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## **PREFACE**

The Niagara River has been designated by the federal and provincial governments in cooperation with the International Joint Commission (IJC) as one of forty-three Areas of Concern (AOC) in the Great Lakes Basin. This designation is due to degraded water quality, which impairs complete use of the River's resources.

In response to concerns over the health of the entire Niagara River ecosystem, a Remedial Action Plan (RAP) was developed. The RAP is represented by the federal and provincial government, resource agencies and the public. The Public Advisory Committee (PAC) allowed for the participation of public stakeholders when the RAP was initiated.

The development of the Niagara River RAP is a dynamic process based on the framework established by the 1987 Great Lakes Water Quality Agreement (GLWQA) protocol.

The stage I report (Environmental Conditions and Problem Definition) was completed in September 1993. The purpose of this report was to describe the current environmental conditions in the AOC, identify sources of contamination, and outline the extent of beneficial use impairments.

The stage II report (The Cleanup Connection Recommended Plan) was completed in 1995. The purpose of this report was to identify the goals and objectives of the RAP. The report identifies remedial activities (recommendations) necessary to restore the desired beneficial uses and achieve the environmental goals. The report also outlines the necessary monitoring program needed to track project success, and a RAP implementation structure.

The Implementation Annex completes the stage II report. The Annex identifies agencies that are responsible for implementing recommendations, and provides a schedule of activities, timelines and projected costs.

The final stage of the RAP will be monitoring to confirm the restoration of all beneficial uses. Evidence and updates will be reported in an annual forum until all beneficial uses have been restored.

## **ACKNOWLEDGEMENTS**

The remedial action plan process is a consultative, consensus building process involving many participants representing many jurisdictions. The production of the Stage II Report and the Implementation Annex has been a collaborative effort.

The RAP is a challenging process due to the large number of participants and jurisdictions. The RAP process has provided a forum that has combined the efforts of a diverse group of individuals representing a wide range of knowledge, expectations, interests, and commitment.

The participation of the RAP stakeholders at the public meetings was key in the development of the draft Implementation Annex. They are to be recognized for their efforts to help move the RAP forward, and are thanked for their review and comments on the Implementation Annex.

Environment Canada and the Ontario Ministry of the Environment are to be acknowledged for jointly funding this venture and providing technical expertise.

In addition, there is a diverse group of agencies, organizations and individuals who through their advice and comments have supported the Niagara River RAP. Their efforts and dedication is greatly appreciated.

## SUMMARY

The Niagara River Remedial Action Plan Stage II Report The Cleanup Connection is now complete with the finalization of the Implementation Annex. The Stage II Report consists of the recommended remedial activities necessary to restore the desired beneficial uses. The purpose of the Implementation Annex is to lay out a plan and outline the process for achieving the Stage II goals. The Annex identifies the partners, their commitments and responsibilities for implementing RAP Recommendations. The Annex also includes the Federal and Provincial responses and commitments to the Stage II RAP (Appendix C). Appendix A & B lists a schedule of activities, time-lines and projected costs for implementation.

The central theme of the RAP Stage II Implementation Action Strategy is to build on existing strengths and to formulate partnerships with other government and non-government initiatives. In order to accomplish this, the Stage II Recommendations have been organized into six key theme categories. This will provide a stronger focus to effectively accomplish the restoration of the identified impaired beneficial uses.

The six key theme categories are:

1. Beneficial use impairment related to persistent toxic load to the Niagara River.
2. Stage II RAP goals related to improving recreational opportunities, aesthetics and habitat features on the Niagara River.
3. Beneficial use impairment of Niagara River tributaries as a result of issues unique to the Niagara River Area of Concern.
4. Beneficial use impairment due to stressors common to areas with similar rural and urban land management.
5. Recommendations that can not be implemented at the local level and are feasible to implement only at the Federal or Provincial level.
6. The Niagara River RAP Implementation framework.

Grouping the Recommendations into theme categories allows for the creation of a successful and manageable implementation organization. Each category will be managed independently, as each will require different implementation mechanisms in order to restore beneficial uses and meet delisting criteria. This format enables integration of the Stage II RAP with partners including the Niagara River Toxics Management Plan (NRTMP), the Ministry of the Environment, the Niagara Peninsula Conservation Authority, Federal, Provincial and Municipal governments, community groups and committees.

The Implementation Annex is a concise account of the proposed and anticipated RAP partner and implementation activities. This framework will provide the starting point for annual progress reporting and the liaison with appropriate RAP partners. In order to ensure that there remains a central focus, the Niagara Peninsula Conservation Authority will provide a central forum as coordinating body.

## **SUMMARY OF PRIORITY ACTIVITIES**

The key role of the Niagara River RAP will be to liaise with agencies responsible for implementing the Stage II RAP Recommendations with the objective of producing an annual progress indicator report. This report will be released to the public in order to provide an update to completed activities and progress on an annual basis.

The RAP will initiate, participate and provide updates on the implementation of the following activities related to beneficial use impairment.

## **PROJECTS**

1. Projects to encourage the implementation of agricultural best management practices.
2. The reduction of rural septic system pollution.
3. The encouragement of wetland habitat creation, protection and restoration projects.
4. The encouragement of projects targeted towards increasing forest cover, connective corridors and increased interior forest habitat.
5. The encouragement of projects targeted to increasing riparian buffers for 1st to 3rd order streams.
6. Projects and activities to reduce in-channel erosion and sedimentation and encourage natural channel design projects.
7. The encouragement of improved urban stormwater practices.
8. The encouragement of projects to assist municipalities to reduce or eliminate combined sewer overflows.
9. The reduction of Glanbrook landfill leachate discharge and activities to monitor tributaries downstream of the airport.
10. The reduction and eventual elimination of Hamilton International Airport discharge and activities to monitor tributaries downstream of the airport.
11. Encourage local industries, businesses, school boards and governments to participate in the MOE Pollution Prevention Pledge Program (P-4) and the Environment Canada Accelerated Reduction and Elimination of Toxics (ARET) programs.

