. M.Winfield, Hazardous Waste Management in Ontario, Chapter VI.

143. Ministry of the Environment, Re: Application for a Review of the Need for a New Act, Policies and Regulations relating to Hazardous Waste Management EBRO File Number 98EBR004.R, April 20, 1998.

144. EBR Notice RA8E0023 - Draft Waste Management Regulation, June 2, 1998.

145. R.Nadarajah, T.McClenaghan, and M.Winfield, Submission to the Ministry of the Environment Re: EBR Notice RA8E0023 Draft Waste Management Regulation, September 10, 1998.

146. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

147. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 2: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

148. Pers. comm., Julia Langer, Manager, Wildlife Toxicology Program, World Wildlife Fund Canada,

November 9, 1998.

149. OPSEU, Nothing Left to Cut, figure 9.

Objective Three:

Conserve and Protect Human and Ecosystem Health

Objective Three: Conserve and Protect Human and Ecosystem Health

Lakewide Planning (LaMPs)

COA Commitments:

3.1.1 Develop ecosystem-based principles, objectives and indicators for Lake Ontario by 1995, Lake Superior by 1996, Lake Erie by 1996, and Lake Huron by 2000 to provide direction for management plans.

Develop Stage 1 Lakewide Management Plans (LaMPs) for critical pollutants for Lake Superior by 1995, Lake Ontario by 1995, and for Lake Erie by 1998 for consideration by the International Joint Commission (IJC).

Develop Stage 2 LaMPs for critical pollutants for Lake Superior by 1996, Lake Ontario by 1997, and for Lake Erie by 2000 for consideration by the IJC.

Statement of Progress

Key Elements of the Governments's Statement of Progress on COA Commitments.[1]

3.1.1. LaMPs

LaMPs are well under way for three of the four Canadian Great Lakes. The Stage 1 Problem Definition has been completed for Lakes Superior and Ontario; the Lake Erie Stage 1 document is expected in 1998. The Stage 2 Load Reductions and Ecosystem Targets document has been drafted for Lake Superior and public comments have been received. The Stage 2 document for Lake Ontario is delayed until winter 1999. Principles, objectives and indicators for Lake Huron are not due until 2000 and discussions have not been initiated.

LaMPs are frameworks for coordination and cooperation, integrating existing land and water-based activities on a lake-by-lake basis. All COA targets contribute to the achievement of LaMP goals and objectives.

Lake Superior

The Lake Superior LaMP provides an example of the cooperation and consensus that exists among Canadian and U.S. government agencies, as well as members of the public and in particular the Lake Superior Forum.

The Stage 1 LaMP problem definition has been completed and incorporates public comment. The draft Stage 2 document was released for comment in the fall of 1996. Public comments have been incorporated and the document will be completed by the end of 1997.The Stage 2 draft LaMP includes load reduction targets for in-basin sources of nine of the COA Tier 1 pollutants, as proposed by the Lake Superior Binational Forum and

endorsed in principle by governments. Options for dioxin are still being considered by the U.S. states. Load reduction targets are consistent with the basin-wide targets in COA and those of the Great Lakes Binational Toxics Strategy. Canadian and U.S. governments will finalize details by the end of 1997.

Lake Superior Binational Program: Reduction Targets

Mercury	**PCBs**	**Pesticides**	**Dioxin** **	**OCS**	**HCB**
60% by 2000 80% by 2010 VE by 2020	33% by 2000 60% by 2005 95% by 2010 VE by 2020	Retrieve and destroy four banned pesticides* by 2000	80% by 2005	90% by 2015	100% by 2020

* (DDT, dieldrin/aldrin, chlordane, toxaphene)

** Dioxin targets are under consideration. (Baseline year is 1990)

In September 1996, the agencies participating in the Lake Superior Binational Program released a discussion document entitled Ecosystem Principles and Objectives, Indicators and Targets. This document contains indicators and numerical targets for aquatic communities, terrestrial wildlife, habitat, human health and sustainability. Agencies are now beginning to investigate cost-effective ways to monitor these indicators. A habitat problem-identification document that parallels the one completed for toxics substances is in development.

Lake Erie

Work began on the binational Lake Erie LaMP in September 1994. The goal of the LaMP is to restore and protect the beneficial uses of Lake Erie. Both chemical and non-chemical stresses that contribute to beneficial use impairments are being evaluated. Key concerns that have arisen out of the technical analysis include introductions of exotic species, polychlorinated biphenyls (PCBs), habitat alterations and losses, and nutrient management. The 1995 COA report noted that all beneficial uses were under assessment. There are now six beneficial uses that are designated as impaired, two as not impaired, and six that remain under assessment.

The governments state that in addition to the technical evaluations, a substantial public involvement program has been instituted. In Ontario, this program is implemented through a partnership with the Lake Erie Conservation Authorities. A key component is the Lake Erie Forum, which consists of approximately 80 stakeholders from the U.S. and Canada. This group provides ongoing advice to the governments on the content and direction of the Lake Erie LaMP process.

A report that details progress of the LaMP to date will be available by winter 1998; the Stage 1 document will be completed early in 1999.

Lake Ontario

The draft Stage 1 report for the Lake Ontario LaMP was released for public review in April 1997, and the final Stage 1 Report in June 1998. The report is primarily a problem definition document; elements of Stages 2 and 3, however, were incorporated where available. Eleven beneficial uses are considered impaired in the Canadian nearshore; four of these are common to the U.S. and are being addressed under the binational LaMP. The four lakewide impaired beneficial uses are fish and wildlife consumption restrictions, fish and wildlife population degradation, bird and animal reproductive problems and the loss of fish and wildlife habitat. In the spring of 1997, a series of ten open houses / public meetings were held around the basin to provide information and an opportunity to discuss the conclusions with agency staff. The document will be revised and is expected to be finalized for submission to the IJC early in 1998.The binational critical pollutants for Lake Ontario are PCBs, Dichloro-diphenyl-trichloroethane (DDT), and its metabolites, mirex, dioxins/furans and mercury. In light of recent data and new criteria, further assessment of chemicals is ongoing.

The governments state that ongoing efforts are being made to coordinate LaMP objectives and activities with ongoing, proposed or new resource management initiatives in the basin. Federal/provincial tributary monitoring in the Lake Ontario basin will take place in the summer/fall of 1997 and spring/summer of 1998, to fill a significant gap that exists in knowledge of sources and loadings of critical pollutants to the lake. Cooperative binational open lake monitoring and modelling activities are also planned. It is anticipated that the Stage 2 document will be drafted by winter 1999.

Lakewide Planning Components

Planning Components	**Lake Ontario**	**Lake Erie**	**Lake Superior**
Principles	IP	IP	C
Ecosystem Objectives	IP	IP	C (IP)
Indicators	IP	IP	C (IP)
Problem Definition	IP	IP	C (IP)
Load Reductions & EcosystemTargets	-	-	IP
Remedial Measures	-	-	IP
Restoration	-	-	IP

IP = In Progress C= Completed Note: The symbol in ( ) reflects where designation has changed since the First COA Progress report.

Impaired Beneficial Uses for Binational LaMPs

Use Impairment	Lake Ontario	Lake Erie	Lake Superior
Restrictions on Fish and Wildlife Consumption	I	I (UA)	I
Tainting of Fish and Wildlife Flavour	NI	NI (UA) NI	
Degradation of Fish and Wildlife Populations	I	UA	I
Fish Tumours and other deformities	NI [I]	UA	I
Bird and Animal Deformities or Reproductive Problems	I	UA	I
Degradation of Benthos	NI [I]	UA	I
Restrictions on Dredging	NI [I]	I (UA)	I
Eutrophication or Undesirable Algae	NI [I]	I (UA)	I
Restrictions on Drinking Water	NI [I]	NI (UA) NI	
Beach Closings	NI [I]	I	(UA)I
Degradation of Aesthetics	NI [I]	I	(UA)I
Added Costs to Agriculture and Industry NI [I]	UA	NI	
Degradation of Phytoplankton and Zooplankton	NI	I (UA)	NI
Loss of Fish and Wildlife Habitat I (NI)	UA	I	

I = Impaired NI = Not Impaired UA = Under Assessment
Note: The symbol in ( ) reflects where designation has changed since the First COA Progress report.
The symbol in [ ] reflects Canadian assessment of impairments.

Lake Huron

Principles, objectives and indicators for Lake Huron are not scheduled for completion until 2000. Discussions have not been initiated to date on this commitment.[2]

Commentary and Discussion

COA Commitment 3.1.1

LaMPs

Progress on LaMP Development

The development of Lakewide Management Plans was one of the core elements, along with the development of Remedial Action Plans for the Areas of Concern, of the 1987 Protocol to the Great Lakes Water Quality Agreement. However, progress on the LaMPs has been very slow. No action has been taken on the Lake Huron LaMP, the Lake Erie stage 1 LaMP is still under development, the Lake Superior Stage 2 LaMP has yet to be adopted by the governments and the Lake Ontario Stage 2 LaMP is to be released in 1999.

As noted under ***2.3.2.*** *the Lake Ontario LaMP Coordinator was laid off by the*

Ontario Ministry of the Environment in January 1997, as part of an overall reduction in Ministry personnel. Environment Canada is now providing the Lake Ontario LaMP Coordinator's position.

Actions Affecting LaMP Goals

*The Ontario and federal governments have undertaken a number of initiatives that may affect key goals of the LaMPs. These include the reduction of inputs of critical pollutants, such as **dioxins**, **furans** and **mercury**, and the protection of fish and wildlife habitat.*

Federal

Critical Pollutants

Action on Critical Pollutants Under the Canadian Environmental Protection Act (CEPA)

*As noted under **2.1.1.** (Tier I Substances) and **2.1.2.** (Tier II Substances) a number of critical pollutants have been determined to be "Toxic" substances for the purposes of CEPA. These include **mercury**, **lead**, **hexochlorobenzene**, **PCCD** (**dioxin**) and **PCDF** (**furans**), **cadmium**, **PAHs**, and **3,3 dichlorobenzidine**. However, with the exception of **dioxin** and **furan** discharges from pulp and paper mills, no regulatory actions have been regarding these substances since the completion of the first Priority Substances List (PSL 1) assessment process.*

*The federal government currently relies on the Voluntary Accelerated Reduction/Elimination of Toxics (ARET) program as its primary instrument to reduce releases to the environment of these substances. The weaknesses of the ARET program are also discussed in **2.1.1.** and **2.2.1.***

Critical Habitat Protection

The Department of Fisheries and Ocean's intention to withdraw from all of its freshwater functions was announced in the February 1995 budget. The Great Lakes are the region most heavily affected by this decision. The Department reports a 70% reduction in its operating budget and 40% reduction in scientific staff for its Great Lakes Research Program between the 1994 and 1997 fiscal years.[3]

*The Department reports the restoration of 25% of its staff reductions, as of April 1, 1998, principally in the area of habitat research.[4] This decision is related to the Ministry of Natural Resource's September 1997 decision to withdraw from the enforcement of the habitat protection provisions of the federal Fisheries Act. These developments are discussed in detail in **3.2.2.***

A report tabled by the House of Commons Standing Committee on Fisheries and Oceans in November 1998 encouraging the settlement of this dispute between the federal and provincial governments, the provision of adequate resources to the Department to adequately and efficiently complete the tasks associated with habitat management, and increases in the department's funding of science and research on Great Lakes Fisheries.[5]

Provincial

Critical Pollutants

Ministry of the Environment 1998-99 Business Plan

*As noted under **2.1.1** and **2.1.2,** the Ministry of the Environment's 1998-99 Business Plan outlines reduction targets for **mercury**, **benzo(a)pyrene**, **PAHs** and **dioxins** and **furans** far short the COA objectives, and makes no reference to any other COA Tier I or II substances.*[6]

Incineration Ban Repeal

*As noted under **2.1.1** and **2.1.2,** in December 1995, a ban on the approval of new municipal waste incinerators established in 1992 was repealed by the provincial government. This action was specifically criticized as being likely to result in increases in the presence of priority pollutants in the Great Lakes Basin by the International Joint Commission in its 8th*[7] *and 9th*[8] *Biennial Reports on Great Lakes Water Quality. Municipal waste incinerators have been identified as major sources of a wide range of contaminants, including **dioxins** and **furans**, heavy metals such as **mercury**, **lead** and **cadmium**, and sulphur dioxide and nitrogen oxides.*[9]

Weakening Control on Burning 'Waste Derived Fuel'

*As noted in **2.1.1** and **2.1.2,** in June 1998 the Ministry of the Environment proposed to amend the definition of waste-derived fuel to permit the burning of non-hazardous solid waste as fuel. This would permit the burning of non-hazardous solid wastes in cement kilns and industrial boilers. The burning of supplemental fuels in cement kilns has been strongly associated with emissions of a wide range of major contaminants, such as **dioxins** and **furans.***[10]

The Introduction of Electricity Market Competition

*As noted under **2.1.1** and **2.1.2,** Bill 35, an act to establish a competitive market was enacted in October 1998.*[11] *Serious concerns have been raised that the introduction of competition into the electricity market without significant new environmental requirements may lead to major increases in air pollution, particularly acid rain and smog precursors, and heavy metals, including **mercury** and **cadmium.***[12] *To date the government of Ontario has failed to specify what measures it intends to take to address this issue.*

Ontario Hydro Nuclear Assess Optimization Plan

*As noted under **2.1.1.** and **2.1.2.** in August 1997 Ontario Hydro's Board of Directors approved the Nuclear Asset Optimization Plan (NAOP). The implementation of the plan has lead to major increases in emissions from fossil fuel generating facilities, including sulphur and nitrogen oxides. Although specific data are not publicly available, emissions of heavy metals, such as **mercury**, arsenic and **cadmium** can also be expected to have increased significantly as well.*

Weakening the MISA Program

*As noted in **2.1.1**, in November 1997, the Ministry re-iterated its July 1996 proposals to amend the MISA Regulations to:*

- *reduce the frequency of chronic toxicity testing semi-annually to annually;*
- *remove effluent limits for substances that are not used, produced or stored on site;*
- *reduce daily monitoring requirements for some parameters if a sites performance surpasses permitted limits for 12 consecutive months; and*
- *amend the Pulp and Paper Sector Regulation to remove the requirement that facilities submit plans on the elimination of AOX, and advance the date for the AOX limit of 0.8kg/tonne from December 1999.*

These proposals were posted on the Environmental Bill of Rights Registry in December 1997. As of January 1999, the proposals had not been implemented.

Critical Habitat

Ministry of Natural Resources Reductions in Great Lakes Programs

*As noted under **1.1.** and **1.3**, the Great Lakes Branch of the Ministry of Natural Resources was disbanded in 1996, a $1million/yr fund for RAP work eliminated, and the operating budgets of the Ministry of Natural Resource's four Great Lakes Management units have been reduced by 73% and staff by 40% between the 1992/93 and 1997/98 fiscal years. Activities related to enforcement, fish community monitoring and fisheries management have been the most heavily affected by these changes.[13] No reference to COA commitments is made in the Ministry's current business plan.[14]*

Reduced Habitat Protection in Land Use Planning

Major amendments were made to the Planning Act through the enactment of Bill 20, the Land Use Planning and Protection Act, 1996 in March 1996. These changes repealed the structures put in place by the previous government in response to the report of the Commission on Planning and Development Reform in Ontario, and were largely seen to weaken environmental protection requirements.[15]

In particular, requirements that municipal planning decisions be consistent with provincial policy statements were significantly weakened through the Bill 20 amendments. Bill 20 also limited the role of the Ministries of Environment and Energy and of Natural

Resources in the municipal land-use planning process. In the past, these agencies had acted as voices for environmental protection and natural resources conservation in the planning process. Since the enactment of Bill 20, both agencies have effectively withdrawn from the land-use decision-making processes.

Furthermore, as is acknowledged in the governments' most recent progress report on COA ***(3.2.1.)*** *the Provincial Policy Statement made under the Planning Act regarding wetlands was amended to apply to a smaller area of the province, and to remove requirements for impact studies of proposed developments in or adjacent to wetlands.*[16] *Protections for significant ravine, river and stream corridors and adjacent lands, shorelines of lakes, rivers and streams were also removed from the Province's Policy Statements under the Act.*[17] *These changes are discussed in greater detail under* ***3.6.2****.*

MNR Withdrawal from Enforcement of the Habitat Protection Provisions of the Federal Fisheries Act

On September 19, 1997, the Ministry of Natural Resources announced that it was withdrawing from a 1989 agreement with the federal Department of Fisheries and Oceans to enforce the habitat protection provisions of the federal Fisheries Act. The Ministry stated that it would take no further action to enforce the Act in Ontario.[18] *This action is discussed in detail under* ***3.2.2.***

MNR Implementation of Public Lands Act and Lakes and Rivers Improvement Act Amendments

In November 1996, the Ministry of Natural Resources announced new regulations to implement the January 1996 Bill 26 amendments to the Public Lands Act and the Lakes and Rivers Improvement Act. These regulations removed permit requirements for a wide range of activities likely to affect shorelines and fish habitat, including mineral exploration, the construction of shoreline structures like docks and boathouses, dredging, and the removal of aquatic plants.[19]

Reductions in the Funding and Mandates of Conservation Authorities

Conservation Authorities had been major actors with respect to habitat protection and restoration. Provincial capital and operating support to the Authorities declined by approximately 70% between 1995 and 1997. In addition, the January 1996 amendments to the Conservation Authorities Act limited the mandate of the Authorities, and facilitated their dissolution and the sale of their lands. The use of provincial funds by Authorities was limited to flood control activities and the payment of property taxes.[20]

A survey of Conservation Authorities conducted by the Federation of Ontario Naturalists conducted in late 1996 indicated that they had typically lost between 20% and 50% of their staff as a result of the reductions in provincial support.[21]

Conclusions

The development of the Lakewide Management Plans (LaMPs) for the Great Lakes was one of the key elements of the 1987 Protocol to the Great Lakes Water Quality Agreement. The LaMPs are intended to integrate many of the restorative goals of the Agreement. However, progress on the development of the LaMPs has been slow. No action has been taken on the Lake Huron LaMP, the Lake Erie stage 1 LaMP is still under development, the Lake Superior Stage 2 LaMP has yet to be adopted by the governments and the Lake Ontario Stage 2 LaMP is to be released in 1999.

Little progress has been made by the federal government on actions to address critical LaMP pollutants, and habitat restoration efforts have been affected by the reductions in the Department of Fisheries and Oceans Great Lakes Research Program. Environment Canada has taken steps to support some key programs abandoned by the province and other departments, including the position of the Lake Ontario LaMP Coordinator and the Department of Fisheries and Oceans Environmental Toxicology Program. The Department of Fisheries and Oceans is restoring some capacity in the area of habitat protection in response to the Ministry of Natural Resource's withdrawal from the enforcement of the Fisheries Act.

At the provincial level, the Ontario government has undertaken a number of actions that seem likely to undermine LaMP goals. These have included the layoff of the Lake Ontario LaMP coordinator. In addition, the removal of a ban on new municipal waste incinerators, proposals to weaken controls on the burning of waste as 'waste derived fuel' and industrial water pollution, proposals to introduce competition into the electricity market in the absence of adequate environmental standards, and the implementation of Ontario Hydro's Nuclear Asset Optimization Plan all seem likely to result in increases of critical pollutants, such as ***dioxins*** *and* ***furans****, and* ***mercury****.*

Similarly, efforts to protect critical fish and wildlife habitat see likely to be undermined by the Ministry of Natural Resource's disbandment of its Great Lakes Branch, reductions in the budgets of its Great Lakes Management Units of more than 70%, and withdrawal from the enforcement of the habitat protection provisions of the federal Fisheries Act. Changes to the land use planning process weakening the protection of wetlands and other forms of habitat, and reductions in mandates and budgets of conservation authorities are also negatively affecting LaMP goals.

Habitat Conservation and Protected Areas

COA Commitments:

3.2.1 Implement the Great Lakes Wetlands Conservation Action Plan in 1994 to protect coastal and basin wetlands.

3.2.2 Apply the principles of the Federal Policy for the Management of Fish Habitat with a goal of net gain in productive capacity of fish habitat basinwide.

3.2.3 Secure a network of protected areas representative of terrestrial and aquatic natural areas in the Great Lakes Basin by 1999.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[22]

3.2.1 Implementation of Great Lakes Wetlands Conservation Action Plan

Implementation of the GLWCAP is under way. Progress has been made in protecting and communicating the value of wetlands. More than 3 000 hectares at 14 wetlands have been secured, with the Eastern Habitat Joint Venture of the North American Waterfowl Management Plan a major partner. The first GLWCAP progress report has been completed. Hectares secured have increased from 811 in 1995 to 3031 in 1997.