## **MONITORING**

1. Develop an effective water quality monitoring program for the Welland River watershed.
2. Develop an effective water quality monitoring program for the Niagara River tributaries.
3. Develop an effective monitoring program for groundwater quality and quantity in the Niagara River watershed.
4. Monitor the progress of the Technical Committee formed to address beneficial use impairment associated with daily water level fluctuations in the Welland River.

5. Monitor and initiate actions to address man-made physical barriers in the Welland River watershed.
6. Establish monitoring program to document and determine the effects of road salt applications in the Niagara River AOC.
7. Continue monitoring programs to report on the progress of the Hamilton International Airport, Glanbrook Landfill and the Oswego Park Sewage Lagoons.
8. The continuation of Operation Clean Water Surveillance Program.
9. The continuation of MISA (Municipal and Industrial Strategy for Abatement) programs.
10. The continuation of the NRTMP (Niagara River Toxics Management Plan) point source monitoring program.

## **COMMUNICATION**

1. The RAP will liaise with the Welland River Strategy Committee in order to provide assistance in guiding, directing and prioritizing the Welland River rehabilitation activities. An annual report detailing the remedial progress made within the Welland River watershed will be developed.
2. The RAP will maintain linkage with the NRTMP and provide assistance in developing a coordinated and integrated communications strategy.
3. The RAP will liaise with the MOE to review available contaminated sediment data, identify data gaps and to develop appropriate action plans. Specific, Task Force and Action Groups will be formed on an as-needed basis.
4. The RAP will re-establish a formal communication link with the New York State Niagara River RAP.
5. The RAP will liaise with agencies whose activities relate to the Stage II RAP goals of improving recreational opportunities, aesthetics and habitat features on the Niagara River.
6. The RAP will liaise with agencies in order to develop education and compensation programs to encourage the participation of private landowners in improving habitat features on their property.
7. The RAP will continue to liaise with the Niagara River Restoration Council.

## **REPORTING**

1. The RAP will produce an annual progress indicator report. This report will be released to the public in order to provide an update to completed activities and progress on an annual basis.
2. The RAP will review all the Ontario Ministry of the Environment data of all regulatory monitoring efforts of Canadian/Ontario point sources. This information will be released to the public and the Niagara River Restoration Council as part of an annual report card of the point source discharge.
3. The RAP will review the Niagara Region's annual report of wastewater plant monitoring, pollution control plant optimization and waste water capital projects completed in the Niagara River AOC. This information will be released to the public as part of an annual progress report card.
4. The RAP will develop appropriate action plans with stakeholders in order to assess available data and identify data gaps.

# INTRODUCTION

## Renewed Niagara River Remedial Action Plan Strategies

In 1999 the Ministry of the Environment, Environment Canada and the Niagara Peninsula Conservation Authority entered into an agreement under which the Niagara Peninsula Conservation Authority will initiate and co-ordinate activities for the continued development and implementation of the Niagara River RAP.

The most significant task is the development and completion of the Niagara River RAP Implementation Annex.

This Implementation Annex is intended to compliment the goals, objectives and ecosystem approach vision expressed in the Niagara River Remedial Action Plan Stage II Report, completed in April 1995. The Stage II goals remain the long-term destination. The process of getting from where we are to where we would like to be is being revisited through the Implementation Annex.

The renewed format and recommendations put forward in this Implementation Annex are necessary for several reasons:

- 1) Some of the original Stage II Recommendations have been reviewed in the context of program changes and results. Alternative approaches have been identified and different implementation mechanisms have been selected.
- 2) In order to prioritize activities, there is a need to strongly link Recommendations to beneficial use impairments and delisting criteria.
- 3) Several of the Stage II Report Recommendations, although desirable, are not practically attainable. Unattainable recommendations need to be identified, revised and supplemented with a practical action plan.
- 4) The intention of the Implementation Annex is to formulate a practical strategy that can be implemented locally. Niagara River Stage II RAP Recommendations that may be desirable but can not be implemented locally are identified.
- 5) There has been lack of progress in meeting some of the Stage II Recommendations.

Building on existing strengths and formulating partnerships between government and non-profit organizations, as expressed in Recommendation #5 of the Stage II Report, is the primary objective of the Implementation Annex.

In order to achieve this objective, the renewed recommendations are presented and organized into key theme categories. This breakdown into groups of related activities allows for the creation of a manageable implementation organization. The grouping of related activities and focuses will provide the opportunity for government and non-government partners to be directly involved. In order to ensure that there remains a central focus, the Niagara Peninsula Conservation Authority will provide a central forum as coordinating body.