In 1995, under the *Planning Act*, Ontario issued a Comprehensive Set of Policy Statements (CSPS). The CSPS on wetlands protected provincially significant wetlands through the municipal land use planning process. In 1997, during planning reform, Ontario issued a Provincial Policy Statement (PPS) to replace the CSPS. The wetlands Statement, therefore, now applies to a smaller region in Ontario and there is no specific requirement for impact studies for proposed developments in or adjacent to wetlands. However, development proponents must demonstrate no negative impact on natural features or ecological functions for which an area was identified.

MNR and Wildlife Habitat Canada announced the establishment of the Wetland Habitat Fund to assist private landowners to restore wetlands on their properties. As well, a number of communication initiatives have been undertaken to increase public awareness and commitment to protecting wetlands.

Commentary and Discussion

COA Commitment 3.2.1

Both levels of government have undertaken actions likely to reduce the protection of wetlands in the Great Lakes Basin.

Federal

*As noted under **3.1.1,** the reductions to the Department of Fisheries and Oceans activities in the Great Lakes Basin included cuts to the fish habitat research program.*

Provincial

Reduced Wetlands Protection in Land Use Planning

*As noted under **3.1.1,** major amendments were made to the Planning Act through the enactment of Bill 20, the Land Use Planning and Protection Act, 1996 in March 1996. These changes were largely seen to weaken environmental protection requirements.[23] In particular, as is acknowledged in the governments' Statement of Progress, the Provincial Policy Statement regarding wetlands was amended to apply to a smaller area of the province, and to remove requirements for impact studies of proposed developments in or adjacent to wetlands.[24]*

*As is described in detail under **3.2.2,** the Ministry of Natural Resource's withdrawal from the enforcement of the habitat protection provisions of the federal Fisheries Act in Ontario may also have a negative impact on the protection of wetlands.*

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[25]

3.2.2 Fish Habitat Protection

The governments state that Fish habitat was addressed in the Provincial Policy Statement issued by the Government of Ontario under the revised *Planning Act* in 1996. Implementation guidelines and manuals have been prepared to ensure that the principles of the Federal Policy are met. Recently, the provincial government withdrew from administering Section 35 requirements of the *Fisheries Act* that relate to the harmful alteration, disruption, or destruction of fish habitat. In future, the Department of Fisheries and Oceans Canada (DFO) alone will assess developments to determine their potential to impact fish habitat.

Federal Policy for the Management of Fish Habitat

A number of initiatives are under way to implement the Federal Policy. These include:

- DFO and MNR prepared a software package, Guide to Guidelines, that links guidelines for stormwater management, river crossings, and sediment control plans to activities that may have an adverse impact on fish habitat. They also prepared factsheets on the impact of road maintenance on fish habitat (with the Good Roads Association), simple methods for determining thermal stability and solar input to streams and rapid assessment techniques for estimating salmonine populations.
- DFO completed the development of a prototype software system, Defensible Methods that assesses the impact of proposed developments on nearshore fish habitat. This work was conducted in partnership with the private sector and MNR. The software has already been pilot-tested on a number of development projects on Lake Ontario shores.
- DFO completed a set of three reports that document by life stage (spawning, nursery and adult) the habitat requirements of all fishes found in the Great Lakes.
- DFO developed a framework for quantification of net gains and losses of productivity of fish habitats.
- DFO and MNR converted the nearshore habitat inventory for Severn Sound into a GIS-based database. The data will be used to develop a Fish Habitat Management Plan.
- DFO, MNR and Long Point Conservation Authority staff completed a remote sensing inventory and atlas of fish habitats in the Long Point region of Lake Erie.
- The Ontario Parks Legacy 2000 Program, a partnership between MNR and the Natural Conservancy of Canada, has acquired 887 hectares of Wainfleet Bog for preservation and protection, a significant Carolinian wetland in the Niagara area. This acquisition also contributes to Target 3.3.1.

Source: *COA 2nd REPORT / Objective 3: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Commentary and Discussion

COA Commitment 3.2.2

Ministry of Natural Resources Withdrawal from the Enforcement of the Habitat Protection Provisions of the Fisheries Act

The application of the federal Policy for the Management of Fish Habitat under the Fisheries Act, have been heavily affected by the Ministry of Natural Resources September 1997 withdrawal from the enforcement of the habitat protection provisions of the Act.

On September 19, 1997, the Ministry of Natural Resources announced that it was withdrawing from a 1989 agreement with the federal Department of Fisheries and Oceans to enforce the habitat protection provisions of the federal Fisheries Act. The Ministry stated that it would take further no action to enforce the Act in Ontario.[26]

The Fisheries Act contains strong provisions related to the protection of fish habitat, such as wetlands, streams and shorelines. These include a prohibition on the alteration or destruction of fish habitat without the permission of the Minister of Fisheries and Oceans.[27] *Over the years, the Ministry of Natural Resources has undertaken numerous prosecutions under the Act.*[28]

The Ministry of Natural Resource's action was a result of a dispute with the federal government over the delegation of the power to authorize the alteration or destruction of

fish habitat to the provinces. The provinces have sought the unconditional delegation of this power through amendments to the Fisheries Act. Ontario has also been seeking financial compensation for its activities related to the habitat protection provisions of the Act.

The federal government has stated that it is unwilling to proceed with unconditional delegation. Amendments to the Fisheries Act introduced into Parliament in October 1996 would have permitted the delegation decision-making authority regarding fish habitat to the provinces. However, the delegation would have been subject to conditions regarding compliance with federal policies regarding habitat protection and requirements that the provinces report to the federal government and the public regarding their activities with respect to the administration and enforcement of the habitat protection provisions of the Act.[29]

When it withdrew from the enforcement of the Act in September 1997, the Ministry of Natural Resources indicated that it would resume its enforcement activities if the federal government committed to the delegation of decision-making authority related to habitat alteration and destruction, and to provide financial resources to support the Ministry's activities in relation to the Act.[30]

The Ministry of Natural Resource's action created a situation in which no one was responsible for the enforcement of the habitat protection provisions of the Fisheries Act in Ontario. This was a particularly serious situation given that the provincial government had significantly weakened or even repealed the requirements of provincial legislation, regulations and policies related to the protection of fish habitat.

In addition, Environment Canada and the U.S.EPA's "State of the Great Lakes 1997" report had concluded that aquatic habitat and wetlands were in "poor" condition in the Great Lakes basin.[31] *In the words of the House of Commons Standing Committee on the Environment and Sustainable Development, the Ministry of Natural Resource's action created a "huge hole in the Department's (Fisheries and Oceans) fish habitat program."*[32]

As a temporary measure, the federal Department of Fisheries and Oceans brought in four federal Fisheries Officers from the Maritimes to enforce the habitat protection provisions of the Act in Ontario. These officials were to deal with the work previously handled by 215 provincial enforcement officers.[33] *In May 1998, two of the four federal Fisheries Officers assigned to Ontario were withdrawn to their home regions.*[34] *At one point in over the summer of 1998, only one official, the Director of Conservation and Protection for the Department's Central and Arctic Region, based in Yellowknife, was available to enforce the habitat protection provisions of the Fisheries Act in Ontario.*[35]

Between September and November 1988, eight Fisheries Officers and one Supervisor were reassigned from a number of regions to Ontario to carry out enforcement functions with respect to the habitat protection provisions of the Fisheries Act. These arrangements are designed to remain in place until March 2000.[36] *In addition, in April 1998 the Department announced its intention to restore the positions of some (25%) of the*

habitat biologists in Ontario cut through the February 1995 budget. These are to support the administration and enforcement of the habitat provisions of the Act. [37]

A report tabled by the House of Commons Standing Committee on Fisheries and Oceans in November 1998 encouraged the resolution of the dispute over habitat protection, and called for a structure to provide the Department of Fisheries and Oceans with the resources to adequately and efficiently complete the tasks associated with habitat management.[38]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[39]

3.2.3 Protected Areas Network

The governments state that significant progress towards meeting this target has occurred, with almost half a million additional hectares protected since 1995. The Great Lakes network continues to expand as priorities are brought forward and land is secured. Highlights include:

- Approximately 500 protected areas cover 1 200 000 hectares in the basin. These include national and provincial parks, conservation areas and sanctuaries.
- Since 1995, Ontario has protected almost half a million hectares in provincial parks and conservation reserves at 19 sites within the basin.
- Parks Canada has acquired a total of 1 200 hectares in two National Parks (Bruce Peninsula and the St. Lawrence Islands) and two Heritage Canals (Rideau Canal and Trent-Severn Waterway).
- In 1997, the Boundary Waters/Voyageur Waterway was designated as part of the Canadian Heritage Rivers System. Starting at the mouth of the Pigeon River, more than one-third of its 250 km route is in the Lake Superior basin.
- The critical habitat database and Geographic Information System (GIS) mapping by the Lake Superior Binational Program Habitat Committee will be used to support protection and restoration activities around the basin.
- Work is under way to establish a binational "cluster biosphere" designation under UNESCO's Man and the Biosphere Program for the Lake Superior basin. Input from community groups is being sought for such a designation; see related discussion of Lake Superior special designation in Objective 2. Directories of Canadian and U.S. core protected areas have been compiled. In addition, Parks Canada has undertaken to identify representative marine areas as candidates for National Marine Conservation Areas in all the Great Lakes. A feasibility study has also been initiated for Lake Superior to determine the level of support for the establishment of a National Marine Conservation Area.
- Parks Canada is working with local land trusts around national parks and heritage canals to encourage compatible land use in these areas. Multi-partner studies and workshops with communities have been held around the Georgian Bay Islands, the St. Lawrence Islands, the Bruce Peninsula and Pukaskwa Parks. In addition, a conference was supported to promote the Biosphere Program in the Niagara

Escarpment and other areas.

Measures taken to increase incentives for conservation include:

- In 1997, MNR announced the establishment of the Conservation Land Tax Incentive Program (CLTIP), effective in 1998. This will replace the property tax rebate program which has been in effect since the late 1980s. CLTIP provides tax relief to land owners to promote the protection of significant natural heritage lands, which include provincially significant wetlands, provincially significant areas of natural and scientific interest, the habitats of endangered species, designated natural areas in the Niagara Escarpment Plan and other conservation lands that are owned by charitable organizations.
- The *Ontario Conservation Lands Act*, which provides for conservation covenants or easements, was amended to allow landowners and a broad range of government agencies, Conservation Authorities and charities to enter into agreements for the purposes of conservation and restoration or enhancement of land for wildlife.
- In 1995, the federal *Income Tax Act* was amended to promote the donation of ecologically sensitive lands, covenants, easements and servitudes for conservation purposes. Donations may be made to either a Canadian municipality or a registered charity whose primary purpose is the conservation of Canada's environmental heritage. Thirteen sites in Ontario have been certified and have donated either land or easements that cover more than 892 hectares.
- In 1997, MNR introduced the Managed Forest Tax Incentive Program, which reduced the minimum size from 25 to 10 acres. These changes encourage landowners to be good stewards of private forest land and thus contribute to overall ecosystem diversity and integrity. [40]

Commentary and Discussion

COA Commitment 3.2.3

Progress on Protected Areas

The Conservation Land Tax program, Conservation Easements amendments to the Conservation Lands Act, and the 1995 amendments to the federal Income Tax Act will have positive impacts on the protection of ecologically significant areas on private lands.

However, independent evaluations of the potential for progress on protecting ecological areas are less optimistic than those of the governments. The following Tables, for example, are drawn from the annual reports of the World Wildlife Fund's Endangered Spaces Campaign.

Ratings for Terrestrial Ecosystem Protection

Jurisdiction	1995-96	1996-97	1997-98

Federal Government (All Canada)	C	A-	D
Ontario	F	C-	D+

Sources: World Wildlife Fund *Endangered Spaces Progress Report* 1996-97 and 1997-98

Ratings for Marine Ecosystem Protection

Jurisdiction	**1995-96**	**1996-97**	**1997-98**
Federal Government (All Canada)	C	D	D+
Great Lakes Region	D	D	D

Sources: World Wildlife Fund *Endangered Spaces Progress Report* 1996-97 and 1997-98

The Endangered Spaces Progress Reports highlight the following factors for the lack of progress in the establishment of protected areas in the Great Lakes Region:[41]

- *an inadequate ecological planning framework;*
- *a lack of strategy for the completion of a system of freshwater protected areas;*
- *the annual rate of progress in new site designation is very low; and*
- *there has been no improvement in protection standards for existing protected areas.*

Provincial Actions affecting Protected Areas

In addition, a number of other provincial initiatives may have a negative impact on the creation of protected areas in the future, and on the maintenance of the integrity of existing areas. These include the following.

Lands for Life

The 'Lands for Life' process was initiated in February 1997. The process is intended to allocate uses for public lands in the central region of Ontario, an area of 46 million hectares. Under the program, the Ministry of Natural Resources has divided central Ontario into three large planning areas (Boreal West, Boreal East, and Great Lakes-St Lawrence). Regional round tables, one in each planning area, are to draft recommendations on how land and resources in their region should be allocated. The members of the Round Tables, who had to be residents of their area, were appointed by the Minister of Natural Resources. The three major land-uses that have been developed in the process are: natural heritage protection, which includes parks and protected areas; remote tourism areas; and general industrial use, including forestry and mining. The Round Tables were originally scheduled to make their recommendations to the Minister of Natural Resources by March 1998.

Serious concerns have been raised about several aspects of the 'Lands for Life' process. These have included the short time lines for such a massive planning undertaking, the fairness of the public consultation process, and the quality of the information made available to the public. Specific concerns have included the lack of

representation from members of the public from outside of the planning areas themselves, the lack of input from Southern Ontario, the weighting of the Round Tables' membership in favour of resource industries, and the lack of specific guidelines or policies on how the Round Tables are to arrive at their conclusions.[42]

In response to these concerns, the Ministry of Natural Resources increased consultation in Southern Ontario, issued some guidelines to the Round Tables, and extended the time line for the Round Tables to draft their recommendations until June 1998. However, in her April 1998 Annual Report to the Legislature, the Environmental Commissioner noted that the MNR's previous land use planning process for this region took more than 10 years to complete. The Commissioner also expressed concerns that the Round Tables' tight schedule did not allow MNR to enough time to compile detailed analyses of potential natural heritage areas, or to identify existing old growth forests.[43]

The Round Table Reports reports were delivered to the MNR in October 1998. The reports recommended only a 1.6% increase in the amount of land classified as protected areas in the lands covered by the lands for life process.[44] *The designation of lands for industrial use may make the establishment of new protected areas on public lands extremely difficult in the future. The Round Tables have recommended that 71,270 hectres of Great Lakes Heritage Coastlines be protected by regulations under the Public Lands Act. However, the level of protection this would provide is unclear,* [45] *and no coastline areas on the lower lakes were recommended for protection in this category.*

Ontario Parks

Ontario Parks, the branch of the MNR responsible for the management of Ontario's provincial parks released its first business plan in June 1996. The plan reflects the amendments to the Provincial Parks Act to permit revenue retention, corporate sponsorships and the delegation of the operation of provincial parks to "any person" that were enacted in June 1996 though Bill 36, The Ministry of Natural Resources Statute Law Amendment Act.

There is a strong emphasis on increased revenue generation. This is to compensate for the $9 million reduction the operating budget and $3.3 in capital budget for the provincial parks system to be in place by the 1996/97 fiscal year.[46] *The business plan also indicated that Ontario Parks would seek corporate sponsorships through sponsorship agreements.*[47] *The focus on revenue generation has prompted expressions of concern that it may compromise the natural heritage protection mandate of the provincial parks system.*[48] *The Ministry's 1998-99 Business Plan also emphasizes increasing the level of use of provincial parks.*[49]

Disposition and Sale of Crown Lands

Over the past three years, the MNR has accelerated its efforts to sell public lands

that are "no longer needed" and are not "ecologically significant." In her April 1998 Annual Report, the Environmental Commissioner for Ontario reported that in 1995-96 the Ministry sold 151 properties with a market value of more than $4 million. The MNR's current target for the sale of Crown land is currently approximately $5 million/yr.[50]

In her report, the Environmental Commissioner expressed concern the proposed Bill 119[51] *amendments to the Public Lands Act which would remove limits on the maximum size and minimum price of parcels of public land for sale. Other proposed changes to the Act would delegate the power to authorize the sale of public lands from the Lieutenant-Governor in Council to the Minister of Natural Resources.*[52] *The Commissioner also noted that the EBR public notice and comment requirements do not apply to the sale of public lands.*[53]

The sale of public lands will make the establishment of protected areas in the future more difficult, as the lands would have to be bought back, at market rates, in order to be incorporated into such areas.

Conclusions

There has been some progress in the area of habitat conservation by the federal and provincial governments with respect to the taxation of conservation lands, and the establishment of conservation easements. However, there are also serious problems, particularly at the provincial level.

The protection of fish habitat has been undermined by the Ministry of Natural Resource's withdrawal from the enforcement of the habitat protection provisions of the Fisheries Act, changes to the land-use planning process that weaken protection of wetlands and other important forms of fish and wildlife habitat.

Little progress has been made in the establishment of new protected areas by either level of government. In addition, the possibility of the establishment of new protected areas in the future, and the integrity of existing parks, is threatened by the 'Lands for Life' process and sale of Crown lands. The integrity of existing provincial protected areas is also under stress due to pressures for increased use and revenue generation.

Fish and Wildlife Conservation

COA Commitments:

3.3.1 Have biodiversity policies in place by 1996 designed to protect the function and structure of diverse, self-sustaining biological communities.

3.3.2 Focus monitoring programs to measure success in achieving healthy diverse ecosystems.

3.3.3 Develop and implement by 1997, joint federal and provincial action plans to control the introduction of undesirable species and mitigate the negative impacts of non-indigenous nuisance species, such as zebra mussels and ruffe. The federal government will continue the control program on sea lamprey.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[54]

3.3.1 Biodiversity Policies

Agreement on the Canadian Biodiversity Strategy by the Canadian Council of Ministers of the Environment is cited in the joint federal-provincial response in 1997[55] as a measure toward fulfilment of this obligation: " This target was achieved through the promulgation of the Canadian Biodiversity Strategy: Canada's Response to the Convention on Biological Diversity. Continuing activity under many programs contributes to the conservation of biodiversity."

Commentary and Discussion

COA Commitment 3.3.1

Real progress by the two governments in this area beyond the adoption of the Canadian Biodiversity Strategy in 1997 appears to be very limited.

Legislation to Protect Species at Risk

Federal

The Canadian Endangered Species Protection Act

Bill C-65, the proposed Canada Endangered Species Protection Act died on the

Order Paper with the call of the June 1997 federal election. As of October 1998, the Bill had not been reintroduced. The Bill had been the subject of widespread criticism that it failed to provide adequate protection for species at risk in Canada.[56]

Provincial

The Fish and Game Conservation Act, 1997

Progress on legislation to protect endangered species has been mixed to poor. The Ontario government enacted The Fish and Wildlife Conservation Act in December 1997. The new statute provides for the protection of non-game species. However, the Act has been characterized as being too weak to ensure adequate enforcement.[57]

Removal of Biodiversity Considerations from Provincial Land-Use Policy Statement.

As part of the March 1996 changes to the Provincial Policy Statement under the Planning Act, the references to the conservation of biological diversity, and to the protection of the habitat of 'vulnerable' species were removed from the province's Natural Heritage Policy Statement.[58]

Other Federal and Provincial Initiatives Negatively Affecting Biodiversity Conservation

Both levels of government have undertaken initiatives likely to undermine efforts to protect the function and structure of diverse, self-sustaining biological communities in the Great Lakes Basin. As outlined under ***3.1*** *and* ***3.2,*** *these include:*

- *the federal Department of Fisheries and Oceans reductions to its Great Lakes Research Program;*
- *changes to the land-use planning process adopted by the province in March 1996 to weaken the protection of wetlands and other ecologically important areas;*
- *the Ministry of Natural Resources's withdrawal from the enforcement of the federal Fisheries Act in September 1997; and*
- *the province's weakening of the mandates and resources of Conservation Authorities.*

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[59]

3.3.2 Monitoring Programs to Measure Success in Achieving Healthy Ecosystems

The Lake Superior Binational Program is developing a monitoring strategy to support its Ecosystem Principles and Objectives, and Indicators and Targets for Lake Superior. In addition, DFO and EC are developing a streamlined long-term monitoring plan for Lake Ontario. A similar monitoring plan is being developed for Lake Erie.