## Key Theme Categories

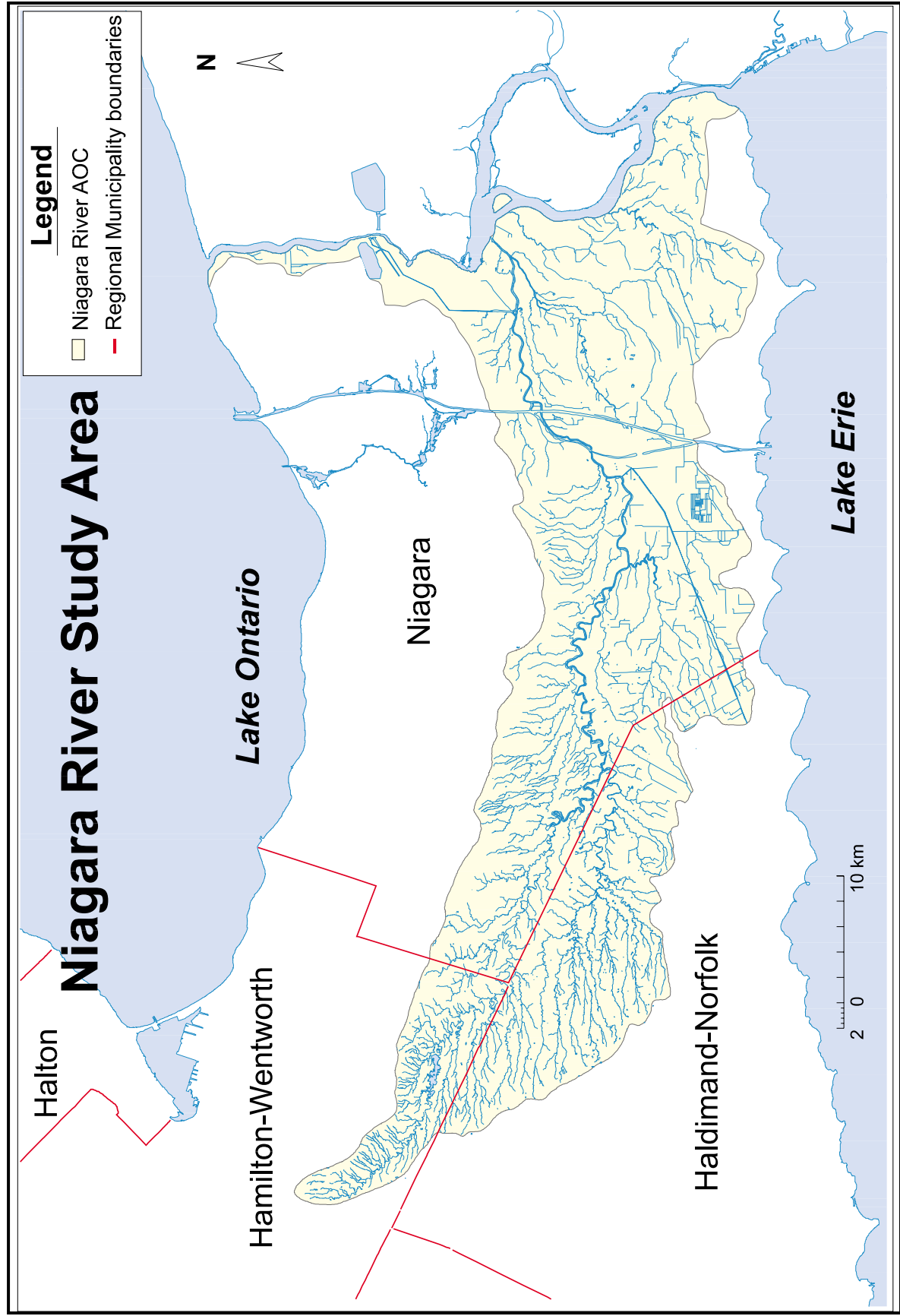
**The 6 key theme categories are as follows.**

1. Beneficial use impairment related to persistent toxic load to the Niagara River.
2. Stage II RAP goals related to improving recreational opportunities, aesthetics and habitat features on the Niagara River.
3. Beneficial use impairment of Niagara River tributaries as a result of issues unique to the Niagara River Area of Concern.
4. Beneficial use impairment common to other areas with similar rural and urban land management.
5. Recommendations that can not be implemented at the local level and are feasible to implement only at the Federal or Provincial level.
6. The Niagara River RAP Implementation Framework.

Each category will be managed independently in order to clearly link the Stage II goals and recommendations to beneficial use impairment and delisting criteria. This format enables integration of the Stage II RAP Implementation with partners, including the Niagara River Toxics Management Plan (NRTMP), the Ministry of the Environment, municipal governments, the Niagara Peninsula Conservation Authority, Federal and Provincial partners and community groups and committees.

For each theme area, the Stage II RAP goals, recommendations, current status, and the renewed implementation action strategy is outlined. Although some of the Stage II RAP goals and recommendations apply to more than one of the theme areas there is limited duplication or overlap of effort since there are clear jurisdictional boundaries. With proper management and co-ordination, recommendations that apply to more than one theme area will mutually reinforce goals from other theme areas.

**NIAGARA RIVER AREA OF CONCERN (AOC) MAP**





## **BENEFICIAL USE IMPAIRMENT RELATED TO: PERSISTENT TOXIN LOAD TO THE NIAGARA RIVER**

Activities to reduce persistent toxic load to the Niagara River are the highest priority for Niagara River RAP Implementation. In the Stage II RAP Report, 11 of the 16 goals (see below) and 14 of the 36 (pages 5 & 6) recommendations relate directly to this theme.

The key role of the Niagara River RAP will be to liaison with the partners responsible for implementing the activities to address the Stage II RAP Recommendations. Progress will be monitored and summarized in an annual indicator report. This report will be released annually to the public in order to provide an update to the progress being made. The RAP and other partners will also be directly involved in encouraging industry, business and government participation in the 'Pollution Prevention Pledge' (P-4) and 'Accelerated Reduction/Elimination of Toxics' (ARET) programs.

### **Stage II RAP Goals**

1. To preserve and restore a good quality sustainable habitat in the Niagara River through the virtual elimination of the discharge of pollutants, with the ultimate goal of zero discharge of persistent bio-accumulative toxics.
2. Seek extensions to the NRTMP goal of a 50% reduction of 10 chemicals, for further reductions by the year 2000, with eventual complete elimination of toxic discharges (NRTMP goals revised in 1996).
3. Continually improve the quality of treated discharges of municipal and industrial sewage effluent, with no spills or discharges causing fish kills or other undesirable impacts.
4. Reduction and virtual elimination of Combined Sewer Overflows (CSO's).
5. To improve environmental quality so that there are no adverse effects or risks to human, animal and plant life so that consumption guidelines are eliminated, and water can be used without restriction for all desired uses.
6. Remediate and restore the Niagara River ecosystem so that human health is protected from deterioration from persistent toxics and pathogens.
7. Reduce and maintain bacterial, visibility, and toxic chemicals to levels to permit safe swimming.
8. Ensure water quality is sufficiently free of contaminants to be suitable for potable water after treatment in a modern plant, for industrial uses with minimal treatment, and for agricultural use.
9. Maintain and improve fish and wildlife habitat to encourage populations at healthy, contaminant free, self-sustaining levels without fear of bio-accumulation.
10. To reduce non-point sources of pollutants, including sediments, and eventually eliminate discharges of persistent bio-accumulative toxics.
11. Identify and correct contaminated sediment sites so that benthic community structure and toxicity is similar to unimpacted sites.

## Stage II RAP Recommendations and Current Status

#	Recommendation	Current Status
1	Establish an International RAP.	Habitat protection and restoration activities are underway on both sides of the border independently. The existing framework, in which the two RAP's work parallel with-in the context of binational governmental cooperation has proven effective. There is binational participation on the NRTMP.
10	Enforce the Regional Sewer Use By-Law (By-Law #3308)	The Region of Niagara will assess their compliance strategy to ensure the objectives of the by-law are met.
11	The Region of Niagara continues to work towards implementing a water pollution control plant optimization program for all its plants.	A pollution control plant optimization study was completed for the Niagara Region AOC. The Region is in the process of implementing the program throughout the region in all water pollution control plants.
12	Enforce MISA Municipal Program For Municipal Sewage Treatment Plants upon promulgation of the MISA Municipal Regulation.	The Ministry of Environment is enforcing requirements for discharge limits and has abatement plans underway to address non-compliance for Sewage Treatment Plants.
16	The lower Welland River (downstream of the Welland airport) be the priority focus of any sediment assessment	Full-scale cleanup (6,500 m3) of the Welland Reef site completed in 1995.
17	Potentially contaminated locations be prioritized for review, assessment and remediation.	Review of sites identified in the Stage II Report has been completed.
18	Test potentially contaminated sediment sites to confirm the absence / presence of contamination.	Thompson Creek is sampled through Cytec. Sir Adam Beck Reservoir, Lyons Creek and Frenchmen Creek can be sampled through MOE. No remediation activities have been completed at these sites.
26	Continue monitoring municipal point sources (e.g., sewage treatment plants) including but not restricted to NRTMP point source monitoring parameters.	In November 1996 MOE released a final report on NRTMP-specific monitoring of point sources on the Niagara River. From 1986 to 1995, MOE has reported a 99% reduction in the loading of the 18 chemicals of concern. As a result, MOE has discontinued point source monitoring and has focused resources toward Ontario's biomonitoring program.  Niagara River upstream / downstream water quality monitoring, biomonitoring using caged mussels and juvenile fish, sport fishery contaminant analysis and sediment cores are part of the NRTMP monitoring program.

#	Recommendation	Current Status
27	Continue monitoring industrial point sources and publish results.	Regulatory monitoring and reporting of Ontario industrial point sources compiled by the MOE, as specified in Certificates of Approval and Clean Water Regulations by the Ministry continues. The Environmental Compliance summary has been reported through the MOE website at <a href="http://www.ene.gov.on.ca">http://www.ene.gov.on.ca</a>
28	Landfills continue to be monitored regularly, as determined by monitoring results.	Studies completed from 1991 and 1993 concluded that the 5 landfills identified in the Stage I Report have minimal impact on the Niagara River. Regulatory monitoring and reporting of these non-point sources as required by Certificates of Approval will continue. The impact of the Glanbrook landfill, located in the upper Welland River, has not been evaluated.
30	Taste and odor program (results) be monitored (drinking water).	The Region of Niagara is monitoring the effectiveness of its program to reduce taste and odour problems.
31	Continue all monitoring programs for drinking water.	Ontario's Drinking Water Surveillance Program will continue. No known health guidelines have been exceeded at the Fort Erie, St. Catharines, Niagara Falls, or Welland plants.
35	Public education programs continue and new ones be developed as required.	The Niagara River RAP has not developed public education programs targeted toward persistent toxic issues in the Niagara River.  The NRTMP "Public Involvement Strategy" work plan includes an annual progress report, public meetings and web-site upgrades. A brochure summarizing NRTMP activities has been developed.
36	Professional education programs continue and new ones be developed as required.	Environment Canada and the MOE continue to provide professional education opportunities through conferences and reports. e.g./ Guidelines for the Assessment and Management of Aquatic Sediments in Ontario (1993); Stormwater Quality Best Management Practices (1999).

# **Renewed Implementation Action Strategy**

## **RAP Implementation Objectives**

1. Achieve the persistent toxin load targets established by the Niagara River Toxics Management Plan (NRTMP).
2. The eventual elimination of all toxic discharges.

## **Proposed RAP Partner Activities**

### **Formal Link With the NRTMP**

The Niagara River RAP will pursue a formal link with the Niagara River Toxics Management Plan (NRTMP). The NRTMP goal of 50% reduction of the eighteen priority toxics is consistent with the short-term goals of the Niagara River RAP. The long-term goal of the Niagara River RAP, the eventual complete elimination of toxic discharges, is currently not an expressed NRTMP goal. Linkage to the NRTMP will partially meet the intent of the Stage II RAP Report recommendation to establish an international RAP.

The communications strategy of the Niagara River RAP will be co-ordinated and integrated with the NRTMP public involvement work plan.

A formal link to the NRTMP and a co-ordinated and integrated public education and communications program will be completed before the end of 2001.

### **Niagara River Toxics Management Plan (NRTMP)**

There will be continued commitment by the US EPA, NYS DEC, Environment Canada, and the MOE to the activities summarized in the 1999 NRTMP work plan.