Current Great Lakes Monitoring Programs

- Measuring contaminants in fish, plankton and benthos;
- Measuring phytoplankton, zooplankton and benthic productivity in Lakes Ontario and Erie;
- Monitoring tumours in the lower lakes;
- Assessing reproductive success in lake trout;
- Providing information for the Long Range Transport of Air Pollutants program;
- Measuring trends in contaminant levels in the food web;
- Assessing basin-wide populations of waterbirds;
- Measuring status of selected species of fish.

Source: *COA 2nd REPORT / Objective 3: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

MNR continues to monitor production and other parameters in fish stocks in each Great Lake, and to develop management actions that include setting annual quotas for the commercial fishery.

Biodiversity Projects

- The Canadian Botanical Conservation Network (CBCN) has assisted botanical gardens and arboreta to deliver the Canadian Biodiversity Strategy and to carry out conservation programs.
- Biodiversity monitoring plots established west of Long Point and Egbert, (south of Barrie); a Great Lakes Fact Sheet has been produced; the Niagara River Corridor was designated an Important Bird Area; and a local committee is currently developing a conservation plan for the area.
- Monitoring programs in Lake Huron have shown signs of recovery in specific lake trout stocks, indicating that past efforts to rehabilitate relic stocks have been successful. In Lake Superior, assessments are under way to measure the success of walleye and coaster brook trout rehabilitation in Nipigon Bay, and the success of habitat restoration projects in Thunder Bay and Nipigon Bay.
- Ontario has confirmed its support for the completion of an ecologically representative protected area system by 2000, the goal of the Endangered Species campaign launched by the World Wildlife Fund in 1989.
- In November 1996, Canada designated three monarch butterfly reserves. All are in the Great Lakes basin at Point Pelee National Park, Long Point National Wildlife Area and Prince Edward Point National Wildlife Area, which are critical migration concentration points. This implements a Canada-Mexico agreement to establish an international network of reserves to protect habitat critical to the monarch's migration and overwintering.

Source: *COA 2nd REPORT / Objective 3: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Highlights of monitoring activities include:

- Several contaminant monitoring programs have reported a reduction in the rate of decline for numerous compounds since the mid-to-late 1980s.

- The Wildlife Watchers Program, a volunteer program, contributes to tracking changes in populations and identifying species at risk.

- By monitoring pulp and paper mill effluents, EC has noted partial recovery of affected fish populations with mill process changes at some study sites. Recovery is inconsistent, however, and some impacts remain. While there has been substantial progress in attempts to identify the compounds associated with biological responses, other compounds will have to be identified to explain all of the responses.

- DFO will report on its long-term studies of contaminant trends and their effects on fish of the Great Lakes. Results will be included in a national summary document available in winter 1997. One chapter is devoted to the Great Lakes.

- DFO and EC are involved in cooperative programs to: (i) address the issue of toxaphene in the Great Lakes and how it is related to changes in recently measured ecosystem levels and altered dynamics within the biological communities; and (ii) model the potential changes to contaminant levels in Lake Erie biota as a result of increasing populations of exotic species such as zebra mussels and gobys.

- The first assessment of primary productivity of Lake Ontario in 25 years was published in 1996. The information will be used to help establish the productive capacity for the offshore fishery. A companion paper reported that trends in phosphorus deficiency have remained relatively unchanged since the early 1980s.

- DFO published two reports that describe the physical, nutrient, and lower trophic level biology of Lake Erie. Past and present conditions were compared to assess the impact of zebra mussels and changing phosphorus concentrations on Lake Erie.

- DFO, EC and partners from Universities of Toronto, Windsor, and Buffalo presented the results of several years of phytoplankton, zooplankton and benthic production studies in Lake Erie at a special session of the International Association for Great Lakes Research. The Symposium will be published as a book that describes the state of the Lake Erie ecosystem.

- DFO and MNR published the results of water quality and biological monitoring in the Bay of Quinte. The long-term data are being used to assess the impact of zebra mussels on the health of the Bay of Quinte food web. DFO and EC are developing a phosphorus model for the Bay of Quinte to establish phosphorus targets and to assist in the future development of phosphorus load allocation.

Fish and wildlife monitoring programs in the Great Lakes have detected the effects of endocrine disrupting compounds (EDC) for several years. Reporting of the presence of endocrine disrupters is increasing around the world. In 1996, the issue was summarized in a book co-authored by Dr. Theo Colborn, "Our Stolen Future". The incidence of reproductive failure and developmental abnormalities in wildlife has decreased as the degree of contamination of the foodchain has declined, but some species, including terns, bald eagles and snapping turtles, continue to have problems that appear to be caused by contaminants. The use of more sensitive measures, such as immune function, suggests that current levels of contamination at some sites are affecting fish-eating birds.

Endocrine Disruptor Research by Environment Canada

° Development of an exposure protocol to determine the presence of endocrine disrupters in complex mixtures;
° Screening test development and development of in-house capabilities to measure and screen steroid hormones;
° Examination of new discharge areas for evidence of additional, unforeseen problems;
° Studying the effects of organochlorines or other environmental contaminants on embryo development, plasma hormone levels and secondary sexual characteristics in snapping turtles;
° Studying the effects of chlorinated hydrocarbons and pesticides used in Areas of Concern (AOCs) and in apple orchards on reproduction, hormone levels, testicular histology and immune function in tree swallows;
° Studying the effects of PCBs and other contaminants on reproductive success, gonadal morphology and plasma hormone levels in common terns nesting along the St. Lawrence River;
° Studying the effects of PCBs and other contaminants on immune function in herring gulls and Caspian terns.

Source: *COA 2nd REPORT / Objective 3: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Commentary and Discussion

COA Commitment 3.3.2

Environmental research and monitoring programs have been heavily affected by budgetary reductions over the past three years. The province's weakening environmental science and monitoring capacity has prompted expressions of concern from a number of sources, including the Environmental Commissioner,[60] Provincial Auditor,[61] and the International Joint Commission (IJC). In its 1996 8th Eighth Biennial Report on Great Lakes Water Quality, the Commission noted that by 1997, a reduction of between 47-62% in the number of environmental research projects in the basin.[62]

Specific Great Lakes research programs suffering significant budgetary reductions in Ontario include the following:

Department of Fisheries and Oceans Great Lakes Research Program

The Department reports a reduction in the operating budget for its program of 70% and a reduction in scientific staff of 40% between 1994 and 1997. Environmental toxicology research and some RAP related work has been largely transferred to Environment Canada, while open lake monitoring of primary and secondary production has been terminated.[63]

A report tabled by the House of Commons Standing Committee on Fisheries and Oceans in November 1998 called for increases in the department's funding of science and research on Great Lakes fisheries.[64]

Health Canada Great Lakes Health Effects Program

This program reports a 40% ($20 million to $11-$13 million) reduction in resources since its establishment in 1994.[65] As a result, biomonitoring and community level activities have been reduced, and no new research programs have been initiated.[66]

Ministry of Natural Resources Monitoring Programs

The Ministry of Natural Resources reports a 73% reduction in budget and a 40% reduction in staff to its Great Lakes Management Units. Fish community monitoring and fisheries management are identified as areas heavily affected buy these changes.[67]

In his November 1998 Annual Report to the Legislature, the Provincial Auditor was highly critical of the Ministry's fish and wildlife monitoring programs. The Auditor concluded that:

- *the Ministry had not developed proper effectiveness measures to assess the program's success in achieving the sustained development of the province's fish and wildlife resources;*
- *did not have adequate policies in place for the management of big game species (moose, deer and bear); and*
- *information from the assessment of fish populations and other data were often not available to assist management in managing regeneration, stocking and harvesting.[68]*

Ministry of the Environment Monitoring Programs

Ministry of the Environment Monitoring Programs have also been heavily affected by budgetary reductions. These have included the following:

- *the Ontario Public Service Employees Union (OPSEU) reports a reduction in number of air quality monitoring stations from 55 to 40 between May 1996 and December 1997 and a 45% reduction in technical staff for monitoring since 1992;[69]*
- *a reduction in the number of Water Quality Monitoring Facilities from 700 in 1991 to 200 today. It is has been reported that no facilities remain in operation north of Barrie;[70]*
- *a 53% reduction in groundwater and hydrogeology staff;[71]*
- *a 21% reduction in aquatic, aquatic toxicology and ecosystem science staff;[72]*
- *the disbandment of the Ministry's Marine Service Unit, which provided vessels and staff for sampling water and sediments and obtaining data for geographic information systems; and*
- *a reduction in the number of sites monitoring acid rain deposition from 39 to 16. Ten years of deposition data have yet to be analyzed, and quality assurance procedures have been reduced as a result of budget cuts. This may compromise the completeness and integrity of the data collected. There is evidence of continuing serious impacts of acid rain, and of a need for further action to curb acid rain*

causing emissions.[73]

University Research on the Great Lakes

Great Lakes research at Ontario universities has been greatly impacted by provincial and federal funding reductions. For example, the province withdrew from a 1995 commitment to complete the funding for a Great Lakes environmental research centre at the University of Windsor. $3.6 million is needed to complete the project and is being sought through a University sponsored campaign.[74]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[75]

3.3.3 Alien Species Control

The federal and provincial governments continue to develop control programs in an effort to meet this target. Lake trout restoration in Lake Superior has been declared a success because of efforts to reduce lake trout mortality through sea lamprey control and restrictions on harvest and stocking. A number of other prevention programs are being developed, such as ballast water treatment to prevent accidental introductions, and risk assessment protocols to properly assess the risk of purposeful introductions. In addition, there are several programs in place to control (but not eradicate) invading species already present in the Great Lakes such as the University of Guelph's experimental biological control program for purple loosestrife or the partnership between MNR and the Ontario Federation of Anglers and Hunters to prevent the spread of mussels to inland lakes

Control efforts for non-indigenous species

- Transport Canada has implemented a research and development program that focuses on ballast water as a vector of introduction and has produced educational materials on ballast water and the role of ships in the introduction of undesirable species to the Great Lakes.
- DFO research on exotic species includes: the use of organic acids for treating ballast water and chloramines for treatment of ballast tank slops; surveys of changes to the ecosystems of Lake Erie and Lake Ontario (phosphorus availability and zebra mussel biomass); the distribution of new exotic amphipod species (*Echinogammarus ishnus*); and the impact of zebra mussels in Lake Erie.
- MNR and DFO helped sponsor a Ruffe Symposium held in Ann Arbor in 1997. Voluntary guidelines have been generated by industry for Lake Superior.
- The MNR: participated on a committee to develop a generic risk assessment protocol to evaluate exotic fish introductions; is involved with the Ruffe Control Committee; are helping to support research on biological control of purple loosestrife at the University of Guelph; and is initiating an assessment of the risks associated with the live food fish industry.
- An Invading Species Awareness Program for Ontario.
- Sea lamprey control efforts coordinated by the Great Lakes Fishery Commission include the following initiatives: reducing the use of the pesticide TFM by 25%; development of velocity and inflatable barriers, a larval sea lamprey distribution survey in the St. Marys River; trapping and sterile male release and spot treatments of larvae using Bayer 73;

Source: *COA 2nd REPORT / Objective 1: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

through a boat cleaning program.

Commentary and Discussion

COA Commitment 3.3.3

In its November 1998 report on freshwater fisheries, the House of Commons Standing Committee on Fisheries and Oceans highlighted the problems associated with the introduction of alien species into the Great Lakes, particularly through the exchange of ballast water from ocean-going vessels entering the Lakes. The Committee recommended that a mandatory ballast water exchange program be adopted by the Government of Canada, and that science and research on the effects of such species be increased.[76]

In April 1998 the federal government announced that it would spend $6 million on a lamprey control program in the Great Lakes in fiscal year 1998-99.[77] *In its November 1998 report, the House of Commons Standing Committee recommended that a secure base of not less than $8million per year be provided by the Department of Fisheries and Oceans to the Great Lakes Fisheries Commission for the purposes of lamprey control.*[78]

Some research activities are reported on other alien species, although little wide scale, comprehensive action to control or reduce their impacts is reported. The 1997 State of the Great Lakes report indicates that the ruffe fish has extended its range from Lake Superior to northern Lake Huron and that the round goby fish is expanding its range throughout the Great Lakes over the period 1994 to 1997.[79]

Conclusions

There is some limited progress with respect to biodiversity protection, particularly through the enactment of Ontario's Fish and Wildlife Conservation Act. The federal government has yet to bring forward endangered species legislation to replace the Bill that died on the Order Paper with the June 1997 election call.

At the same time, the province has undertaken a number of initiatives that are likely to undermine the structure and function of diverse, self-sustaining biological communities. These include changes to the land-use planning process to reduce protection for ecologically significant areas, such as wetlands, the province's withdrawal from the enforcement of the habitat protection provisions of the Fisheries Act.

Ecosystem monitoring programs have been heavily affected by budgetary reductions at the federal and provincial levels. Some research continues on alien species, although action to control these species is focussed on the sea lamprey.

Human Health

COA Commitments:

3.4.1 Protect and promote human health through education, long term monitoring and stewardship. By 2000...
i) ...70% of the population will be knowledgeable about five key environmental health issues and how to reduce their risk.
ii) ...achieve for the general population a 30% reduction in human health risks associated with exposure to environmental contaminants.
iii) ...80% of the population will have significantly increased their understanding and taken action in order to protect their health through involvement in environmental stewardship.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[80]

3.4.1. Environmental Health Issues Education

A wide variety of initiatives have been undertaken by Health Canada in response to this target. These include:

° developing human health indicators, supporting community education projects in rural and urban areas, and raising knowledge about environmental health through publications, conferences and media coverage.

° Human health considerations, particularly recreational water quality, fish and drinking water consumption, are being integrated into the Lakes Superior and Erie LaMPs. Health Canada is leading the preparation of the human health section of the Stage 1 report for the Lake Erie LaMP, scheduled for completion in fall 1998. A paper that assesses the bacterial levels at Lake Erie beaches has been completed for the Lake Erie LaMP. For the Lake Superior LaMP, Health Canada is collaborating with the United States Environmental Protection Agency (U.S. EPA) to update the status of human health indicators and to summarize epidemiological studies associated with environmental contamination around the Great Lakes basin.

° As part of the effort to increase basin residents' knowledge of environmental health issues, Health Canada's Great Lakes Health Effects Program published three summaries:
    ° Sport Fish Eating and Your Health: A Summary of The Great Lakes Anglers Exposure Study.
    ° Great Lakes Water and Your Health: A Summary of "Great Lakes Basin Cancer Risk Assessment: A case-control Study of Cancers of the Bladder,

Colon and Rectum."
° Outdoor Air and Your Health: A Summary of Research Related to the Health Effects of Outdoor Air Pollution in the Great Lakes Basin.

° A State of Knowledge Report on Environmental Contaminants and Human Health in the Great Lakes Basin has been completed, reviewed and revised. The final production of this report, along with a public summary report is in progress and scheduled to be published in the fall of 1997.

° Health Canada co-hosted the Great Lakes / St. Lawrence Health Conference 97 in Montreal in partnership with the United States Agency for Toxic Substances and Disease Registry and the Ministère de la Santé et des Services Sociaux du Québec. Three hundred participants from Canada, the United States and several other countries met to review the findings of recent studies of the Great Lakes and St. Lawrence River basins and to discuss their significance for public health. Media coverage from this conference ranged from 470,000 households for newspaper to 300,000 households for radio and television.

° Health Canada is developing indicators of human health in order to monitor changes in health risks associated with exposure to environmental contaminants. These indicators pertain to drinking water, recreational water, air, radionuclides, fish contaminant levels and contaminant levels in human breast milk. Health Canada is also working with several agencies to develop faster methods for testing the bacteria E.coli in recreational waters. Faster methods will lead to earlier beach postings in bathing areas, thus reducing health risks.

° To help basin residents increase their understanding and to protect their health, Health Canada's Great Lakes Health Effects Program has sponsored 21 community education projects in rural and urban areas as part of its community animation support around environmental health issues. In addition, a pilot survey of Ontario residents has been completed in an effort to develop potential indicators of stewardship in the population.[81]

Commentary and Discussion

COA Commitment 3.4.1

Reductions in the Great Lakes Health Effects Program

*As noted under **1.7.1,** the budget of the Great Lakes Health Effects Program has been reduced from $20 million to $11-13 million since its establishment in 1994.[82] The Department states that it has reduced the extent of most of its activities, and is reviewing its program delivery on an ongoing basis.[83] In particular, while existing projects have been maintained, there have been no new initiatives. Biomonitoring and community level activities have been have been especially affected by these changes.[84] Health Canada has compiled, but has yet to release to the public, health data for each of the AOCs.*

i & iii) Education

The principal provincial environmental education program was terminated in April 1993, prior to the signing of the current COA.

A range of projects are reported by Health Canada in this area. However, the Statement of Progress does not provide an indication of progress towards achieving the specific educational objectives of:

- *70% of the population will be knowledgeable about five key environmental health issues and how to reduce their risk; and*
- *80% of the population will have significantly increased their understanding and taken action in order to protect their health through involvement in environmental stewardship.*

Survey research would be required to verify the impact of public education activities related to these objectives. However, no such research appears to have been completed, perhaps due to the impact of the reductions to the Health Effects Program.

ii) 30% Reduction in Human Health Risks

No specific actions are reported to reduce human health risks associated with exposure to environmental contamination. The failure of the federal government to take action on priority pollutants identified as "toxic" for the purposes of the Canadian Environmental Protection Act are outlined under ***2.1.*** *and* ***3.1.*** *For its part, the province has undertaken many initiatives that seem likely to increase human health risks associated with exposure to environmental contamination. These are also outlined under* ***2.1.*** *and* ***3.1.***

Conclusions

Despite major reductions to the budget of the Great Lakes Health Effects Program, Health Canada has undertaken a number of research and outreach activities on human health impacts of environmental contaminants. Provincial environmental education activities were terminated in 1993.

However, neither level of government has taken direct action to actually reduce the risk of exposure to environmental contaminants as per their COA commitment. At the same time, the province has undertaken many initiatives likely to increase exposure to environmental contaminants. These include the removal of a ban on new municipal waste incinerators, proposals to weaken controls on burning waste as 'fuel,' weaken controls on the management of hazardous wastes, and industrial water pollution, and to introduce competition into the electricity sector without adequate environmental safeguards.

Climate Change

COA Commitments:

3.5.1: Identify the most likely impacts of climate variability and change on the Great Lakes Basin Ecosystem (for example, on human or ecosystem health or water and land use management) and develop and promote adaptive response strategies to reduce vulnerability.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitments[85]

A number of activities are being undertaken by EC and MNR to identify likely impacts of climate change. These include: research, development of database programs and tracking systems, assessments and inventories. A Toronto-Niagara Region study has been initiated to assess the likely impacts of climate change on urban areas. Further details include:

° Modelling of Watershed Responses to Changing Climate was carried out to derive the effects of rainfall variations on rural and urban runoff of nutrients such as phosphorus and nitrogen. These inputs provided the basis for an examination of social and economic adaptation strategies for coping with climate change. A preliminary assessment of climate change impacts on the Bay of Quinte by the Canadian Climate Centre suggests that a reduction in the overall runoff to the Bay of Quinte by 12 per cent, a decline in soil moisture, and an increase in phosphorus concentrations in runoff would change the trophic status of streams and lakes.

° Climate Change And Great Lakes Basin Wetlands: Background Research For A GL2000 Project is a report prepared by EC. This report inventories the wetland modelling literature relevant to the Great Lakes basin and identifies databases of candidate sites for the proposed GL2000 wetland vulnerability study. Phase I of the Lake Climatology Investigation for Lake Erie and Lake Ontario was completed. Long-term temperature data was collated from shipboard and remote observations and resulted in derivations of lake-wide and basin-wide estimates of: (a) surface temperature; (b) one-dimensional vertical temperature profiles; and, (c) heat storage.

° The National Water Research Institute Satellite Tracking Station was fully readied and calibrated. Preliminary methodologies for data management and interpretation were established and tested. An MNR-U.S. sponsored symposium on Adapting to the Impacts of Climate Change and Variability in the Great Lakes-St. Lawrence Basin focused on research and on the potential impacts on water use and management, ecosystem health, human health, land use and management.

° In order to effectively analyze the possible role(s) of ultraviolet radiation in the ascendancy of blue-green algae in Lake Erie, it is essential to obtain the spectral bio-optical response functions of aquatic organisms, as well as the spectral

bio-chemical response functions of the water column to ultraviolet radiation. A complex laboratory chamber system was constructed to obtain the spectral optical / biochemical response functions of aquatic organisms in response to UV radiation.

- A GIS and database program now summarizes groundwater data for the Grand River basin. Collaborators include Halton Region, the Grand River Conservation Authority, EC and McMaster University. A literature review of climate change impacts on groundwater was completed and a preliminary characterization of groundwater conditions was carried out within the mapped area.