Monitoring program activities include:

- a) upstream / downstream monitoring of the eighteen priority toxins
- b) biomonitoring program data (juvenile fish and caged mussels)
- c) sediment core data from Niagara River depositional zones
- d) track-down monitoring to identify the sources of toxic chemicals found in tributaries and sewer systems
- e) contaminant analysis of sport fishery in the Niagara River.

Public Involvement activities in progress or completed by the NRTMP include:

- a) the development of a reader friendly brochure that provides an overview of the NRTMP and summarizes progress made on restoring the Niagara River
- b) the development of an NRTMP web page
- c) annual public meetings to present the progress report and annual work plan.

The RAP will participate in the distribution of communications material developed by the NRTMP and participate at the public meeting for the progress report and annual work plan.

### **Linkage With MOE Regulatory Monitoring Efforts**

The mandate of the Niagara River RAP goes beyond the 18 chemicals of concern targeted by the NRTMP. The Niagara River RAP goal is the eventual elimination of all toxic discharges. The Niagara River RAP will review the MOE information on regulatory monitoring and will provide this information to the public through an annual report of all regulatory monitoring efforts of Ontario point sources.

### **The Niagara River RAP Will Encourage Industry, Business and Government Participation in the P-4 and ARET Programs**

P-4 is a voluntary pollution pledge partnership program initiated by the MOE. The Niagara River RAP will encourage local industries, businesses, school boards and governments to participate in the program by working;

- to promote the concepts, principles and application of pollution prevention;
- to advertise the ministry's Pollution Pledge Program;
- to share information and results.

The goal is to promote the P-4 program and establish new signatories to the various existing 'Memorandums of Understanding' with additional local partners in 2001.

The Accelerated Reduction and Elimination of Toxics (ARET) program is a federally sponsored voluntary program. The long term vision of ARET is consistent with the Niagara River RAP; virtual elimination of persistent, bioaccumulative and toxic substances and reduction of other toxic substances to levels insufficient to cause harm. By the year 2000, ARET aims to reduce persistent, bioaccumulative, and toxic substances by 90% and all other toxic substances by 50%.

Some Niagara River RAP based industries, including Atlas Specialty Steels, Cytec Canada and the Stelpipe Ltd. and Welland Pipe Ltd. divisions of Stelco Inc., are currently participating in the ARET program.

The Niagara River RAP will recognize the voluntary compliance by these industries and will encourage other industries to participate.

### **Linkage with Niagara Region Pollution Control Optimization Plant Program and Niagara Region Water and Wastewater Capital Projects**

The Niagara River RAP will review the Niagara Region's annual report of wastewater plant monitoring, pollution control plant optimization and waste water capital projects completed in the Niagara River AOC. This information will be released to the public and RAP partners as part of an annual progress report card.

The annual report card based on data provided by the Niagara Region will be initiated in 2001.

### **Liaison With The MOE To Review Contaminated Sediment and to Develop Appropriate Action Plans**

There is an immediate need to liaison with the MOE and Environment Canada to review available data, identify data gaps and to determine areas for sediment assessments and remediation and to develop the appropriate action plans for contaminated sediment remediation if necessary. Specific Task Force and Action Groups will be formed on an as-needed basis.

Liaison with the Niagara District MOE to review contaminated sediment data will be initiated before the end of 2001.

## **Re-establish Dialogue with the New York State Niagara River and Buffalo River RAP**

There has been limited dialogue and interaction between the Niagara River RAP and the New York State Niagara River RAP, the Buffalo River RAP, the New York State Department of Environmental Conservation, and the public advisory committees associated with these activities.

Re-establishing communication linkages with these partners will be priority activity in 2000.

### **RAP Implementation Activities**

1. Produce an annual persistent toxic load progress report summarizing data provided by RAP partners. The report will include, but not be limited to the following.
  - a) an update of NRTMP activities
  - b) the status of MOE regulatory monitoring of Ontario point sources
  - c) Region of Niagara wastewater plant monitoring and pollution plant optimization activities
  - d) the status and progress in dealing with contaminated sediment sites
  - e) an update on local industry participation in the Pollution Prevention Pledge (P-4) and Accelerated Reduction and Elimination of Toxics (ARET) programs.
2. Co-ordinate and integrate persistent toxic public education and communication efforts with the NRTMP.
3. Liaison with the MOE to inform RAP partners and the public about regulatory monitoring efforts of Canadian point sources of persistent toxics.
4. Liaison with the Niagara District MOE to review contaminated sediment data and to develop appropriate action plans.
5. Request that the Niagara Region provide an annual report of wastewater plant monitoring, pollution control plant optimization and water and wastewater projects completed in the Niagara River Area of Concern.
6. Encourage industry, business and local government participation in the Pollution Prevention Pledge (P-4) and Accelerated Reduction and Elimination of Toxics (ARET) programs.

**BENEFICIAL USE IMPAIRMENT RELATED TO:  
IMPROVING AESTHETICS AND HABITAT FEATURES  
ON THE NIAGARA RIVER**

In the Niagara River RAP Stage II Report, 3 of the 16 goals relate to this theme. None of the 36 recommendations relate to attaining the aesthetic, recreational and habitat goals.

The key role of the Niagara River RAP will be liaison with the Niagara Parks Commission, the Department of Fisheries and Oceans and other stakeholders with the objective of reviewing available data, identifying data gaps and developing appropriate action plans.

### **Stage II RAP Goals**

1. To sustain and improve the compatible Niagara River recreational and scenic resources.
2. Maintain and improve the recreational and scenic resources through enhancements to the existing paths along the Niagara River and its tributaries, controls on the placement of fill along the gorge face, reduction of debris and litter on shore and in the water, the encouragement of natural regrowth, and the restoration of avian and other habitat along watercourses.
3. Aesthetic impact issues to be clearly addressed in any development in the AOC.

### **Stage II RAP Recommendations and Current Status**

None

### **Renewed Implementation Action Strategy**

#### **Liaison And Partnership With Niagara River Stakeholders**

The extent and nature of various opportunities to improve habitat features and naturalize portions of the Niagara River are unknown. There is an immediate need for liaison with the Niagara Parks Commission, the Department of Fisheries and Oceans and other stakeholders to review available data, identify data gaps and to develop appropriate action plans. Specific, ad-hoc Task Force and Action Groups, will be formed on an as-needed basis.

Liaison with the Niagara Parks Commission, the Department of Fisheries and Oceans, and other stakeholders will be initiated before the end of 2000.

### **RAP Implementation Activities**

1. Produce an annual progress report summarizing progress toward identifying and improving habitat features along the Niagara River.
2. Liaison with the Niagara Parks Commission, Department of Fisheries and Oceans and other stakeholders to pursue the objectives of the Niagara River RAP.

**BENEFICIAL USE IMPAIRMENT RELATED TO:**  
**NIAGARA RIVER TRIBUTARIES**  
**AS A RESULT OF ISSUES UNIQUE TO**  
**THE NIAGARA RIVER AREA OF CONCERN**

Beneficial use impairment of Niagara River tributaries as a result of issues unique to the Niagara River Area of Concern are not identified in the Niagara River Stage II RAP Report. This theme area specifically relates to beneficial use impairment associated with Ontario Power Generation manipulation of inland stream water levels and fish migration issues linked to the Welland Canal siphons and other identified migratory barriers.

These issues merit special theme status because they are the greatest barriers to re-establishing, protecting and maintaining the ecological integrity of the Welland River and other inland tributaries. All other efforts to restore the ecological health of the Welland River and inland tributaries are largely irrelevant if these issues are not addressed.

The primary role of the Niagara River RAP will be to liaison with the Niagara Peninsula Conservation Authority Welland River Watershed Strategy with the following objectives.

- a) To produce an annual progress report based on data provided by the Conservation Authority
- b) To offer resources and assistance in guiding, directing and prioritizing Welland River rehabilitation activities.

## **Stage II RAP Goals**

1. Control nutrient loading levels to a point that excessive weed and algal growth does not occur.
2. Identify and correct high erosion areas so that non-storm suspended solids are less than 80 mg/l, sedimentation is reduced on fish spawning beds, and all life levels of desirable fish species are unimpeded.
3. Maintain and improve fish and wildlife habitat to encourage populations at healthy, contaminant free, self-sustaining levels without fear of bioaccumulation.

## **Stage II RAP Recommendations and Status**

There were no Stage II RAP Recommendations related to this theme area. There has been some progress through the activities of the Welland River Restoration Committee.

In 1998, the Welland River Restoration Committee was established to guide the development of a detailed plan of action to restore the natural resources of the Welland River watershed. This Committee has representation from all regional and area municipalities – politicians and staff – as well as staff from various Federal and Provincial agencies and citizens representing various community groups in the watershed.

The work of the Restoration Committee has focussed on the following:

- Review the needs and specific concerns and criteria of all parties having an interest in the watershed to identify issues;
- Provide a forum within which differing technical and social issues may be openly discussed;
- Establish communication links between agencies, citizen groups and individuals;
- Act as a coordinating body to agencies and groups implementing remediation methods within the watershed;
- Provide guidance to various committees established to examine specific technical issues within the watershed;



- Prepare a Plan of Action (Watershed Management Strategy) for the Welland River, which will include recommendations for further study and remedial measures to assist in improving the overall health of the watershed.

The Restoration Committee members worked together throughout 1998 and early 1999 to discuss issues and develop options and have provided the needed data and input to develop a comprehensive and focussed strategy to restore the health of the watershed. This Strategy is the result of the Committee's efforts. It is designed to effect positive environmental, economic and social change in the watershed. Co-operation and teamwork by government agencies (area and regional municipalities, Provincial Ministries, Federal government departments and the Niagara Peninsula Conservation Authority), special interest groups, community groups and individual citizens are the keys to the successful restoration of the Welland River watershed. The focus of these restoration efforts in the watershed is through the implementation of 'voluntary stewardship' programs, in addition to the involvement of the Federal, Provincial and Municipal sectors and programs.

The rehabilitation of this watershed involves long term, sustained action. The complexities of this system create a situation where integrated solutions must be employed. This Strategy works to assess these complexities, present effective solutions and provide a time frame and cost estimates to ensure the long term enhancement and quality of life for the watershed.

Watershed goal and targets have been derived from Committee discussions.

The **goal** of the Strategy is,

**"To restore the ecological health of the Welland River and its watershed"**

### **Specific targets designed to meet the goal include the following:**

1. The restoration of a natural flow regime. Impoundment's of the river, caused by dams, weirs and unnatural, daily water level fluctuations, interfere with the natural river sediment transport functions and have a drastic impact on water quality and the food chain.
2. A watershed in which all fish species can freely migrate from the Niagara River to all tributary headwater areas.
3. A watershed that supplies the flow regime, habitat structure, woody debris and leaf litter input to support a healthy and diverse aquatic community. In order to meet this objective, it has been suggested that the following habitat targets should be met.
  - a) 70% of the first to third order streams with a 30-m natural vegetation buffer.
  - b) 30% of the land area as natural forest and/ or wetland.
  - c) 10% of the land area in each tributary as wetland.
  - d) Base flow that is a minimum of 20% of the average annual flow.
  - e) A minimum of 4% of the warm water stream area as riffle habitat.
  - f) A minimum of 15% pool bottom cover as boulders, stumps, logs, trees, rocks or vegetation.
4. A watershed that supports a healthy and diverse terrestrial ecosystem. In order to meet this objective, it has been suggested that the following habitat targets should be met.
  - a) 30% of the watershed area should be natural forest and/or wetland.
  - b) There should be at least one large natural habitat patch of 100 ha with a minimum width of 500 m.
  - c) There should be at least 10% of the watershed that is forest cover 100 m or further from the edge.
  - d) There should be at least 5% of the watershed that is forest cover 200 m or further from the edge.