- EC, MNR and U.S. partners held a binational symposium on Adapting to the Impacts of Climate Change and Variability in the Great Lakes-St. Lawrence Basin in May 1997. This conference marked the completion of Phase 1 of the Binational Great Lakes-St. Lawrence Basin Project. Symposium and project reports are currently in preparation.

- EC completed and published a study on Adapting to the Impacts of Climate Change and Variability in the Grand River Basin: Water Supply and Demand Issues.

- EC, together with provincial partners, initiated the Toronto-Niagara Region Study on Atmospheric Change, an investigation of the individual and cumulative causes and effects of air issues (climate change, ground-level ozone, stratospheric ozone depletion, suspended particulate matter, hazardous air pollutants and acidic deposition) in the region.[86]

Commentary and Discussion

COA Commitment 3.5.1

As indicated by this COA commitment, the focus of climate change response activity is largely adaptation and mitigation to the phenomenon rather than attempted prevention of climate change itself. A number of research projects are under way in this area.

Although not a specific COA, commitment, it is important to note that, actions to reduce greenhouse gas emissions have been very limited to date. Canada has now signed the Kyoto Protocol and is committed to a reduction of 6% in its greenhouse gas emissions between the years 2008-2012.

Canada has yet to ratify the Kyoto Protocol. The National Climate Change Process will not complete a plan to meet Canada's Kyoto commitment until at least November 1999. If ratified by federal, provincial and territorial environment ministers, the plan would set Canada on a course to achieve GHG emission stabilization followed by a reduction of 6% between the years 2008 and 2012. Canada's greenhouse gas emissions have generally been on an upward trend since Canada began to make commitments in the area in the early 1990s.

If adaptation is to be the chosen focus of climate change response, then more could be demonstrated to prepare for the impacts of climate change in Ontario. This could include:

- *in preparation for likely worsening smog and air quality conditions, Canada and Ontario could be moving much more swiftly on smog reduction efforts, vehicle emission testing programs, reducing the sulphur content of fuels, fuel switching and renewable energy advancement;*

- *in preparation for the potential of Great Lakes water level fluctuations, Canada and Ontario could be safeguarding much more land in floodplains, wetlands and conservation areas. The International Joint Commission noted that dams and other flow control devices in the Great Lakes Basin were not receiving the attention to safety that they deserve.[87] Specifically, it noted that "government oversight" was insufficient to ensure safety and that the IJC did not have "confidence in all existing safety programs." It also noted that Ontario has no government oversight of its facilities whatsoever.*

- *in preparation for the possibility of more intense or frequent precipitation episodes, Canada and Ontario could be advancing work on the naturalization of stream courses, improving natural drainage and percolation conditions in urban areas and generally reducing the amount of asphalt and concrete areas.*

*Many of the policy changes in the past three years, particularly in Ontario have worked against much of the above (for details see commentary under commitments **1.3** Species and Habitat Rehabilitation, **2.4** Atmospheric Deposition, **3.2** Habitat Conservation and Protected Areas and **3.6** Land and Water Use Management).*

Actions Likely Increase in Greenhouse Gas Emissions in Ontario

The government of Ontario has also adopted a number of policies likely to increase the province's greenhouse gas emissions. These include:

- *proposals to introduce competition into the electricity market without adequate environmental controls;[88]*
- *changes to the land-use planning process that facilitate and promote urban sprawl;[89] and*
- *the withdrawal of provincial funding for public transportation.[90]*

Conclusions

There has been some progress on climate adaptation research by the federal government, although there has been no action on the implementation of adaptation measures. Although COA did not provide specific commitments on reducing emissions that

contribute to climate change, it is important to note that both levels of government continue to pursue policies that contribute to increasing levels of greenhouse gases and ultimately promote climate change. Although planning is ongoing, there has been little or no action to act on Canada's Kyoto Commitment to reduce its greenhouse gas emissions.

Land and Water Use Management

COA Commitments:

3.6.1 Implement water efficiency initiatives to reduce per capita water use in the Great Lakes basin.

3.6.2 Develop and adopt an ecosystem-based planning process to integrate land use and water management by 1997.

3.6.3 Focus demonstration projects for ecosystem based practices to reduce stresses to land, water and biota.

3.6.4: Support the development and implementation of Environmental Farm Plans.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment.[91]

3.6.1. Water Efficiency Initiatives

Efforts in this area are three-part: the endorsement of the National Action to Plan to Encourage Municipal Water Use Efficiency; the implementation of some actual water conservation efforts and the dissemination of information about water conservation. In addition, the Canada-Ontario Infrastructure Works program was a factor in the ability to finance water efficiency initiative and was extended to the year 1997-98.

Commentary and Discussion

COA Commitment 3.6.1

Provincial

As noted in the Statement of Progress, the Ministers of Environment and Energy, of Natural Resources and of Municipal Affairs and Housing endorsed the National Action to Plan to Encourage Municipal Water Use Efficiency in a letter to the heads of all municipal councils in 1996. Endorsing the plan may be a beginning of the effort to conserve water but more resources and determination will be required to complete the effort.

Building Code Amendments

The province has adopted changes to the Ontario Building Code that require that new construction use only water-efficient fixtures.[92]

Termination of the Green Communities Program

Many of the water efficiency success stories in Ontario were started with seed money provided by the Ontario Green Communities Initiative. This program was eliminated in November 1995.

Changes to the Land-use Planning Process

The March 1996 Bill 163 amendments to the Planning Act had significant implications for water efficiency. The amendments removed requirements, established in 1995, that local planning decisions be consistent with provincial planning policies. The new Provincial Policy Statement, adopted at the same time as Bill 163, removed the Conservation Policy Statement, adopted in May 1994, which had explicitly promoted water and energy efficiency, as well as the reduction, reuse and recycling of waste, and the use of public transit, in land-use planning.[93]

Amendments to the Environmental Assessment Act

Major amendments were made to the Environmental Assessment Act in December 1996. Among other things, these amendments made the consideration of the need for undertakings, and the examination of the availability of alternatives to undertakings in the assessment process discretionary. These steps had been mandatory under the original Act.[94]

This change has significant implications for water efficiency, as it may eliminate the need to examine water efficiency alternatives in the approval of new water and sewer infrastructure under the Act.

Failure to Incorporate Water Efficiency Requirements into the Municipal Assistance Program and Its Successor.

The Provincial Auditor's November 1997 Annual Report to the Legislature highlighted a number of problems with the province's programs related to sewer and water infrastructure. In particular, the Auditor stated that water or sewage expansion projects should not be funded by the province unless municipalities have implemented and maximized water conservation.[95] *Such conditions were not incorporated into the Municipal Assistance Program, terminated in April 1996, or its successor, a one-time $200 million grant program for municipal sewer and water infrastructure announced in May 1997.*

Water Exports

In early May 1998, it was revealed that the Ministry of the Environment had granted a Certificate of Approval under the Ontario Water Resources Act to take up to 10 million litres of water per day from Lake Superior over a period of five years. The firm that obtained the approval indicated that it intended to export the water to drought-stricken areas of Asia.[96]

The approval prompted the Great Lakes Commission, an interstate agency based in Michigan[97] to suggest that the province had violated the 1909 Boundary Waters Treaty between Canada and the United States by granting the approval. Concerns were also raised regarding the implications of permitting water exports under the North American Free Trade Agreement.[98]

In response, the Minister of the Environment indicated his intention to withdraw the Certificate of Approval for the water taking and to adopt a Ministry policy against the approval of bulk water takings for export in the future.[99] The proponent withdrew an appeal of the Ministry's proposed withdrawal of its approval of the water taking in November 1998.[100] The approval of water exports would clearly be inconsistent with the COA commitment to water efficiency.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[101]

3.6.2 Ecosystem Based Planning

Several efforts are cited by the governments as examples of progress on this action item including watershed management evaluation, recommendations to enhance watershed management and the publication of an inventory. Also cited are the Ontario government's establishment of the Lands for Life Process which is "to ensure environmentally sound management of Ontario natural resources" and the promulgation of the revised Planning Act for Ontario in 1996. The revised Act is said to advocate “an ecosystem-based, watershed approach to planning by municipalities." A centre-for-excellence for watershed research is being established with partners that include Trent University, Sir Sanford Fleming College and MNR. The Lake Superior Binational Program is developing an integrated plan. Ontario and other Great Lakes jurisdictions, are trying to develop a Great Lakes Water Resource Management Plan, a commitment dating back to 1985 by signing of the Great Lakes Charter (1985).[102]

Commentary and Discussion

COA Commitment 3.6.2

The government of Ontario has undertaking a number of initiatives in the past three years, which are likely to undermine ecosystem based planning processes. These include the following:

Bill 20, the Land Use Planning and Protection Act, 1996, and Changes to the Land-use Planning Process

A number of significant amendments to the land-use planning system under the Planning Act, introduced by the previous government as a result of the work of the

Commission on Planning and Development Reform in Ontario, were repealed through Bill 20 (The Land Use Planning and Protection Act)[103] in March 1996. The Commission's work had placed a strong emphasis on ecosystem based approaches to planning.[104]

In particular, the Bill 20 amendments removed the requirement that municipal planning decisions be consistent with provincial planning policy statements. In addition, the participation of the Ministries of Environment and of Natural Resources was limited to situations were they are invited to do so by the Ministry of Municipal Affairs. Both Ministries have subsequently effectively terminated their activities related to land use planning.[105] In the past, both had acted as voices for environmental protection and natural resources conservation in the planning process.

A new Provincial Policy Statement was introduced at the time of the passage of Bill 20, replacing the set of Comprehensive Policy Statements adopted in 1994. The new Policy Statement weakened requirements related to natural heritage and environmental protection in a number of significant ways. Specifically, the protection for wetlands was altered to apply to a smaller area of the province, and to remove requirements for impact studies of proposed developments in or adjacent to wetlands.[106]

*In addition, references to the protection of significant ravine, river and stream corridors and adjacent lands, the protection of the habitat of 'vulnerable' species, and shorelines of lakes, rivers and streams, natural corridors, and biodiversity conservation were removed from the Provincial Policy Statement.[107] As noted under **3.6.1.**, the 1994 Conservation Policy Statement, intended to promote water and energy efficiency, the 3Rs and the use of public transit, was entirely deleted from the new policy statement.*

Lands for Life

*As outlined under **3.2.3** the 'Lands for Life' process was initiated in February 1997. The process is intended to allocate uses for public lands in the central region of Ontario, an area of 46 million hectares. Under the program, the Ministry of Natural Resources has divided central Ontario into three large planning areas (Boreal West, Boreal East, and Great Lakes-St Lawrence). Regional round tables, one in each planning area, are to draft recommendations on how land and resources in their region should be allocated.*

Serious concerns were raised about several aspects of the 'Lands for Life' process. These have included the short time lines for such a massive planning undertaking, the fairness of the public consultation process, and the quality of the information made available to the public. In her April 1998 Annual Report to the Legislature, the Environmental Commissioner noted that the MNR's previous land use planning process for this region took more than 10 years to complete. The Commissioner also expressed concerns that the Round Tables' tight schedule does not allow MNR to enough time to compile detailed analyses of potential natural heritage areas, and to identify existing old growth forests.[108]

The Round Table Reports reports were delivered to the MNR in October 1998. The reports recommended only a 1.6% increase in the amount of land classified as protected

areas in the lands covered by the lands for life process.[109] The government's response to the Round Table Reports is expected early in 1999.

Reductions in the Funding and Mandates of Conservation Authorities

There are 38 Conservation Authorities in Ontario. They are the only institutions in the province established on an ecosystem basis, being organized around major watersheds. Conservation Authorities own or are responsible fro the management of 121,400 hectares of land in Ontario. Their lands include a wide range of ecologically significant areas, such as wetlands, ravines and woodlots.

Conservation Authorities were identified as major actors ecosystem based planning by the Commission on Planning and Development reform and others.[110] Provincial capital and operating support to the Authorities declined by approximately 70% between 1995 and 1997. In addition, January 1996 amendments to the Conservation Authorities Act limited the mandate of the Authorities, facilitated their dissolution and the sale of their lands. The use of provincial funds by Authorities was limited to flood control activities and the payment of property taxes.[111]

A survey of Conservation Authorities conducted by the Federation of Ontario Naturalists conducted in late 1996 indicated that they had typically lost been 20% and 50% of their staff as a result of the reductions in provincial support.[112]

Implementation of Amendments to the Public Lands Act and the Lakes and Rivers Improvements Act

The implementation of the January 1996 Bill 26 amendments to the Public Lands Act and the Lakes and Rivers Improvements Act through regulations adopted in November 1996 removed permitting requirements for a wide range of activities on public lands, and affecting public waterways.[113] The removal of these requirements reduces opportunities for the integration of planning and approval decisions on an ecosystem basis.

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[114]

3.6.3: Demonstration Projects

The Initiation of demonstration projects are cited as support for this target. The program which has sponsored these projects (the Canada-Ontario Agriculture Green Plan) officially concluded in March 1997. A number of these projects have been extended by participants, with their own funding. Information on the projects will be disseminated. Research projects are on-going in this area.

Demonstration Projects

Under the Wetland/Woodlands/Wildlife program of the Canada-Ontario Agriculture Green Plan, ten large watershed-based demonstration and extension projects were implemented to contribute to the environmental sustainability of the Ontario agriculture and agri-food sector and, at the same time, maintain and improve fish and wildlife habitat. In these ten demonstration areas, a total of about 200 projects were implemented with the cooperation of local farmers and rural residents to illustrate low-cost and innovative methods that will increase knowledge and adoption of agricultural practices compatible with wildlife habitat, and to reduce conflicts between agriculture and wildlife and wildlife habitat. TPM would allow an industrial discharger to compensate for some increases in discharge volumes by funding rural non-point source pollution controls (conservation farming practices) upstream of the discharge.

Source: *COA 2nd REPORT / Objective 3: Annex Report*, Environment Canada & Ontario Ministry of the Environment.

Commentary and Discussion

COA Commitment 3.6.3.

Projects described were all funded through the now terminated Canada-Ontario Agriculture Green Plan. Programs for which funding has been terminated include: Conservation Clubs, Wetlands/Woodlands/Wildlands Program, the Best Management and Practices Program.[115]

Statement of Progress

Key Elements of the Governments' Statement of Progress on COA Commitment[116]

3.6.4: Environmental Farm Plans

Since the fall of 1992, more than 10 000 farmers have attended workshops, with 5 186 approved integrated action plans in place. The Best Management Practices Program has produced a number of information products on a wide range of topics such as soil and water management, tilling and irrigation.

While funding under the Canada-Ontario Agriculture Green Plan has concluded, the environmental farm planning program will continue to operate for another three years with funding from the Agricultural Adaptation Council's (AAC) CanAdapt program. Agriculture and Agri-food Canada is providing funds for this industry-lead program.[117]

Commentary and Discussion

COA Commitment 3.6.4

Environmental Farm Plans

This program is currently operating with federal funding until March 2000. The Ontario Federation of Agriculture has requested that the provincial government provide additional resources for farm-related environmental programs,[118] presumably including the Environmental Farm Plan initiative.

The Farming and Food Production Protection Act, 1998.

In June 1997, the government introduced the Farming and Food Production Protection Act. The Bill received Royal Assent and came into force in May 1998. The Bill maintains the current prohibition in the Farm Practices Protection Act baring neighbours of farms from undertaking actions in relation to nuisances which arise from 'normal' farm practices. It also permits farmers to appeal municipal by-laws to control such nuisances to 'Normal' Farm Practices Protection Board. The Board is granted power to disallow these by-laws in response to an appeal by a farmer.[119]

The legislation is particularly disturbing given that a draft State of the Environment Report prepared by the Ministry of Environment and Energy and released to the public in February 1997, indicated that runoff from agricultural operations the leading cause of declining surface water quality in Southern Ontario.[120] Evidence of the growing environmental impacts of industrial agricultural operations in the province has also emerged from other sources over the past year as well.[121] The legislation is designed to limit the ability of individual landowners and municipalities to address these problems, rather than providing incentives to farmers to reduce the environmental impacts of their activities.

Conclusions

There has been little progress in the areas of land and water use management since the signing of the COA agreement. Some water conservation requirements have been incorporated into the Building Code. However, the province has undertaking many initiatives likely to undermine ecosystem based planning and water conservation. These include the Ontario Bill 20 amendments to Planning Act and new policy statements, replacing structures established on basis of recommendations from the Commission on Planning and Development reform in Ontario. The Commission had placed a strong emphasis on resource conservation, including water efficiency, and ecosystem based planning. These requirements were weakened or eliminated in the new Provincial Policy Statement.

The weakening of the mandates and resources of Conservation Authorities is also having a negative effect on the application of ecosystem and watershed based planning in the province. In Northern Ontario, the Lands for Life has been criticized for proceeding with

excessive haste, and in the absence of adequate background research and consultation to provide the foundation for an ecosystem based approach to land-use planning. Opportunities for ecosystem based planning are further reduced by the implementation of the Bill 26 amendments to the Public Lands Act and the Lakes and Rivers Improvements Act.

Funding for demonstration projects related to reducing the environmental impacts on agricultural operations through the Canada-Ontario Agricultural Green Plan has now ended, and concerns have been expressed regarding the future of the Environmental Farm Plan program, such is currently being sustained with federal funding. In May 1998, the province enacted the Farming and Food Production Protection Act. The legislation is designed to limit the ability of individual landowners and municipalities to address these problems, rather than providing incentives to farmers to reduce the environmental impacts of their activities.

Summary and Conclusion

Objective Three: Conserve and Protect Human and Ecosystem Health

The development of the Lakewide Management Plans (LaMPs) for the Great Lakes was one of the key elements of the 1987 Protocol to the Great Lakes Water Quality Agreement. The LaMPs are intended to integrate many of the restorative goals of the Agreement. However, progress on the development of the LaMPs has been slow. No action has been taken on the Lake Huron LaMP, the Lake Erie stage 1 LaMP is still under development, the Lake Superior Stage 2 LaMP has yet to be adopted by the governments and the Lake Ontario Stage 2 LaMP is to be released in 1999.

Little progress has been made by the federal government on action to address critical LaMP pollutants, and habitat restoration efforts have been affected by the reductions in the Department of Fisheries and Oceans Great Lakes Research Program. Environment Canada has taken steps to support some key programs abandoned by the province and other departments, including the position of the Lake Ontario LaMP Coordinator and the Department of Fisheries and Oceans Environmental Toxicology Program. The Department of Fisheries and Oceans is restoring some capacity in the area of habitat protection in response to the Ontario Ministry of Natural Resource's unilateral withdrawal from the enforcement of the habitat protection provisions of the federal Fisheries Act.

At the provincial level, the Ontario government has undertaken a number of actions that seem likely to undermine LaMP goals. These have included the layoff of the Lake Ontario LaMP coordinator. In addition, the removal of a ban on new municipal waste incinerators, proposals to weaken controls on the burning of waste as 'waste derived fuel' and industrial water pollution, proposals to introduce competition into the electricity market in the absence of adequate environmental standards, and the implementation of Ontario Hydro's Nuclear Asset Optimization Plan, all seem likely result in increases in the generation and release of critical pollutants, such as ***dioxins*** *and* ***furans****, and* ***mercury****.*

Similarly, efforts to protect critical fish and wildlife habitat seem likely to be undermined by the Ministry of Natural Resource's disbandment of its Great Lakes Branch, reductions in the budgets of its Great Lakes Management Units of more than 70%, and the Ministry's withdrawal from the enforcement of the habitat protection provisions of the federal Fisheries Act. Changes to the land use planning process weakening the protection of wetlands and other forms of habitat, and reductions in the mandates and budgets of conservation authorities, are also negatively affecting LaMP goals.

There has been some progress in the area of habitat conservation by the federal and provincial governments with respect to the taxation of conservation lands, and the

establishment of conservation easements. However, there are also serious problems in this area, particularly at the provincial level. Little progress has been made on the establishment of new protected areas by either level of government. The possibility of the establishment of new protected areas in the future, and the status of existing parks, is threatened by the province's 'Lands for Life' process and the sale of Crown lands. The integrity of existing provincial protected areas is also under stress due to pressures for increased use and revenue generation.

There is some limited progress with respect to biodiversity protection, particularly through the enactment of Ontario Fish and Wildlife Conservation Act. At the same time, however, the province has removed references to the conservation of biological diversity from its provincial land use Policy Statement. For its part, the federal government has yet to bring forward endangered species legislation to replace the Bill that died on the Order Paper with the call of the June 1997 election.

The province has undertaken a number of initiatives that are likely to undermine the COA Goal of protecting the structure and function of diverse, self-sustaining biological communities. These include changes to the land-use planning process to reduce protection for ecologically significant areas, such as wetlands, the province's withdrawal from the enforcement of the habitat protection provisions of the Fisheries Act.

Ecosystem monitoring programs have been heavily affected by budgetary reductions at the federal and provincial levels. Some research continues on alien species, although action to control such species is limited to the sea lamprey. The House of Commons Standing Committee on Fisheries and Oceans has recently recommended the establishment of mandatory ballast water exchange requirements for ocean going vessels entering the Great Lakes, and an increase in support for scientific research on alien species in the Lakes.

Health Canada has undertaken a number of research and outreach activities on human health impacts of environmental contaminants. However, the program has been subject to a 40% budget cut, and is undertaking no new research projects. Provincial environmental education activities were terminated in 1993.

Neither level of government has taken direct action to actually reduce the risk of exposure to environmental contaminants as per their COA commitments. At the same time, the province has undertaken many initiatives likely to increase exposure to environmental contaminants. These include the removal of a ban on new municipal waste incinerators, and proposals to weaken controls on the burning of waste as 'fuel,' the management of hazardous wastes, and industrial water pollution, and to introduce competition into the electricity sector without adequate environmental safeguards.

There has been some progress on climate adaptation research by the federal government, although there has been no action on the implementation of adaptation measures. Although greenhouse gas emissions reductions were not a specific COA commitment, it is important to note that both levels of government continue to pursue policies that contribute to increasing levels of greenhouse gases and ultimately promote

climate change.

There has been little progress in the areas of land and water use management since the signing of the COA agreement. Some water conservation requirements have been incorporated into the provincial Building Code. However the province has undertaking many initiatives likely to undermine ecosystem based planning and water conservation. These include the Ontario Bill 20 amendments to Planning Act and new policy statements, replacing the structures established on basis of recommendations from the Commission on Planning and Development reform in Ontario. The Commission had placed a strong emphasis on resource conservation, including water efficiency, and ecosystem based planning. These requirements have been weakened or eliminated from the new Provincial Policy Statement. The reduced mandates and resources of Conservation Authorities are also having a negative effect on the application of ecosystem and watershed based planning in the province.

Funding for demonstration projects related to reducing the environmental impacts on agricultural operations through the Canada-Ontario Agricultural Green Plan has now ended, and concerns have been expressed regarding the future of the Environmental Farm Plan program. This is currently being sustained with federal funding, which is scheduled to end in the year 2000. In the meantime, the province has adopted the Farming and Food Production Protection Act, legislation which effectively protects environmentally damaging agricultural practices from challenges by neighbouring landowners or local municipalities.

Endnotes

1. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

2. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

3. Great Lakes Water Quality Board, "Review of Government Resources and Changing Program Thrusts as they Relate to Delivery of Programs under the Great Lakes Water Quality Agreement" (International Joint Commission, 1998), Canada - Department of Fisheries and Oceans. URL:http://www.ijc.org/boards/wqub/gpvres/review.html

4. Ibid.

5. Standing Committee on Fisheries and Oceans, Central Canada's Freshwater Fisheries Report (Ottawa: House of Commons, November 1998), Recommendations 9 and 14.

6. Ministry of the Environment, *1998-99 Business Plan*. URL:http://www.gov.on.ca./MBS/english/press/plans98/env.html

7. International Joint Commission, 8th Biennial Report on Great Lakes Water Quality (Washington and Ottawa: 1996).

8. International Joint Commission, 9th Biennial Report on Great Lakes Water Quality (Washington and Ottawa, 1998).

9. See M.Winfield, Response to Incineration Informaiton Package (Toronto: CIELAP, (Brief 95/3), September 1995).

10. See, for example, M. Cohen et.al. *Quantitative Estimation of the Entry of Dioxins, Furans, and Hexachlorobenzene into the Great Lakes from Airborne and Waterborne Sources* (Flushing, NY: Centre for the Biology of Natural Systems, Queen's College CUNY, May 1995).

11. Bill 135 - *The Electricity Competition Act, 1998*.

12. See, for example, J.Gibbons and S.Bjorkquist, Electricity Competition and Clean Air (Toronto: Ontario Clean Air Alliance, April 1998).

13. Great Lakes Water Quality Board, "Review of Government Resources," Ontario Ministry of Natural Resources.

14. Ministry of Natural Resources, 1998-99 Business Plan. URL:http:/www.gov.on.ca/MBS/english/press/ plans98/mnr.html

15. See Winfield and Jenish, Ontario's Environment and the Common Sense Revolution: A First Year Report, pp.11-16.

16. Report, 3.2.1.

17. See Ministry of Municipal Affairs, Comprehensive Set of Policy Statements (Toronto: Ministry of Municipal Affairs, May 1994) A: Natural Heritage, Environmental Protection and Hazard Policies; and Ministry of Municipal Affairs and House, Provincial Policy Statement under *the Planning Act*

(Toronto: March 1996) 2.3 Natural Heritage.

18. See EBR Registry Number: PB7E4004.P, August 18, 1997, and EBR Registry Number: **????**, September 19, 1997.

19. Ministry of Natural Resources Press Release and Fact Sheets, "New Regulations Guide Activites on Crown Lands, " November 5, 1996.

20. Ontario's Environment and the CSR: A Second Year Report pp-29-30.

21. Ibid.

22. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

23. See Winfield and Jenish, Ontario's Environment and the Common Sense Revolution: A First Year Report, pp.11-16.

24. Report, 3.2.1.

25. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

26. See EBR Registry Number: PB7E4004.P, August 18, 1997, and EBR Registry Number: **????**, September 19, 1997.

27. *Fisheries Act*, s.35.

28. J.Swaigen and M.Winfield, "Water," in J.Swaigen and D.Estrin, eds., Environment on Trail: A Guide to Ontario Environmental Law and Policy (Toronto: Emond-Montgomery Publishers and CIELAP, 1993).

29. See Bill C-62, *The Fisheries Act, 1996*.

30. See memorandum to staff from Ran Vancart, Deputy Minister, "MNR's Role in Fish Habitat Management under Section 35(2) of the Fisheries Act," August 14, 1997.

31. USEPA and Environment Canada, State of the Great Lakes, 1997.

32. Standing Committee on Environment and Sustainable Development, Enforcing Canada's Pollution Laws; The Public interest Must come First! (Ottawa: House of Commons, May 1998), pg.16.

33. Ibid.

34. Standing Committee on Environment and Sustainable Development, Enforcing Canada's Pollution Laws, pg. 16.

35. Pers. comm., Byril Kurtz, Department of Fisheries and Oceans, November 24, 1998.

36. Ibid.

37. Great Lakes Water Quality Board, "Review of Government Resources," Canada- Department of Fisheries and Oceans.

38. Standing Committee on Fisheries and Oceans, Central Canada's Freshwater Fisheries Report, Recommendation 14.

39. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

40. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

41 World Wildlife Fund *96-97 Guide to the Grades / A Companion to World Wildlfie Fund's Endangered Spaces Progess Report*, April 1997.

42. EBR Request for Review, R97008 - Review of the Lands for Life planning process and of the need for a new policy to correct the shortcomings of the Lands for Life process..

43. ECO, 1997 Annual Report, pg.41.

44. Lands for Life: Consolidated Recommendation of the Boreal West, Boreal East and Great Lakes St. Lawrence Round Tables (Toronto: Ministry of Natural Resources, October 1998), Table 4.

45. Ibid and Recommendation 151.

46. Ontario Parks Business Plan Summary (MNR, June 1996), pg.13.

47. As of January 1997, more than 100 responses had been received to a prospectus sent to businesses to develop major corporate partnerships. MNR, News Release, "Ontario Parks-Paddling in a New Direction, January 14, 1997.

48. See, for example, J.Rusk, "Ontario provincial parks starting to lease campsites," The Globe and Mail, August 5, 1996.

49. Ministry of Natural Resources, 1998-99 Business Plan, Key Performance Measures.

50. Ibid., pg.45.

51. Now incorporated into Bill 136, *The Red Tape Reduction Act*.

52. Ibid.

53. Ibid.

54. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

55. *News Release:* "Canada and Ontario announce Great Lakes cleanup successes" Environment Canada and the Ontario Ministry of the Environment, October 31, 1997.

56. A.Thompson, "Ottawa called flop at saving species," The Toronto Star, September 30, 1997.

57. See, for example, D.McClaren, "Commnet on Bill 139, the *Fish and Game Conservation Act, 1997*" (Toronto: Canadian Environmental Law Association, December 1997).

58. See, Ministry of Municipal Affairs, Comprehensive Set of Policy Statements, A: Natural Heritge; Environmental Protection and Hazard Policies; and Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2.3 Natural Heritage.

59. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

60. ECO Annual Report 1996.

61. Office of the Provincial Auditor, 1996 Annual Report: Accounting/Accountability/Value for Money (Toronto: Queen's Printer, October 1996), pp.113-128.

62. International Joint Commission, Eighth Biennial Report on Great Lakes Water Quality (Washington and Ottawa: 1996), pp.5-7.

63. Great Lakes Water Quality Board, "Review of Government Resources," Canada- Department of Fisheries and Oceans.

64. Standing Committee on Fisheries and Oceans, Central Canada's Freshwater Fisheries Report, Recommendation 9.

65. Ibid., Health Canada.

66. Pers.comm, Doug Haines, Health Canada, December 7, 1998.

67. Ibid., Ministry of Natural Resources.

68. 1998 Annual Report of the Provincial Auditor of Ontario to the Legislative Assembly (Toronto: Queen's Printer, Fall 1998), pp.175-193.

69. Ontario Public Service Employees Union, Nothing Left to Cut, pp.2-3.

70. Ibid., pg.1.

71. Ibid., figure 9.

72. Ibid.

73. Ibid., pp. 20-21.

74 "Lake project gets premier power" *Globe and Mail,* April 30, 1998.

75. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

76. Standing Committee on Fisheries and Oceans, Central Canada's Freshwater Fisheries Report (Ottawa: House of Commons, November 1998), Recommendations 11 and 12.

77 Media Release: *Snobelen wants long-term funding commitment from Ottawa for sea lamprey control* April 1, 1998.

78. Ibid, Recommendation 10.

79 Environment Canada and the United States Environmental Protection Agency *State of the Great Lakes 1997 - The Year of the Nearshore,* (Chigago / Burlington 1997).

80. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

81. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

82. Pers. comm., Doug Haines, Great Lakes Health Effects program, Health Canada, December 7, 1998.

83. Great Lakes Water Quality Board, "Review of Government Resources," Canada - Health Canada.

84. Pers, comm, Haines, December 7, 1998.

85. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

86. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

87. International Joint Commission *Unsafe Dams? A Report by the IJC* (Ottawa, Washington: February 1998).

88. See Gibbons and Bjorkquist, Electricty Competition and Clean Air.

89. See Winfield and Genish, Ontario's Environment and the 'Common Sense Revolution', pp.11-14.

90. See Winfield and Genish, Ontario's Environment and the 'Common Sense Revolution', pp.109-110.

91. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

92.. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

93. See: Ministry of Municipal Affairs, Comprehensive Set of Policy Statements, E: Conservation Policies; and Ministry of Municipal Affairs and Housing, Provincial Policy Statement.

94. Bill 76, the *Environmental Assessment Consultation and Improvements Act, 199*

95. Office of the Provincial Auditor, 1997 Annual Report, pg.125.

96. M.Mittelstaedt, "Permit to export Lakes water draws U.S. fire," The Globe and Mail, May 1, 1998.

97. M.Mittelstaedt, "Permit to export Lakes water draws U.S. fire."

98. P.Goodspeed, "Lake water sale put on hold," The Toronto Star, May 6, 1998.

99. R.Mackie, "Permit to export lake water to be cancelled, Ontario says," The Globe and Mail, May 15, 1998.

100. H.Scoffield, "Ottawa gets a breather on water export plan," The Globe and Mail, November 26, 1998.

101. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

102. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

103. For a detailed discussion of the impact of Bill 20 see Submission of the Canadian Environmental Law Assocation to the Standing Committee on Resources Development Reviewing Bill 20 (Toronto: Canadian Environmental Law Association, February 1996).

104. Commission on Planning and Development Reform in Ontario, Final Report (Toronto: Minstry of Municipal Affairs and Housing, June 1992).

105. The MNR has reduced its budget for participation in land-use planning activities by $3.2 million/yr in its April 11, 1996 Business Plan. The Ministry of Environment and Energy announced a reduction of

$680,000/yr in spending in this area on October 6, 1996.

106. See: Ministry of Municipal Affairs, Comprehensive Set of Policy Statements, Natural Heritage, Environmental Protection and Hazard Policies; and Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2.3 Natural Heritage.

107. Ibid.

108. ECO, 1997 Annual Report, pg.41.

109. Lands for Life: Consolidated Recommendations, Table 4.

110. Commission on Planning and Development Reform, Final Report, pp.78-80.

111. Ontario's Environment and the CSR: A Second Year Report pp-29-30.

112. Ibid.

113. See Winfield and Jenish, Ontario's Environment and the Common Sense Revolution: A Second Year Report, pg.28.

114. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

115. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

116. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective3.html

117. Environment Canada and Ontario Ministry of the Environment, *COA 2nd REPORT / Objective 3: Annex Report*, December 17, 1997 URL: http://www.cciw.ca/glimr/data/coa-second/annex-objective1.html

118. Kate Harries, "Farmers look to Harris for help," The Toronto Star, September 15, 1998.

119. For a detailed commentary on the Bill see, P.McCulloch, "Submission to the Standing Committee on Resources Development Regarding Bill 146, An Act to Protect Farming and Food Production" (Toronto: Canadian Environmental Law Association, 1998).

120. 1992 Status Report on Ontario's Air, Water and Waste (Toronto: Ministry of Environment and Energy, unpublished), pg.45.

121. T.Walkom, "The Whole Hog," The Toronto Star, May 9, 1998.

Canada-Ontario Agreement:

Conclusions

Conclusions

The *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem* is the primary vehicle for the fulfilment of Canada's obligations under the *Canada-United States Great Lakes Water Quality Agreement*. The current Canada-Ontario Agreement was signed in July 1994 by the federal Ministers of the Environment, Fisheries and Oceans, Health, and Agriculture and Agri-Food, and the Ontario Ministers of Environment and Energy, Natural Resources, Health, and Agriculture, Food and Rural Development. The Agreement ends in March 2000.

The 1994 Agreement was focused on three key objectives: 1) the restoration of degraded areas, particularly the seventeen Canadian and Binational Areas of Concern (AOCs) identified through the 1987 Protocol to the *Great Lakes Water Quality Agreement*; 2) the prevention and control of pollution, including a 90% reduction in the use, generation and release of persistent toxic substances identified in the Agreement; and 3) the conservation and protection of human and ecosystem health in the Great Lakes Basin. In the Agreement, the Parties agreed to an estimated cost of $2.5 billion to achieve the objectives, including approximately $1.7 billion for the restoration of degraded areas.

The 1994 COA departed from the format of previous COA Agreements in that it outlined 47 specific goals and commitments to be achieved by the signatories over the six-year life of the Agreement. This permitted much more detailed assessments of progress than under previous Agreements. However, the 1994 Agreement was subject to strong criticism by environmental organizations at time of its signature, particularly for its reliance on voluntary action by industry to reduce the use, generation and release of priority pollutants. Concerns were also raised over the Agreement's failure to assign specific responsibilities to each level of government, or to make specific funding commitments, by each level of government, to COA activities.

The governments' progress against the goals and objectives of the 1994 Agreement has not been strong. It is clear that most of the Agreement's specific goals and objectives will not be met. In fact, there is evidence of worsening problems in a number of areas that were to be addressed through the Agreement.

The year 1995 was a watershed for COA at both the federal and provincial levels. Many of the most significant achievements reported by the governments under COA, such as the major reductions in discharges from the pulp and paper industry, the reduction of discharges of priority contaminants into the Niagara River from Canadian facilities, and the upgrading of sewage treatment facilities, result from pre-1995 initiatives.

At the federal level, the February 1995 Program Review budget had a major impact on COA related activities. The $150 million budget of the Great Lakes 2000 program, the primary mechanism for the federal government's implementation of Canada's commitments under the *Great Lakes Water Quality Agreement*, was reduced by 15% ($22.5 million) over the six year life of the program. In addition, the Department of Fisheries and Oceans announced its intention to withdraw from its freshwater activities, including those in the

Great Lakes. This translated into a 70% reduction in the budget of the Department's Great Lakes Research Program, and a 40% loss of staff. A 40% ($11-$13 million) reduction was made to the budget of Health Canada's Great Lakes Health Effects Program.

At the provincial level, the June 1995 election resulted in a new provincial government, which had campaigned on the basis of a platform entitled the "Common Sense Revolution." The fall of 1995 and spring of 1996 were marked by a series of announcements of major reductions in the budgets of the key COA agencies. In the case of the Ministry of the Environment, the Ministry's operating budget has fallen by 44% between the 1994/95 and 1998/99 fiscal years, resulting in major reductions to programs which provided both direct and indirect support to COA objectives. With respect to the Ministry of Natural Resources, a 26% reduction in the Ministry's operating budget over the same period resulted in the disbandment of the Ministry's Great Lakes Branch, the withdrawal of the Ministry from COA-related activities, particularly RAP implementation, and a 73% reduction in the operating budgets, and 40% reduction in staff, of the Ministry's four Great Lakes Management Units.

These budgetary reductions have been accompanied by wide ranging changes to the province's regulatory framework for the prevention and control of pollution, programs related to the management of fish and wildlife populations and the protection of their habitat, and the land-use planning system, which undermine key goals of the COA Agreement.

COA Objective One: Restoration of Degraded Areas

The development and implementation of Remedial Action Plans (RAPs) for the Areas of Concern (AOCs) around the Great Lakes was one of the key elements of the 1987 Protocol to the *Great Lakes Water Quality Agreement*, and the 1994 Canada-Ontario Agreement. Fourteen Canadian and three binational AOCs have been identified under the Canada-U.S. Agreement. COA committed the governments to the restoration of 60% of the impaired uses in the AOCs, and the de-listing of nine of the AOCs by the year 2000.

There has been some progress on the development and implementation of RAPs, particularly in such locations as Nipigon Bay, Thunder Bay Harbour, Spanish Harbour, Collingwood Harbour, Wheatly Harbour, Hamilton Harbour and the Canadian side of the Niagara River. Collingwood Harbour has been declared delisted. However, RAP work has been heavily affected by budgetary reductions at the federal and provincial levels, and activities have been delayed or stalled in many of the AOCs, including the St. Mary's River, Toronto Harbour, Port Hope, the Bay of Quinte, and the St. Lawrence River. Consequently, it is clear that the COA goal of the delisting of nine AOCs by 2000 will not be met. In May 1998, the Ontario Ministry of the Environment indicated that only the Nipigon Bay, Spanish Harbour, Wheatly Harbour, and Niagara River RAPs were close to meeting the year 2000 deadline.

At the federal level, the 1995 Program Review budgetary reductions resulted in the termination of much of the Department of Fisheries and Oceans' environmental toxicology research related to RAPs, and of the direct participation of Health Canada in RAP-specific health research.

With respect to the province, following the 1995 provincial election many of the programs that provided support for RAP work were terminated by the Ministry of the Environment including the Urban and Rural Beach Clean-up Program, and the Municipal Assistance Program, which provided support for sewage treatment plant upgrades. There have also been major reductions to the operating budgets of regional operations of the Ministry that were providing support to RAP work. In January 1997 the Ministry of the Environment laid off the coordinators for many of the provincially lead RAPs, and eliminated support for the volunteer Public Advisory Committees (PACs). COA had specifically committed the Parties to sharing the core administrative costs associated with the central and local coordination of the RAP program.

The situation has been even more severe in the case of the Ministry of Natural Resources. The Ministry has disbanded its Great Lakes Branch, which coordinated its participation in RAP processes and other Great Lakes restoration activities, eliminated its $1 million/yr fund for RAP implementation work, and ended its direct participation in most RAP activities. The reductions in the budgets of the Ministry's Great Lakes Management Units has also negatively affected RAP activities, particularly with respect to the loss of monitoring and surveillance capacity. There is no reference to RAP or COA commitments in the Ministry's current Business Plan.

Environment Canada has intervened to support some key activities abandoned by other agencies, including, on an ad hoc and interim basis, the positions of the RAP coordinators in some of the provincially-led RAPs terminated by the Ministry of the Environment, and the RAP related toxicology research of the Department of Fisheries and Oceans.