5. Water quality that meets or exceeds the standards published in the "Provincial Water Quality Objectives" and the "Canadian Water Quality Guidelines" for all key parameters, including the following:
  - a) suspended sediment < 80 mg/l
  - b) fecal bacteria < 100 E. coli/100 ml
  - c) phosphorus not exceeding .03 mg/l
  - d) dissolved oxygen > 4 ppm at all times
  - e) metals and persistent toxics.

The Welland River Watershed Strategy recommendations are geared toward meeting these targets.

## Renewed Implementation Action Strategy

### Liaison With Niagara Peninsula Conservation Authority Welland River Strategy

In recognition of the similarity between the goal of the Welland River Watershed Strategy and the mission statement for the Niagara River RAP, efforts will be integrated. The Niagara River RAP will offer resources, guidance and assistance in directing and prioritizing Welland River Strategy rehabilitation activities.

The Niagara River RAP will also request that the Welland River Strategy Committee provide an annual report outlining the progress in meeting the action items specified in the Welland River Watershed Strategy. This information will be released to the public and Niagara River RAP partners as part of the annual progress report card.

The Welland River Watershed Action Strategy for addressing man-made physical barriers and the water level fluctuations in the Welland River are as follows.

ISSUE	ACTION	LEAD	PARTNERS
Barriers to fish migration– NPCA owned structures	The Niagara Peninsula Conservation Authority owns 2 weir structures (Oswego Creek Weir and Port Davidson Weir) and 1 dam (Binbrook Reservoir) in the Welland River watershed. The NPCA will complete a detailed fisheries assessment in order to determine the exact impact these barriers pose to fish migration. Through public consultation the present day benefits of the structures will be evaluated. Future action will be based on this information.	NPCA	MNR DFO Environment Canada
Barriers to fish migration– Old Welland Canal siphon	The NPCA will work co-operatively with all affected partners to assess physical mechanisms which can be implemented to promote fish migration through or around the Old Welland Canal siphons in an effort to improve the state of the Welland River fishery resources.	City of Welland	NPCA MNR DFO Environment Canada
Barriers to fish migration–privately owned structures	Several privately owned physical barriers to fish migration exist within the Welland River system. The NPCA will conduct a detailed inventory of all privately-owned dam/weir structures in the year 2000 and develop an education program about the impacts of these barriers on the sport fishery to encourage voluntary removal or means of passage.	NPCA	MNR DFO

ISSUE	ACTION	LEAD	PARTNERS
Increased sedimentation at barriers	The City of Welland is developing a plan to remove sediment from the Old Welland Canal siphons and is also developing a strategy to eliminate the need for major maintenance in the future.	City of Welland NPCA	MNR Environment Canada
Thermal barriers to fish migration	Holes drilled into the siphon barrels allow lake water flowing through the Old Welland Canal system to enter the Welland River. The thermal variances can cause a barrier for fish migration. There is a need to complete an assessment to determine the impact on fish species migration and to assess the viability of resolving this issue.	MNR	DFO City of Welland St. Lawrence Seaway Authority, NPCA
Daily water level fluctuations and lack of littoral habitat	<p>The operating practices of Ontario Power Generation (formerly Ontario Hydro) within regulated limits at Grassy Island Pool in the Niagara River cause a water level fluctuation problem in the Welland River, the impact of which extends 60 kilometers upstream to the Port Davidson Weir. The twice-daily vertical fluctuation of 1 to 1.5 feet has impacted on the River's ability to transport its sediment to an appropriate outlet or to maintain floodplain wetlands for fish habitat and erosion control purposes. The current situation creates a dilemma in that the River cannot drain effectively. Sediment that is deposited at a delta in other river systems is continually suspended within the Welland River.</p> <p>Recognizing that the product of OPG is vital to the community, it is also recognized that in order to ensure restoration works are effective, all partners must work together to minimize the level of water level fluctuation in the Welland River and its tributaries.</p> <p>A Technical Liaison Committee was formed in 1999 to oversee an assessment of methods to alleviate the water level fluctuation situation in the Welland River while at the same time not adversely impacting the daily operations of OPG.</p>	Ontario Power	MNR MOE City of Welland DFO Environment Canada NPCA

## RAP Implementation Activities

1. Produce an annual progress report summarizing progress toward meeting the Action specified in the Welland River Watershed Strategy.
2. Liaison with the Niagara Peninsula Conservation Authority Welland River Watershed Strategy activities.

**BENEFICIAL USE IMPAIRMENT RELATED TO:  
STRESSORS COMMON TO OTHER AREAS  
WITH SIMILAR RURAL AND URBAN  
LAND USE**

Activities to reduce/ address beneficial use impairment of Niagara River tributaries as a result of issues common to other areas with similar rural and urban land use are identified in the Niagara River Stage II RAP Report. In the Stage II RAP Report, 7 of the 16 goals and 17 of the 36 recommendations relate to this theme.

This theme area includes common stressors and disturbances to inland watersheds, including rural non-point source pollution, municipal pollution control plant and combined sewer overflow issues, urban storm-water runoff, and loss of suitable habitat for the desired species.

One role of the Niagara River RAP will be liaison with the Welland River Watershed Strategy Committee with the following objectives:

- a) To produce an annual progress report based on data provided by the Conservation Authority;
- b) To offer resources and assistance in guiding, directing and prioritizing Welland River rehabilitation activities.