The availability of funds to complete RAP implementation is emerging as a serious concern. The bulk of the work that has been completed on the RAPs to date has tended to be of a relatively non-complex and inexpensive character, such as habitat restoration. Higher cost activities, such as contaminated sediment removal, remain incomplete, and Environment Canada has indicated that the undertaking of some of this work is now dependant on private sector contributions.

The Ontario Ministry of the Environment states that it is committed to the completion of 8 RAPs in its current Business Plan, and has created a Great Lakes Renewal Foundation, with a $5 million seed grant, to attract private sector contributions to the RAP process. However, many RAP participants interviewed for this study were severely critical of the province's approach to the RAPs, highlighting the apparent lack of will and commitment to the RAP process, and the impact of funding reductions to RAP related programs. One participant stated that the province's initiatives had set the RAP process "back five years."

Concerns also exist regarding the direction of the future implementation of RAPs, indicated by the Severn Sound Association model and the Province's Great Lakes Renewal Foundation. This approach may be seen to download responsibility for the financing and carrying out of RAP implementation to municipal governments and the private sector from the provincial and federal governments. The International Joint Commission has stressed the problems associated with the transfer of responsibility for RAP implementation without associated increases in local capacity.

There has been some progress on the rehabilitation of degraded fish habitat and the development of recovery plans for species at risk. However, these activities may be negatively affected by: the reductions in the capacity of the Ministry of Natural Resources in the Great Lakes; changes to the province's land-use planning process to reduce protection for ecologically significant areas, such as wetlands; the Ministry of Natural Resource's withdrawal from the enforcement of the habitat protection provisions of the federal *Fisheries Act*; and the province's reductions in the mandate and resources of Conservation Authorities.

COA also committed the governments to the remediation of 10 federally owned contaminated sites, 5 "orphan" sites and 20 provincial sites. There is no evidence of progress on the clean-up of federally owned contaminated sites. There has been some progress on provincial and 'orphan' sites, although the available resources are clearly inadequate to complete the clean-up process. This has been particularly evident with respect to the Deloro Mine site in Eastern Ontario. In addition, the province has undertaken a number of actions that seem likely to create more problem sites in the future, particularly with respect to the approval of new waste disposal facilities. There has been virtually no progress on COA commitments regarding the remediation of groundwater contamination.

Health Canada has undertaken numerous studies on health impacts of Great Lakes Contaminants. However, the Great Lakes Health Effects Program has lost 40% of its budget since 1994, which has curtailed the Department's ability to carry out biomonitoring and community level activities. Health Canada has compiled, but has yet to release to the public, health data for each of the AOCs.

There has been no direct action by the federal government to reduce the risk of exposure of high risk populations to priority contaminants since the adoption of new discharge regulations for the pulp and paper sector in 1992. The provincial government has also failed to take any direct action to reduce exposure to specific contaminants. The Ministry of the Environment has yet to move forward on proposed revisions to its air pollution control standards affecting COA priority pollutants. In addition, the province has taken many actions that seem likely to increase the exposure of the public to COA priority pollutants such as **dioxins**, **furans**, **mercury** and **cadmium**.

COA Objective Two: Prevent and Control Pollution

COA committed the governments to seeking a 90% reduction in the use, generation and release of seven priority (Tier I) persistent toxic substances by the year 2000 as well as reductions in the use, generation and release of 25 Tier II substances. It also committed the governments to the decommissioning and destruction of PCBs; reductions in the generation and release of hazardous wastes; binational initiatives on persistent toxic substances, particularly in Lake Superior; research on atmospheric inputs of toxic substances into the Lakes; and the review of the pesticides on the COA Tier II list.

The major achievements in this area flow from pre-1995 initiatives. The adoption of new discharge regulations on the pulp and paper sector by the federal and provincial governments in 1992 and 1995 respectively, has resulted in major reductions in discharges of organochlorines and other pollutants from Ontario facilities. The province's Municipal Industrial Strategy for Abatement (MISA) has also played a significant role in the reduction of discharges of priority contaminants into the Niagara River from Ontario sources.

Under the 1994 COA Agreement, the governments have relied heavily on voluntary action by industry to reduce the generation, use and release of Tier I and Tier II priority pollutants, particularly since 1995. The governments are also largely dependant on industry reporting under the voluntary Accelerated Reduction/Elimination of Toxics Program (ARET), to monitor progress on achieving these goals.

Serious concerns have been raised regarding the effectiveness of voluntary programs such as ARET, and regarding the reliability of the information provided through the program. Furthermore, an analysis of 1994 and 1995 National Pollutant Release Inventory (NPRI) data by the North American Commission on Environmental Cooperation suggests that while releases of ARET substances to the environment may be declining, their total generation as waste may be rising.

With respect to hazardous waste, data from both the province's waste manifest data system and the NPRI indicate a dramatic rise in the generation of hazardous wastes in Ontario since 1994. Hazardous waste reduction was one of the specific goals of the COA Agreement. These is also evidence of a trend towards dealing with PCBs through export and the use of disposal options other than the best available technology, both inside and outside of Ontario.

The federal government's performance on pollution and toxics has been weak. This has been largely a function of decisions taken at the national level, particularly the failure to act to control the use, generation and release of the COA Tier I and II substances found to be 'toxic' for the purposes of the *Canadian Environmental Protection Act*.

In June 1995 the federal government adopted a Toxic Substances Management Policy. The policy is reflected in the *Canadian Environmental Protection Act* reform Bill (C-32) currently before the House of Commons. The policy has been strongly criticized as undermining the concept of 'virtual elimination' of persistent toxic substances through the elimination of their use, generation or release, contained in the *Great Lakes Water Quality Agreement*, and reflected in COA. The April 1997 Canada-U.S. Binational Toxic Strategy

has also been seen to undermine the 'virtual elimination' concept for persistent toxic substances articulated in the *Water Quality Agreement*. Furthermore, movement on even the limited goals of the Binational Strategy has been extremely slow.

The situation at the provincial level is perhaps even worse. The province has failed to take any positive action regarding COA priority pollutants. Rather, it has taken or proposed many initiatives that will undermine the Agreement's goals of reducing the use, generation and release of these substances, and of protecting human health by reducing public exposure to them. These actions include the removal of a ban on the establishment of new municipal waste incinerators, a measure which has been specifically criticized by the International Joint Commission as being likely to result in an increase in the presence of priority pollutants in the Great Lakes basin. In addition, the implementation of Ontario Hydro's Nuclear Asset Optimization Plan, which has resulted in major increases in air pollution, likely including COA Tier I and II pollutants.

Furthermore, the province has proposed to weaken the MISA industrial water pollution control program, reduce controls on the burning of waste as 'waste derived fuel,' and the management of hazardous wastes, and to reduce spill reporting requirements. The province has also moved to introduce competition into the electricity market without adequate measures to control the increases in air pollution, including COA priority pollutants, that are likely to result from this initiative.

Some progress is claimed by the governments in the area of monitoring of atmospheric deposition of priority pollutants. However, serious concerns have been expressed over the past few years by a variety of provincial and international agencies, including the Environmental Commissioner of Ontario, the International Joint Commission and the North American Commission for Environmental Cooperation, over the decline in monitoring programs and capacity in Eastern North America, including Ontario. Research in the Great Lakes basin under COA is intended to support Canada's participation in international negotiations, however, concerns have been raised over the role that Canada has been playing in the negotiations related to Long-Range Transport of Pollutants.

There has been no progress on the review of Tier II pesticides that was to occur under COA.

COA Objective Three: Human and Ecosystem Health Conservation and Protection

The Development of Lakewide Management Plans (LaMPs) was one of the key

elements of the 1987 Protocol to the *Great Lakes Water Quality Agreement*. The LaMPs are intended to integrate the restorative goals of the Agreement for each of the Lakes, particularly with respect to priority pollutants and the protection and conservation of critical habitat. The development of the LaMPs was also a major 1994 COA commitment.

Progress on the development of the LaMPs has been slow, and the provincial government, in particular, has undertaken many initiatives since 1995 that are likely to undermine the LaMP goals on critical pollutants. These are outlined under Objective Two: Pollution Prevention and Control.

The situation is similar with respect to the LaMP and COA goals of protecting and conserving critical habitat, and fish and wildlife conservation. The Ministry of Natural Resource's withdrawal from the enforcement of the habitat protection provisions of the *Fisheries Act*; reductions to the Ministry's Great Lakes Management Units; changes to the land-use planning process to weaken protection for wetlands and other ecologically significant areas and to reduce the role of the Ministries of Natural Resources and the Environment; the weakened mandates and resources of conservation authorities; and reduced controls on activities on public lands, lakes and rivers all seem likely to undermine the goals of the LaMPs and COA in this area.

Some progress has been made on the adoption of policies to protect biological diversity as required under COA. The December 1997 provincial *Fish and Game Conservation Act*, for example, extends some protection to non-game species. However, the province has removed references to the protection of biological diversity from its land-use planning policies. The federal government has failed to move forward legislation to replace the *Canadian Endangered Species Protection Act*, which died on the Order Paper with the June 1997 federal election call.

The weaknesses in the province's fish and wildlife management programs were highlighted by the Provincial Auditor in his most recent report to the Legislature. The federal Department of Fisheries and Oceans is strengthening its presence in Ontario with respect to fish habitat protection, after major reductions in 1995. This is due to the province's termination of its enforcement activities related to the *Fisheries Act*.

COA included a commitment to the completion of a network of terrestrial and aquatic protected areas in the Great Lakes basin by the year 1999. The poor performance of both levels of government on the establishment of protected areas in the Great Lakes region has been highlighted in independent assessments by the World Wildlife Fund. The establishment of new protected areas in the basin is threatened by the province's 'Lands for Life' initiative, and by the sale of Crown Lands. The 'Lands for Life' initiative and pressures for increased use and revenue generation also threaten the integrity of existing provincial parks.

Some research on climate change adaptation is under way, as per the commitments under COA. However, no action has been taken on the implementation of adaptation measures, and although not a specific COA commitment, it is important to note that the provincial and federal governments continue to pursue policies that contribute to the climate change problem.

COA also committed the parties to the adoption of an ecosystem based planning process to integrate land and water use, by 1997. The province's March 1996 changes to the land-use planning process, reductions in the role of conservation authorities and the 'Lands for Life' initiative have worked to undermine the COA goals in this area. The COA goal of improving water efficiency has been affected by the province's termination of its programs related to water efficiency, and the removal of references to water efficiency from its land-use planning policies.

Some aspects of COA related to reducing the environmental impacts of agricultural activities are currently being sustained with federal funding. In the meantime, the province has adopted Bill 146, *the Farming and Food Production Protection Act*. This legislation is intended to protect environmentally damaging agricultural practices from interventions by the owners or occupiers of neighbouring lands or local municipal governments.

Overall Conclusions

The performance of the federal and provincial governments in relation to the specific commitments contained in COA has been weak. It is clear that most of the key goals and objectives of the Agreement will not be met before its expiry in March 2000. There has been some progress on RAPs and fish and wildlife habitat restoration. However, these activities have been severely affected by budgetary reductions and restructuring, especially at the provincial level. Progress on priority substances pollution prevention and control largely flows from pre-1995 regulatory initiatives, and the provincial and federal governments have undertaken many initiatives which will undermine the goals of COA and the *Great Lakes Water Quality Agreement* in this area. The situation with respect to the Agreement's human and ecosystem health objectives is similar, with little or no real progress, and many provincial initiatives which are undermining COA goals.

The most significant achievements in relation to COA commitments have tended result from pre-1995 regulatory initiatives, or to be with respect to relatively non-complex and inexpensive activities, such as the restoration of fish and wildlife habitat, and in research programs in relation to atmospheric deposition, climate change, human health, Tier II pollutant fates, contaminated sediment characterization, and alien species. Many of the more challenging, complex and costly aspects of the restoration of the AOCs in particular, and the Great Lakes basin ecosystem in general, remain outstanding.

Prior to the 1995 watersheds of the federal 'Program Review' budget and the change in provincial government, COA emerged as a notable example of successful intergovernmental cooperation, where the budgeting, planning and work activities of the participating federal and provincial agencies was closely integrated. However, since 1995 Environment Canada has been the only agency to show any consistent commitment to the Agreement. Health Canada's involvement is significantly reduced, while the Department of Fisheries and Oceans attempted to withdraw almost completely, only to be forced back into a more active role by the province's termination of its enforcement activities related to the *Fisheries Act*.

The provincial Ministry of the Environment maintains a nominal commitment to COA in its Business Plan, but has withdrawn key resources and functions. The Ministry of Natural Resources, for its part, has effectively abandoned its functions related to the Agreement, and other signatory agencies, such as the Ontario Ministry of Health have never played a significant role.

The current *Canada-Ontario Agreement Respecting the Great Lakes Ecosystem* expires March 2000. The commitment and effective cooperation of the federal and Ontario governments is essential to fulfilment of Canada's commitments under the *Great Lakes Water Quality Agreement*, and the ultimate goal of the restoration of the Great Lakes.

The achievement of this goal will require the renewed commitment and political will of both the governments of Ontario and Canada. The future restoration of the Great Lakes, protection of health and well-being of the human, animal and fish populations that live in and around the Lakes depends on it. In this context, the following recommendations are made regarding the development of the next *Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem*.

1. The Governments of Canada and Ontario should ensure that negotiations on a new Canada-Ontario Agreement are completed in time to be in place when the current Agreement expires in March 2000. The new Agreement should cover the period 2000-2005. The negotiation process should provide for input by all Great Lakes stakeholders, including local and aboriginal governments and communities, and the public at large.

2. The new Canada-Ontario Agreement should recommit the Parties to the basic goals of the *Great Lakes Water Quality Agreement*, including the virtual elimination of persistent toxic substances from the Lakes[1], the completion of the remediation of the Areas of Concern, and the restoration and maintenance of the chemical, physical and biological integrity of the Great Lakes System. The new Agreement should also address emerging issues, such as endocrine-disrupting substances.

3. The new Canada-Ontario Agreement should continue the structure of the current agreement, providing specific targets and benchmarks in relation to the achievement of the Agreement's objectives. The Agreement should specify the responsibilities of each level of government and agency in the achievement of targets, and the allocation of resources to this purpose by each level of government, subject to approval by Parliament and the Legislative Assembly of Ontario.

4. The new Canada-Ontario Agreement should recognize the role of municipal governments, conservation authorities and aboriginal governments and

[1] defined as the elimination of the use, generation and release of these substances

communities in the achievement of the Agreement's objectives. Specific resources should be committed to permit local and aboriginal agencies and communities to carry out these functions.

5. The new Agreement should provide specific and secure funding for both, the central, and local, coordination of the Remedial Action Plan program, and to support the work of the RAP Public Advisory Committees or their successors.

6. The new Agreement should provide for the delivery of annual progress reports to the Parliament of Canada, the Legislative Assembly of Ontario, the International Joint Commission and the public by the Parties.

7. The governments of Canada and Ontario should encourage the United States government and the Great Lakes State governments to develop an implementation framework for the Great Lakes Water Quality Agreement, similar to the Canada-Ontario Agreement.

Glossary

AAC	Agricultural Adaption Council's
AOCs	Areas of Concern
ARET	Accelerated Reduction/Elimination of Toxics
C 4	Canadian Chlorine Coordinating Committee
CBCN	Canadian Botanical Conservation Network
CCPA	Canadian Chemical Producers Association
CLTIP	Conservation land Tax Incentive Program
CMPPP	Comprehensive Municipal Pollution Prevention Project
COA	Canada-Ontario Agreement
CSOs	Combined Sewer Overflows
CSPS	Comprehensive Set of Policy Statements
CWA	Canada Water Act
DDT	Dichloro-Diphenyl- Trichloroethane
DFO	Department of Fisheries and Oceans Canada
EC	Environment Canada
EDC	Endocrine Disrupting Compounds
EFP	Environmental Farm Plants
EMAN	Ecological Monitoring and Assessment Network
EMS	Environmental Management System
GEIA	Global Emission Inventory Activity
GIS	Geographic Information System
GLWCAP	Great lakes Wetlands Conversation Action Plan
GlWQA	Great lakes Water Quality Agreement
HHW	Household Hazardous Waste
IADN	Integrated Atmospheric Deposition Network
IAGlR	International Association for Great lakes Research
IJC	International Joint Commission
LaMPs	Lakewide Management Plans
LIS	Lambton Industrial Society
LOTMP	Lake Ontario Toxics Management Plan
MISA	Municipal-Industrial Strategy for Abatement
MNR	Ministry of Natural Resources
MOEE	Ministry of Environment and Energy
MOU	Memoranda of Understanding
NAPS	National Air Pollution Surveillance
NCIS	National Contaminants Information System
NRTMP	Niagara River T6xics Management Plan
OCS	Octochlorostyrene
OMAFRA	Ontario Ministry of Agriculture, Food and Rural Affairs
P^4	Pollution Prevention Pledge Program
PAHs	Poly-Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCDD	Dioxins ICY
PCDF	Furans

PCPs	Pollution Control Plans
PPS	Provincial Policy Statement
PRC	Pesticide Review Committee
RAP	Remedial Action Plan
REET	Regional Environmental Emergency Team
STPs	Sewage Treatment Plants
TAPs	Trialkyl/Aryl Phosphates
TPM	Total Phosphorus Management
TSMP	Toxic Substances Management Policy
U.S. EPA	United States Environmental Protection Agency

Appendix A:
Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem

Table of Contents

The Canada-Ontario Agreement respecting the Great Lakes Basin Ecosystem

This Agreement is effective the 1st day of April, 1994 Between:
Her Majesty the Queen in Right of Canada
hereinafter referred to as "Canada" represented by the
Deputy Prime Minister and Honourable Minister of the Environment, and the
Honourable Minister of Fisheries and Oceans, and the
Honourable Minister of Agriculture and Agri-Food, and the
Honourable Minister of Health
of the first part, and
Her Majesty the Queen in Right of Ontario
(hereinafter referred to as "Ontario") represented by the
Honourable Minister of Environment and Energy, and the
Honourable Minister of Agriculture, Food, and Rural Affairs, and the
Honourable Minister of Natural Resources
Honourable Minister of Health
of the second part.

Background

On August 13, 1971, Canada and Ontario entered into an agreement (hereafter referred to as the "Canada-Ontario Agreement") mainly to control discharges of phosphorus in municipal sewage in order to implement an agreement being negotiated between Canada and the United States of America for improving water quality in the Great Lakes System.

Subsequent Canada-Ontario Agreements of 1976, 1982, and 1986, the latter extended in 1991 and subsequently expiring on March 31, 1993, shifted the focus to toxic chemical pollution and runoff from both urban and agricultural lands to reflect the Revised Canada-U.S. Great Lakes Water Quality Agreement.

1. Purpose

The purpose of this Canada-Ontario Agreement is to renew and strengthen planning, cooperation and coordination between Canada and Ontario in implementing actions to restore and protect the ecosystem, to prevent and control pollution into the ecosystem, and to conserve species, populations and habitats in the Great Lakes Basin Ecosystem. Implementation of this Canada-Ontario Agreement will contribute substantially to meeting Canada's obligations under the Revised Canada-U.S. Great Lakes Water Quality Agreement as amended by the 1987 Protocol.

2. Principles

The Great Lakes Basin Ecosystem is a complex web of connections, involving the air, the water bodies, and the land and their biota, including humans. The well-being of this Ecosystem, and all Basin residents, is integral to a

healthy and vigorous economy. The goal of the federal and provincial governments is a healthy and sustainable Great Lakes Basin Ecosystem. Canada and Ontario commit to restore, protect and sustain the Great Lakes Basin Ecosystem through joint action using an ecosystem approach.

Canada and Ontario recognize their shared responsibility for managing the Great Lakes and that neither government can succeed alone. Programs and activities resulting from this Canada-Ontario Agreement will be shared in such a way as to reflect the unique roles and responsibilities of each government, to minimize cost and to avoid duplication or overlap. Furthermore, while governments must lead, the responsibility for action is shared by all sectors of society.

Government and the private sector must be accountable and open with respect to their actions and responsibilities within the Basin. All individuals, communities and organizations must be involved in actions to protect the ecosystem. Collaborative arrangements and collective action are crucial to successful protection of the Great Lakes Basin Ecosystem. Stakeholder involvement will be encouraged in program development and implementation, including involvement of other levels of government and First Nations. The contribution of Ontario municipalities, particularly in provision of water and sewage infrastructure, will be significant and critical to the achievement of the goals of this Agreement.

The Canadian and Ontario governments recognize that restoration of the degraded ecosystem is costly and that some features of the ecosystem, once degraded, are lost forever. Preventing pollution at the source is key to conserving and preserving ecosystem health. Conservation and pollution prevention activities avoid further degradation to the Great Lakes Basin Ecosystem.

3. Objectives

Programs and actions shall be undertaken to achieve measurable progress towards three main objectives:

3.1 Restore Degraded Areas

Canada and Ontario, in cooperation with other members of the Great Lakes community, will continue restoration activities which embody a systematic and comprehensive approach to restoring and protecting ecosystem health and beneficial uses in degraded areas.

3.2 Prevent and Control Pollution

Canada and Ontario will work with the producers and sources of pollutants in the Great Lakes Basin Ecosystem to establish schedules and to achieve significant interim reductions (90% by 2000) in the releases of persistent, bioaccumulative and toxic substances by adopting the philosophy of zero discharge. In addition industries and others will be challenged to reduce the use, release or generation of other toxic substances which will contribute to the goal of virtual elimination.

3.3 Conserve and Protect Human and Ecosystem Health

Canada and Ontario, in cooperation with other members of the Great Lakes community, will act to conserve and protect sustainable ecosystems, with their aquatic and terrestrial communities, including people. The governments will determine the impacts of contaminants on basin populations and use the information to provide advice and prompt action, in cooperation with basin stakeholders, on significant ecosystem health issues.

4. Programs and Targets

To achieve these three objectives, Canada and Ontario commit to program targets identified below for each of the objectives.

4.1 Restore Degraded Areas

Restoration efforts will continue in degraded areas throughout the Great Lakes Basin Ecosystem with emphasis on high priority activities in Areas of Concern.

The Remedial Action Plan (RAP) program is a joint effort, led by the governments of Canada and Ontario and including First Nations, municipal governments, industry and the public, to restore water quality and beneficial uses in the 17 Areas of Concern (AOC). (AOCs and beneficial uses are listed in Appendix 1.) Restoration of all of the beneficial uses could take as much as 20 years. As of March, 1994, four Remedial Action Plans (Stage 2 documents) have been completed and a wide range of implementation activities in all 17 AOCs are underway.

Canada and Ontario recognize the important contributions made to the development of RAPs by the local Public Advisory Committees. The continued participation of these Committees or their successors during the implementation of the plans will be essential to achieving the targets noted hereafter.

In collaboration with concerned stakeholders in the Great Lakes Basin Ecosystem, and especially with those in the 17 affected areas, Canada and Ontario commit to the restoration of 60% of impaired beneficial uses across all 17 AOCs, leading to the delisting of 9 AOCs by the year 2000.

Actions undertaken by Canada and Ontario to address these priorities will include, and will not be limited to, the following:

- Complete and submit all RAP Stage 2 reports to governments by the end of 1996. The governments will respond to all completed Stage 2 reports and submit them to the International Joint Commission (IJC), by the end of 1997.
- Establish organizational frameworks for individual AOCs to coordinate and facilitate implementation of local RAPs upon completion of Stage 2 reports. Sustain public involvement and advisory programs for the implementation phase of RAPs.
- By 1995, establish cooperative mechanisms, including environmental surveillance and monitoring, to track progress towards delisting on all 17 Areas of Concern.

Capital Works

- Upgrade eight RAP primary sewage treatment plants to secondary treatment and optimize effluent quality and sludge generation at a further 12 plants in Areas of Concern.
- Enhance phosphorus removal at 15 sewage treatment plants in Areas of Concern by modifying or adding to existing phosphorus controls.
- Undertake 25 stormwater quality pilot projects in Areas of Concern.
- Abate 40% of combined sewer overflows in Areas of Concern by implementing municipal Pollution Control Plans (PCPs).
- Demonstrate and implement new and innovative technologies directly contributing to the restoration of beneficial uses through green industry strategies and other programs of both governments.

Rehabilitation

- Rehabilitate ecosystem function and structure of diverse self-sustaining native biological communities in 12 Areas of Concern and other priority degraded areas in the Great Lakes Basin Ecosystem.
- Develop and implement recovery plans for six threatened species in the Great Lakes Basin Ecosystem.
- Develop fish and wildlife community goals and objectives for each of the Great Lakes and implement plans to rehabilitate degraded native populations.
- Increase the extent of productive aquatic habitats in the Great Lakes Basin Ecosystem, including AOCs, by rehabilitating and protecting 6000 ha of wetland habitat and 600 km of riparian habitats.

Contaminated Sites

- Remediate contamination at ten priority federally-owned sites, at five orphan sites under the National Contaminated Sites Remediation Program, and an expected 20 sites under provincial jurisdiction.
- Assess and prioritize closed landfill sites under provincial jurisdiction for potential problems.

Contaminated Sediments

° Describe effects, demonstrate and implement the clean up of severely contaminated sediments, with emphasis on contamination at priority sites in RAP Areas of Concern.
° Develop long-term strategies for remediation of areas of intermediate sediment contamination at ten locations in the Great Lakes Basin Ecosystem by the year 2000.

Groundwater

° Undertake hydrogeological investigations and demonstration of new approaches to remediate groundwater contamination at priority locations in the Great Lakes Basin Ecosystem.

Human Health

° By 2000, reduce the risk of exposure to specific environmental contaminants in six known high risk populations by 50%.

4.2 Prevent and Control Pollution

The ultimate goal of Canada and Ontario is to achieve the virtual elimination of persistent, bioaccumulative and toxic substances from the Great Lakes Basin Ecosystem by encouraging and implementing strategies consistent with the philosophy of zero discharge.

The application of the zero discharge philosophy requires multi-media and life-cycle pollution prevention approaches in order to reduce and eventually eliminate the formation of persistent, bioaccumulative and toxic substances. Continued application of the zero discharge philosophy, both in the Great Lakes Basin and outside the basin, will be necessary to eventually achieve the long-term goal of virtual elimination.

To date, contributions by Canada and Ontario to the virtual elimination of priority toxic substances include bans or restrictions on the generation or use of PCBs, DDT, chlordane, mirex, dieldrin and toxaphene. These restrictions have contributed to dramatic reductions in the levels of these substances in fish and wildlife in the Great Lakes Basin Ecosystem. Through both voluntary actions and regulatory programs, significant reductions in the levels of other toxic substances have taken place.

Without precluding the use of regulations, further voluntary and cooperative initiatives by responsible parties will be the primary mechanisms to achieve real and measurable reductions in the use, generation or release of both persistent, bioaccumulative and toxic substances, and other substances impairing the Great Lakes Basin Ecosystem. Canada and Ontario will, if necessary, use existing tools or develop new ones to regulate and legislate sources of persistent, bioaccumulative and toxic substances province-wide, and other toxic or undesirable substances locally or regionally.

Thirteen persistent, bioaccumulative and toxic substances are of immediate concern in the Great Lakes Basin, as identified by the International Joint Commission and binational activities, and are referred to as Tier I substances. These pollutants require immediate action to eliminate their use, generation or release in the Great Lakes environment.

Identified as Tier II are 26 pollutants which have a demonstrated potential to impair the Great Lakes Basin Ecosystem, and these along with other pollutants will be subject to research and voluntary reductions at source. Tier II will be updated periodically, on the basis of sound science, to ensure that emerging contaminant issues are addressed as information becomes available. Persistent, bioaccumulative and toxic substances may be elevated from the Tier II listing through a weight-of-evidence approach, and through a process of stakeholder consultation.

The Tier I and Tier II listings represent an initial base-line commitment. Canada and Ontario may agree to target additional compounds of concern for action under specific geographic or sectoral programs.

For Tier I substances Canada and Ontario agree to:

° Confirm by 1996 that zero discharge has been achieved for 5 priority substances.

Manufacturers, distributors and commercial applicators of pesticides in Ontario will be held accountable for confirming that no production, use or importation, of aldrin/dieldrin, chlordane, DDT, mirex and toxaphene occurs to the Great Lakes Basin. Holders of supplies of these orphaned pesticides will be encouraged, through an amnesty under the Pesticides Act (Ontario), to cooperate in the collection and safe disposal of remaining quantities. Together these actions will assure that zero discharge has been met for these compounds.

° Seek to decommission 90% of high-level PCBs in Ontario, to destroy 50% of the high-level PCBs now in storage, and accelerate the destruction of stored low-level PCB waste, by the year 2000.

Operators of facilities currently using high-level (>1%) PCBs will report on their plans to decommission PCBs, either through storage or destruction. Social, economic and technical considerations will be taken into account in jointly establishing reduction targets. Canada and Ontario will facilitate the destruction of high-level PCBs in partnership with PCB owners, local government and citizens, with a goal of having a facility for PCB destruction, or an alternative, in place by 1998. New technologies to remediate low level PCB contaminated soils and sediments will be necessary to ensure the virtual elimination of PCBs.

° Seek a 90% reduction in the use, generation or release of the remaining seven substances by the year 2000.

Approximately 1000 potential sources of priority persistent, bioaccumulative and toxic substances will report on the use, generation or release of benzo(a)pyrene, hexachlorobenzene, alkyl-lead, mercury, octachlorostyrene, dioxins and furans, and the associated processes. Canada and Ontario will verify this information by 1996 and in consultation with those responsible, will develop and support action plans, pilot projects and demonstrations which will contribute to these interim (90%) reduction targets. Social, economic and technical considerations will be taken into account in setting the final reduction targets for these and other sources necessary to achieve virtual elimination.

° Jointly declare the waters of Lakes Superior and Nipigon, under a designation such as the Canada Water Act Part I, and investigate this mechanism for other exceptional waters.

Through a consultative process, building upon the Lake Superior Binational Program, a designation will be established which addresses the management philosophies and mechanisms to maintain and enhance the water quality of Lake Superior. This designation may provide for no net increases in the loadings from basin sources of anthropogenic substances in the short-term and the demonstration of zero discharge for nine designated substances in the long-term. It will illustrate the role of industrial technologies, and the importance of economic and social well-being, in the sustainable management of the Lake Superior basin.

For Tier II substances and other pollutants, Canada and Ontario agree to:

° 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.

In recognition that Tier II substances have the potential to harm the Great Lakes Basin Ecosystem, it is essential to move towards virtual elimination, at a rate which is technically and economically feasible. Voluntary initiatives in partnership with responsible agencies will progress towards interim targets which consider the characteristics of the sector, source, substance (synthetic compound or natural element), process, impacts, and the availability of replacement technologies.

° Provide essential knowledge on the fate and effects of Tier II substances from industrial, municipal and other sources.

Sound science is required to identify and assess the sources, mobilization, transport, and effects of contaminants. A multi-media weight-of-evidence approach will be used to identify emerging issues, and to support appropriate response and remediation actions. Assessment techniques for substances and the related processes will be improved, and awareness of chemical risks increased. Tier II will be updated periodically to ensure emerging contaminant issues are addressed as information becomes available.

° A coordinated review and evaluation of registered and scheduled pesticides will be conducted.

Herbicides, fungicides and insecticides are an issue of increasing public concern. Currently registered pesticides include several which can be toxic to non-target organisms, and may be persistent and bioaccumulative. A cooperative process will be developed concerning monitoring and evaluation of pesticides after their registration and scheduling to determine if actions are necessary to reduce or prevent unintended impacts. This initiative will be developed in consultation with interested stakeholders and will draw upon the work of various regulatory and scientific bodies on the environmental and health risks associated with pesticides. The first report of this initiative, including recommendations, will be specifically included in the annual COA report. This initiative will be carried out for the duration of this Agreement.

Actions to address both Tier I and Tier II priorities will include the following activities:

- Canada and Ontario will work with industry to attain commitments to achieve the targets stated herein through such formal arrangements as Memoranda of Understanding, and through informal arrangements as appropriate.
- Canada and Ontario reiterate their commitment to existing targets and targets under development, for toxics reductions under binational initiatives. Reduction targets will be pursued under the Niagara River Toxics Management Plan and Lakewide Management Plans.
- The role of zero discharge in achieving the virtual elimination of persistent, bioaccumulative and toxic substances will be demonstrated, bearing in mind social and economic factors, primarily through the Lake Superior Binational Program.
- Canada and Ontario will work with the U.S. Federal and State governments to establish a common strategy, by 1996, to eliminate the discharge of persistent, bioaccumulative and toxic substances to the entire Great Lakes Basin Ecosystem.
- Toxic Reduction Plans for major industrial sectors will be incorporated into Lakewide Management Plans for Lakes Ontario and Superior by 2000.
- Implementation by 1998 of pollution prevention programs will be promoted and encouraged at targeted industrial facilities discharging to the Great Lakes, through a variety of instruments, including the Ontario Pollution Prevention Pledge Program for Ontario and the national Accelerated Reduction/Elimination of Toxics (ARET) initiative.
- Significant, measurable reductions in the generation and release of hazardous wastes from all sources will be the focus of cooperative activities with waste generators.
- The prevention and control of spills, by improving federal, provincial and industrial spill prevention, preparedness and response programs in priority areas such as the St. Clair River, will further reduce pollutant loadings.
- The identification of atmospheric inputs of toxic chemicals, and their impacts, derived from worldwide sources, will provide a basis for supporting international negotiations to reduce loadings in the Great Lakes Basin Ecosystem.
- Improvements in and integration of existing air toxic data networks and management systems to track the deposition of contaminants within the Great Lakes Basin Ecosystem will support these international negotiations.

4.3 Conserve and Protect Human and Ecosystem Health

Productive habitats and healthy communities in the Great Lakes Basin Ecosystem are indicative of ecological integrity. Human health is affected by the quality of the Great Lakes environment. Prevention of exposure to environmental agents and promotion of healthy lifestyles are essential to risk reduction.
Actions to conserve ecosystem health have resulted in several positive developments. A sensitive indicator of ecosystem health, the bald eagle, has returned to nesting sites on Lake Erie's north shore and the cormorant population has increased 200 fold in the Great Lakes Basin Ecosystem. The lake trout population in Lake Superior has been restored to 50% of its historic level and is on the way to full recovery.

Lakewide Planning

Building on these developments, Canada and Ontario will develop and implement Lakewide Management Plans (LaMPs) for critical pollutants. Lake ecosystem management plans will also be developed to serve as frameworks for coordination and cooperation, integrating existing land and water-based planning, programming and

conservation activities, including Toxic Management Plans where they exist.

- Develop ecosystem-based principles, objectives and indicators for Lake Ontario by 1995, Lake Superior by 1996, Lake Erie by 1996, and Lake Huron by 2000 to provide direction for management plans.
- Develop Stage I LaMPs for critical pollutants for Lake Superior by 1995, Lake Ontario by 1995 and for Lake Erie by 1998 for consideration by the IJC.
- Develop Stage II LaMPs for critical pollutants for Lake Superior by 1996, Lake Ontario by 1997 and for Lake Erie by 2000 for consideration by the IJC.

Habitat Conservation and Protected Areas

- Implement the Great Lakes Wetlands Conservation Action Plan in 1994 to protect coastal and basin wetlands.
- Apply the principles of the Federal Policy for the Management of Fish Habitat with a goal of net gain in productive capacity of fish habitat basin-wide.
- Secure a network of protected areas representative of terrestrial and aquatic natural areas in the Great Lakes Basin by 1999.

Fish and Wildlife Conservation

- Have biodiversity policies in place by 1996 designed to protect the function and structure of diverse, self-sustaining biological communities.
- Focus monitoring programs to measure success in achieving healthy diverse ecosystems.
- Develop and implement by 1997, joint federal and provincial action plans to control the introduction of undesirable species and mitigate the negative impacts of non-indigenous nuisance species, such as zebra mussels and ruffe. The federal government will continue the control program on sea lamprey.

Human Health

- Protect and promote human health through education, long term monitoring and stewardship:
- By 2000, 70 % of the population will be knowledgeable about five key environmental health issues and how to reduce their risk.
- By 2000, achieve for the general population a 30% reduction in human health risks associated with exposure to environmental contaminants.
- By 2000, 80% of the population will have significantly increased their understanding and taken action in order to protect their health through involvement in environmental stewardship.

Climate Change

Identify the most likely impacts of climate variability and change on the Great Lakes Basin Ecosystem (for example, on human or ecosystem health or water and land use management) and develop and promote adaptive response strategies to reduce vulnerability.

Land and Water Use Management

- Implement water efficiency initiatives to reduce per capita water use in the Great Lakes Basin.
- Develop and adopt an ecosystem-based planning process to integrate land use and water management by 1997.
- Focus demonstration projects for ecosystem based practices to reduce stresses to land, water and biota.
- Support the development and implementation of Environmental Farm Plans.

5. Management

A Review Committee shall be established by Canada and Ontario having the following key functions:

- recommend strategic directions and priorities;
- receive, review and comment annually on workplans to achieve the targets in this Agreement;
- review and report on progress towards strategic directions and targets including a joint report to the biennial

meeting of the IJC beginning in 1995;
- resolve disputes on key issues to the extent possible, or recommend methods by which disputes may be resolved.
- provide stakeholders with an annual opportunity to comment on progress to date and future plans.

The Review Committee will be co-chaired by the Regional Director General, Ontario Region, Environment Canada, and an Assistant Deputy Minister, Ontario Ministry of Environment and Energy, and will contain additional equal numbers of federal and provincial representatives. The Review Committee will, as required, set up federal-provincial mechanisms to ensure effective coordination in meeting objectives and including appropriate integration of research, reporting, monitoring and surveillance activities.

6. Financial Implications

Canada and Ontario agree that the achievement of the objectives covered by this Agreement are estimated to cost Canada, Ontario and municipal governments over $2.5 billion, including approximately $1.7 billion for restoration of degraded areas. Canada and Ontario agree to share the core administrative costs associated with central and local coordination of the RAP program.

The Canadian and Ontario governments will contribute equitably to meeting the objectives of this Agreement. Programs and activities of each government resulting from this Agreement will be shared in such a way as to reflect the unique roles and responsibilities of each government, to minimize cost and to avoid duplication or overlap.

Both parties recognize that the levels of resourcing which support the delivery of results under the Agreement are subject to annual budget authorization by Parliament and the Legislature. To meet the objectives of the Agreement, neither government will modify financial support to agreed upon commitments, programs and activities without consultation.

7. Binational Consultation

Where Canada and the United States propose to consult or to reach any agreement or make any decision on any matter pursuant to the Revised Canada-U.S. Great Lakes Water Quality Agreement, Canada will consult fully with Ontario with respect to such proposed consultation, agreement or decision.

Where, in the opinion of Canada or Ontario a significant change occurs in the requirements and responsibilities under the Revised Canada-U.S. Great Lakes Water Quality Agreement, as amended by the 1987 Protocol, Canada and Ontario will confer on relevant changes to the terms of the Canada-Ontario Agreement.

8. Amendment

The Canada-Ontario Agreement may be amended by joint agreement of Canada and Ontario. All such amendments will be confirmed by an exchange of letters between the federal Minister of Environment and the provincial Minister of Environment and Energy on behalf of their governments and shall specify the effective date or dates of such amendments.

9. Term of Agreement

Except as otherwise expressly provided, the Canada-Ontario Agreement applies in respect of the period beginning on the 1st day of April, 1994 and ending on the 31st day of March, 2000. In the event that the Revised Canada-U.S. Great Lakes Water Quality Agreement as amended by the 1987 Protocol and as reaffirmed on January 29, 1993 by Canada and the United States of America, after due consultation with the Province of Ontario, is terminated pursuant to Article XIV of that agreement, the Canada-Ontario Agreement will be terminated by Canada and Ontario within a reasonable time, and in any event not later than one year thereafter.

Appendix 1 : **Canadian Great Lakes Areas of Concern:**

- Thunder Bay
- Nipigon Bay
- Jackfish Bay
- Peninsula Harbour

° Spanish River
° Severn Sound
° Collingwood Harbour
° Wheatley Harbour
° Hamilton Harbour
° Metro Toronto and Region
° Port Hope Harbour
° Bay of Quinte
° St. Marys' River
° St. Clair River
° Detroit River
° Niagara River
° St. Lawrence River

"Beneficial uses", as defined in the Revised 1978 Great Lakes Water Quality Agreement as amended by the 1987 Protocol

"Impairment of beneficial use(s)" means a change in the chemical, physical or biological integrity of the Great Lakes System sufficient to cause any of the following:

1. restrictions on fish and wildlife consumption;
2. tainting of fish and wildlife flavour;
3. degradation of fish wildlife populations;
4. fish tumours or other deformities;
5. bird or animal deformities or reproduction problems;
6. degradation of benthos;
7. restrictions on dredging activities;
8. eutrophication or undesirable algae;
9. restrictions on drinking water consumption, or taste and odour problems;
10. beach closings;
11. degradation of aesthetics;
12. added costs to agriculture or industry;
13. degradation of phytoplankton and zooplankton populations; and
14. loss of fish and wildlife habitat.

Appendix 2

Tier I substances:

The Tier I listing includes the 11 critical pollutants identified by the International Joint Commission, plus critical pollutants identified in the Niagara River and Lake Ontario Toxic Management Plans and the Lake Superior Binational Program. Tier 1 pollutants are targeted for virtual elimination by adopting the philosophy of zero discharge for local or direct sources, and by encouraging similar actions binationally and globally in order to eliminate distant sources or long-range transport as inputs to the Great Lakes Basin.

° Aldrin/dieldrin
° Benzo(a)pyrene
° Chlordane
° DDT
° Hexachlorobenzene
° Alkyl-lead
° Mercury
° Mirex
° Octachlorostyrene
° PCBs
° PCDD (dioxins)
° PCDF (furans)
° Toxaphene

Tier II substances:

Tier II compounds include substances identified by science-based screening methodologies or Lakewide Management Plans. These substances have the potential for causing widespread impacts, or have already caused local adverse impacts on the Great Lakes environment.

1. Anthracene
2. Cadmium
3. 1,4-dichlorobenzene
4. 3,3'-dichlorobenzidine
5. Dinitropyrene
6. Hexachlorocyclohexane
7. 4,4'-methylenebis(2-chloraniline)
8. Pentachlorophenol
9. Tributyl tin

Plus 17 PAH's as a group, including but not limited to:

1. Benz(a)anthracene
2. Benzo(b)fluoranthene
3. Benzo(g,h,i)perylene
4. Perylene
5. Phenanthrene

Tier II will be updated periodically, on the basis of sound science, to ensure emerging contaminant issues are

addressed as information becomes available. Persistent, bioaccumulative and toxic substances may be elevated from the Tier II listing to the Tier I listing through a weight-of-evidence approach, and through a process of stakeholder consultation.

Original document signed
On behalf of Canada:

The Honourable Ralph E. Goodale, P.C.,
Minister of Agriculture and Agri-Food

The Honourable Sheila Copps, P.C.,
Deputy Prime Minister of Canada and Minister of the Environment

The Honourable Brian Tobin, P.C.,
Minister of Fisheries and Oceans

The Honourable Diane Marleau, P.C.,
Minister of Health

On behalf of Ontario:

The Honourable C.J. "Bud" Wildman,
Minister of Environment and Energy

The Honourable Elmer Buchanan,
Minister of Agriculture, Food and Rural Affairs

The Honourable Howard Hampton,
Minister of Natural Resources

The Honourable Ruth Grier,
Minister of Health

APPENDIX B:

Summary Tables of Programs and Targets for the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (1994)

Objective 1: Restore Degraded Areas

"Canada and Ontario commit to the restoration of 60% of impaired beneficial uses across all 17 AOCs (Areas of Concern), leading to the delisting of 9 AOCs by the year 2000."

Objective 2: Prevent and Control Pollution

"Canada and Ontario, in cooperation with other members of the Great Lakes community, will act to conserve and protect sustainable ecosystems, with their aquatic and terrestrial communities, including people. The governments will determine the impacts of contaminants on basin populations and use the information to provide advice and prompt action, in cooperation with basin stakeholders, on significant ecosystem health issues."

Objective 3: Conserve and Protect Human and Ecosystem Health

"Canada and Ontario will work with the producers and sources of pollutants in the Great Lakes Basin Ecosystem to establish schedules and to achieve significant interim reductions (90% by 2000) in the releases of persistent bioaccumulative and toxic substance by adopting the philosophy of zero discharge. In addition, industries and others will be challenged to reduce the use, release or generation of other substances which will

contribute to the goal of virtual elimination."

Objective 1: Restore Degraded Areas:

Area:	Program & Target Descriptions/Actions Undertaken	*Comments*
1.1 Remedial Action Plans	**.1** Restore 60 per cent of impaired beneficial uses across all 17 areas of Concern (AOCs), leading to the delisting of nine AOCs by the year 2000.	*· Will not be met. Only 4 AOCs reported close to meeting year 2000 target. Progress in many others stalled*
	.2 Complete and submit all RAP Stage 2 reports to governments by the end of 1996. The governments will respond to all completed Stage 2 RAP (Remedial Action Plan) reports and submit them to the IJC (International Joint Commission) by end of 1997.	*· Progress is well behind the schedule.*
	.3 Establish organizational frameworks for individual AOCs to coordinate and facilitate implementation of local RAPs upon completion of Stage 2 reports.	*· Implementation frameworks heavily affected by funding reductions, particularly layoff of RAP coordinators in many provincially led RAPs, and removal of funding support for Public Advisory Committees.*
	.4 By 1995, establish cooperative mechanisms, such as environmental surveillance and monitoring to track progress toward delisting all 17 AOCs.	*· Monitoring heavily affected by funding reductions, particularly by federal Department of Fisheries and Oceans and Ontario Ministry of Natural Resources.*
1.2 Capital Works:	**.1** Upgrade 8 RAP primary sewage treatment plants (STPs) to secondary treatment and optimize effluent quality and sludge generation at a further 12 plants in AOCs.	*· Some progress, mostly through pre-1995 initiatives. Loss of provincial infrastructure support programs (rural and urban beach clean-up, municipal assistance program) sited as problem in several RAPs.*
	.2 Enhance phosphorus removal at 15 sewage treatment plants in AOC by modifying or adding to existing phosphorus controls.	*· 10 STPs in 3 AOCs have achieved RAP phosphorous objectives. See above re: funding of future work*
	.3 Undertake 25 stormwater quality pilot projects in AOCs.	*· Sixteen storm water quality projects have been initiated in five AOCs. See above re: funding of future work.*
	.4 Abate 40% of combined sewer overflows in AOCs by implementing municipal Pollution Control Plans.	*· Plans have been completed for seven AOCs. See above re: funding of implementation.*
	.5 Demonstrate and implement new and innovative technologies directly contributing to the restoration of beneficial uses through green industry strategies and other programs of both governments.	*· Provincial environmental technology support programs terminated.* *· Federal programs also significantly reduced.*

Area:	Program & Target Descriptions/Actions Undertaken	*Comments*
1.3 Species and Habitat Rehabilitation:	**.1** Rehabilitate ecosystem function and structure of diverse self-sustaining native biological communities in 12 AOCs and other priority degraded areas.	*· Some site specific progress.* *· Work heavily affected by DFO and MNR withdrawal from RAP work.* *· Note no reference to RAPs or COA in current MNR Business Plan.*
	.2 Develop and implement recovery plans for 6 threatened species.	*· Recovery plans have been completed for four species. A further eight are in progress. Completion does not equal implementation. Plans may also be negatively affected by other initiatives.*
	.3 Develop fish and wildlife goals and objectives for each of the Great Lakes and implement plans to rehabilitate degraded native fish and wildlife populations.	*· Goals and objectives developed for Lakes Erie, Superior and Huron. Lake Ontario's under development. Note impact of DFO and MNR withdrawal from Great Lakes activities, Provincial Auditor's comments on adequacy of MNR fish and wildlife management programs.*
	.4 Increase the extent of productive aquatic habitats by rehabilitating and protecting 6000ha of wetland habitat and 600km of riparian habitats.	*· Some progress, but heavily affected by DFO and MNR withdrawal. Note also MNR withdrawal from Fisheries Act enforcement, changes to land-use planning process weakening protection of ecologically significant areas, reductions in mandate and resources of Conservation Authorities.*
1.4 Contaminated Sites:	**.1** Remediate contamination at: (i) 10 priority federally-owned sites; (ii) 5 orphan sites under the National Contaminated Sites Remediation Program; (iii) an expected 20 sites under provincial jurisdiction.	*· No progress reported on federal sites.* *· Some progress reported on provincial and 'orphan' sites, but resources inadequate to complete clean-up work (e.g. Deloro).*
	.2 Assess and prioritize closed landfill sites under provincial jurisdiction for potential problems.	*· Provincial inventory outdated (1991).* *·Problems at several sites have emerged (e.g.: Kingston, Owen Sound)* *· Changes to provincial landfill approval process seem likely to result in more problem sites in the future.*

Area:	Program & Target Descriptions/Actions Undertaken	*Comments*
1.5 Contaminated Sediments:	**.1** Describe effects, demonstrate and implement the clean up of severely contaminated sediments, with emphasis on contamination at priority sites in AOCs.	*· Progress on characterization at 7 priority AOCs. reported.* *·Little progress on actual clean-up, only one new project reported post-1995.* *·Progress stated now dependant on private sector contributions* *·Concerns among PACs regarding proposals to rely on natural sedimentation rather than remediation.*
	.2 Develop long-term strategies for remediation of areas of intermediate sediment contamination at 10 locations by the year 2000.	*· Considerable progress on characterization.* *· Little progress on actual clean-up. No projects reported completed since 1995.* *·Concerns among PACs regarding proposals to rely on natural sedimentation rather than remediation.*
1.6 Groundwater:	**.1** Undertake hydrogeological investigations and demonstrations of new approaches to remediate groundwater contamination at priority locations in the Great Lakes Basin Ecosystem.	*· Little progress.* *· Note Provincial Auditor's comments re: lack of provincial groundwater strategy.* *·Note provincial initiatives likely to worsen groundwater contamination problems (e.g.: septic system approvals, landfill approvals).*
1.7 Human Health:	**.1** By 2000, reduce the risk of exposure to specific environmental contaminants in 6 known high risk populations by 50%.	*· Some research activities underway.* *· Heavily affected by 40% reduction to Health Canada Great Lakes Program budget.* *·Health data for AOCs collected but not released.* *·No direct action to reduce risk of exposure to contaminants by either level.* *·Many provincial initiatives likely to increase exposure of public to contaminants.*

Objective 2: Prevent and Control Pollution

Area:	Program & Target Descriptions/Actions Undertaken	Comments
2.1 Priority Toxic Substances :	**.1** For Tier I substances, Canada and Ontario agree to seek a 90 per cent reduction in the use, generation or release of the remaining seven substances (benzo(a)pyrene, hexachlorobenzene, alkyl-lead, mercury, octachlorostyrene, PCDD (dioxins) and PCDF (furans) by the year 2000.	*·Major progress flows from CEPA/MISA regulations on pulp and paper sector for dioxins and furans.* *·Claims of progress reported through ARET open to question.* *·No action by federal government of CEPA toxic Tier I substances other than dioxins and furans from pulp and paper sector. 1995 Toxics Substances Management Policy seen to undermine GLWQA goals for virtual elimination of PBTs.* *·Many provincial initiatives likely to result in increased generation and release of Tier I substances.*
	.2 For Tier II substances and other pollutants, Canada and Ontario agree to collaborate with, and provide support for, voluntary programs by industry and others to reduce the use, release or generation of Tier II substances (cadmium, hexachlorocyclohexane,1,4-dichlorobenzene, 3,3'-dichlorobenzidine, 4,4'-methylene bis(2-chloroaniline), pentachlorophenol, tributyl tin, and a group of PAHs including anthracene and dinitropyrene), and establish specific timelines and targets for achieving their virtual elimination.	*·Claims of progress under ARET open to question.* *·No action by federal government on CEPA 'toxic' Tier II substance except benzene content of gasoline.* *·Many provincial initiatives likely to result in increased generation and release of Tier II substances.*
	.3 Provide essential knowledge on the fate and effects of Tier II substances from industrial, municipal and other sources.	*·Significant progress by federal government in this area.*
	.4 For Tier I, Tier II and other polluting substances: (i) Work with industry to attain commitments to achieve the targets stated herein through such formal arrangements as Memoranda of Understanding (MOU), and through informal arrangements as appropriate. (ii) Implementation by 1998 of pollution prevention programs will be promoted and encouraged at targeted industrial facilities discharging to the Great Lakes, through a variety of instruments, including the Ontario Pollution Prevention Pledge Program (P^4) and the national ARET initiative.	*·Concerns re: effectiveness, efficiency, reach and accountability with these voluntary initiatives.*
2.2 PCBs, Hazardous Waste and Spill Reductions:	.1 Seek to decommission 90 per cent of high-level PCBs in Ontario, to destroy 50 per cent of the high level PCBs now in storage, and accelerate the destruction of stored low-level PCB waste by the year 2000.	*·Some progress reported* *·Federal PCB destruction program terminated 1995.* *·Note growing reliance on less than best available technology for PCB destruction both inside (Steacy Dismantling) and outside (Alberta, Quebec) of*

Area:	Program & Target Descriptions/Actions Undertaken	Comments
		Ontario.
	.2 Actions to address both Tier I and Tier II pollutants will include significant, measurable reductions in the generation and release of hazardous wastes from all sources, and will focus on cooperative activities with waste generators.	*·Major growth in hazardous waste generation reported in both provincial waste manifest system (50% growth 1994-1997) and NPRI (90% growth 1994-1996).* *· Significant growth in waste imports for disposal also reported under CEPA Hazardous Waste Import/Export Regulations.*
	.3 Actions to address the prevention and control of spills by improving federal, provincial and industrial spill prevention, preparedness and response programs in priority areas such as the St. Clair River, will further reduce pollutant loadings.	*·Spill rate "roughly static."* *·Significant losses to federal and provincial spill/environmental emergency response capacity since 1995.*
2.3 Binational Initiatives :	**.1** Establish with U.S. Federal and State governments, a common strategy by 1996 to eliminate the discharge of persistent, bioaccumulative and toxic substances to the entire Great Lakes Basin Ecosystem.	*·April 1997 Binational Toxics Strategy seen to undermine goals of GLWQA on PBT substances.* *·Progress on the implementation of even the limited goals of the Strategy has been weak.*
	.2 Reduction targets will be pursued under the Niagara River Toxics Management Plan (NRTMP) and Lakewide Management Plans (LaMP). Toxic reduction plans for major industrial sectors will be incorporated into LaMPs for Lakes Ontario and Superior by 2000.	*·Progress on LaMP development extremely slow.* *·Major progress on reducing Ontario discharges into Niagara River due to MISA program.*
	.3 The role of zero discharge in achieving the virtual elimination of persistent bioaccumulative and toxic substances will be demonstrated, bearing in mind social and economic factors, primarily through the Lake Superior Binational Program.	*·Major progress on reduction of discharges from pulp and paper sector due to CEPA and MISA regulations.* *·Many provincial initiatives likely to undermine Lake Superior zero discharge goal.*
	.4 Jointly declare the waters of Lakes Superior and Nipigon under a designation such as the Canada Water Act (CWA) Part I, and investigate this mechanism for other exceptional waters.	*·No progress reported.*
2.4 Atmospheric Deposition	**.1** The identification of atmospheric inputs of toxic chemicals, and their impacts, derived from worldwide sources, will provide a basis for supporting international negotiations to reduce loadings in the Great Lakes Basin	*·Some progress reported in this area.* *·Monitoring capacity heavily affected by budgetary reductions at both levels.* *·Concerns over Canada's role in international*

Area:	Program & Target Descriptions/Actions Undertaken	Comments
	Ecosystem.	*negotiations that Great Lakes research is intended to support.*
	.2 Improvements in and integration of existing air toxics data networks and management systems to track the deposition of contaminants within the Great Lakes Basin Ecosystem will support these international negotiations.	·*Some progress reported in this area.* ·*Monitoring capacity heavily affected by budgetary reductions at both levels.*
2.5 Pesticides	**.1** For Tier I Substances, Canada and Ontario agree to confirm by 1996 that zero discharge has been achieved for five priority substances.	·*Substances confirmed as no longer commercially available for use.* ·*Stocks may still exist in private storage.* ·*No significant waste pesticide collection program since 1991-92.*
	.2 For Tier II substances and other pollutants, Canada and Ontario agree to a coordinated review and evaluation of registered and scheduled pesticides.	·*No progress.*

Objective 3: Conserve and Protect Human and Ecosystem Health

Area:	Program & Target Descriptions/Actions Undertaken	*Comments*
3.1 Lakewide Planning:	**.1** In order to provide direction for management plans, ecosystem-based principles, objectives and indicators will be developed for: (i) Lake Ontario (by 1995) (ii) Lake Superior (by 1996) (iii) Lake Erie (by 1996) (iv) Lake Huron (by 2000) For consideration by the IJC, develop LaMPs for critical pollutants for: (i) Lake Superior (Stage I:1995, Stage II:1996) (ii) Lake Ontario (Stage I:1995, Stage II:1997) (iii) Lake Erie (Stage I:1998, Stage II:2000)	*· Progress on LaMP development very slow.* *· Many provincial initiatives likely to undermine LaMP goals on critical pollutants and critical habitat.* *· No federal progress on LaMP critical pollutants except 1992 CEPA pulp and paper regulations.* *· Federal role on critical habitat heavily affected by DFO withdrawal from freshwater functions.*
3.2 Habitat Conservation and Protected Areas:	**.1** Implement the Great Lakes Wetlands Conservation Action Plan (GLWCAP) in 1994 to protect coastal and basin wetlands.	*·Wetlands protection affected by weakening of wetlands protection in provincial land-use planning process, MNR withdrawal from Fisheries Act enforcement.* *·Progress also affected by DFO reductions to fish habitat research activities.*
	.2 Apply the principles of the Federal Policy for the Management of Fish Habitat with a goal of net gain in productive capacity of fish habitat basin wide.	*· MNR withdrew from enforcement of habitat protection provisions of the Fisheries Act in September 1997.* *·DFO has established some enforcement capacity in Ontario on an interim basis.*
	.3 Secure a network of protected areas representative of terrestrial and aquatic natural areas in the Great Lakes Basin by 1999.	*·Lack of progress on protected areas highlighted by WWF Endangered Spaces Program.* *·Establishment of new protected areas, and integrity of existing areas, threatened by provincial 'Lands for Life' program.* *·Tax treatment of ecologically significant lands improved by both levels of government.*
3.3 Fish and Wildlife	**.1** Have biodiversity policies in place by 1996 designed to protect the function	*· No progress on federal endangered species legislation.*

Area:	Program & Target Descriptions/Actions Undertaken	*Comments*
Conservation:	and structure of diverse, self-sustaining biological communities.	*· Provincial Fish and Wildlife Act extends protection to non-game species.* *· Biodiversity protection requirements removed from provincial land-use planning policies.*
	.2 Focus monitoring programs to measure success in achieving healthy diverse ecosystems.	*· Federal and provincial monitoring programs heavily affected by budgetary reductions.*
	.3 Develop and implement by 1997, joint federal and provincial action plans to control the introduction of undesirable species and mitigate the negative impacts of non-indigenous nuisance species, such as zebra mussels and ruffe. The federal government will continue the control program on sea lamprey.	*· Some research reported on alien species, but control actions focussed on sea lamprey.*
3.4 Human Health:	**.1** Protect and promote human health through education, long term monitoring and stewardship. By 2000... i) ...70% of the population will be knowledgeable about five key environmental health issues and how to reduce their risk. ii) ...achieve for the general population a 30% reduction in human health risks associated with exposure to environmental contaminants. iii) ...80%of the population will have significantly increased their understanding and taken action in order to protect their health through involvement in environmental stewardship.	*·Significant health research completed, although Health Canada activities subject to major budget reductions. No new research programs being undertaken.* *·Many provincial initiatives likely to increase exposure to environmental contaminants.* *·No indication of progress on educational initiatives.*
3.5 Climate Change:	**.1** Identify the most likely impacts of climate variability and change on the Great Lakes Ecosystem (for example, on human or ecosystem health or water and land use management) and develop and promote adaptive response strategies to reduce vulnerability.	*· Significant progress on research activities.* *·No progress on adaptation measure implementation.*
3.6 Land and Water Use Management:	**.1** Implement water efficiency initiatives to reduce per capita water use in the Great Lakes basin.	*· Building Code completed to promote water efficiency, but many other provincial initiatives likely to undermine water efficiency efforts.* *· Water exports have emerged as a major concern.*
	.2 Develop and adopt an ecosystem-based planning process to integrate land	*·Target undermined by March 1996 amendments to*

Area:	Program & Target Descriptions/Actions Undertaken	*Comments*
	use and water management by 1997.	*Planning Act, and Provincial Planning Policy Statements.* *·Target also undermined by 'Lands for Life' initiative, reductions in mandates and resources of Conservation Authorities.*
	.3 Focus demonstration projects for ecosystem-based practices to reduce stresses to land, water and biota.	*·Most activities were funded through now terminated Canada-Ontario Agriculture Green Plan.*
	.4 Support the development and implementation of Environmental Farm Plans.	*·Program continuing with federal funding.* *·Note provincial Farming and Food Production Protection Act seems designed to protect environmentally destructive agricultural practices.*