The strategies and actions implemented for the Welland River watershed will also be applied to all other inland tributaries in the Niagara River Area of Concern.

## **Stage II RAP Goals**

1. Control nutrient loading levels to a point that excessive weed and algal growth do not occur.
2. Identify and correct high erosion areas so that non-storm suspended solids are less than 80 mg/l, sedimentation is reduced on fish spawning beds, and all life levels of desirable fish species are unimpeded.

### **Goals that relate to both the Niagara River Toxics and Common Beneficial Use Impairment**

3. Maintain and improve fish and wildlife habitat to encourage populations at healthy, contaminant free, self-sustaining levels without fear of bioaccumulation.
4. Reduction and virtual elimination of Combined Sewer Overflows.
5. To improve environmental quality so that there are no adverse effects or risks to human, plant or animal life so that consumption guidelines are eliminated, and water can be used without restriction for all desired uses.
6. Reduce and maintain bacterial, visibility and toxic chemical levels to permit safe swimming.
7. To reduce non-point sources of pollutants, including sediments, and eventually eliminate discharges of persistent bio-accumulative substances.

## Stage II RAP Recommendations and Current Status

#	Recommendation	Current Status
5	The Niagara River RAP endorses and encourages the process of multi-sectoral liaison committees as the vehicle to facilitate the satisfactory remediation of water quality in the Niagara River AOC.	Fulfilling this recommendation is the key objective of the Implementation Annex.
7	Develop model 'terms of reference' for remediation projects by community liaison committees.	The RAP and the NRRC will develop a 'terms of reference' guidelines for remediation projects for the AOC. A model has been addressed to a certain extent by the development of habitat restoration guidelines for the Great Lakes.
9	The Niagara River RAP become involved in infrastructure needs studies, provide information on funding opportunities and encourage participation from municipalities.	<p>The role of the RAP is to encourage the necessary infrastructure upgrades and identify possible funding opportunities.</p> <p>There is an opportunity to participate in the public consultation efforts associated with infrastructure needs.</p>
10	Enforce the Regional Sewer Use By-Law (By-Law #3308)	The Region of Niagara will assess their compliance strategy to ensure the objectives of the by-law are met.
11	The Region of Niagara continues to work towards implementing a water pollution control plant optimization program for all its plants.	A pollution control plant optimization study was completed for the Niagara Region AOC. The Region is in the process of implementing the program throughout the region in all water pollution control plants.
12	Enforce MISA Municipal Program For Municipal Sewage Treatment Plants upon promulgation of the MISA Municipal Regulation.	The Ministry is enforcing its requirements for discharge limits and has abatement plans underway to address non-compliance for Sewage Treatment Plants.
13	Prepare and implement a rural non-point source pollution remediation strategy (NPS).	A rural non-point source pollution strategy based on the "Agricultural NPS Remediation Strategies – Guidelines for Remedial Action Plan" report was completed in 1994. As a result of this strategy, 90 'best management practice' demonstration projects have been completed. The total value of these projects is \$1,085,750, with a private landowner contribution of \$625,414.

#	Recommendation	Current Status
14	Farmers in the Niagara River AOC be encouraged to follow sound farming practices such as recommended in the Environmental Farm Plan program.	Sound farming practices and participation in the Environmental Farm Plan program are encouraged through the Niagara River Area of Concern Rural Water Quality Program.
15	Additional funding per farm business be given to the Environmental Farm Plan Incentive Program operating in the Niagara River AOC.	Environmental Farm Plan incentives have been increased to \$1,500 per farm. Additional incentive grants are available through the Niagara River Area of Concern Rural Water Quality Program.
19	Prepare a natural heritage strategy for the Niagara River AOC.	<p>Upland Habitat and Wetland Extent reports based on the "Framework for Guiding Habitat Rehabilitation in the Great Lakes Areas of Concern" have been completed. An 'Upland Habitat Rehabilitation Program' has been linked to the on-going landowner contact program completed through the Welland River Rural Water Quality Program.</p> <p>Through this program 34.5 ha of riparian habitat have been protected and 17.8 of upland forest have been restored. 59,000 trees and shrubs have been planted. In cooperation with private landowners and the Wetland Habitat Fund, two wetland restoration projects have been completed.</p>
20	The PAC will critically review government review processes to ensure that they embody the principles and objectives of the Niagara River RAP	An alternative mechanism exists. The Niagara River Restoration Council and the RAP have the opportunity to participate in the public consultation programs associated with government review processes.
23	Municipal planning documents incorporate ecologically based policies and design criteria.	All watershed municipalities will be invited to receive comments and input from the RAP and the NRRC into municipal plans when they receive their five year review. This will ensure that policies are developed in accordance with the Provincial Policy Statement for fish habitat, woodlands and valleylands.
29	Develop and implement a Welland River and (Niagara River) Tributaries Monitoring Program.	<p>Past activities to monitoring the Welland River and other Niagara River tributaries include:</p> <ol style="list-style-type: none"> <li>1. Grab-sample water chemistry from 1994-96.</li> <li>2. Datalogger and multiprobe network established at 3 locations from 1995 – 1997. Jointly funded by the MOE and Environment Canada.</li> <li>3. A comprehensive analysis of the fish community in the lower Welland River (downstream of the Port Davidson weir) was completed in 1997, including biomass analysis, species distribution and abundance, and contaminant analysis. A comprehensive analysis of the fish community in the Upper Welland River and other Niagara River tributaries has not been completed.</li> <li>4. As part of the Niagara River Area of Concern Rural Water Quality Program, BioMAP benthic invertebrate analysis has been completed at selected locations.</li> </ol>

#	Recommendation	Current Status
30	Taste and odor program (results) be monitored (drinking water)	The Region of Niagara is monitoring the effectiveness of its program to reduce taste and odour problems in drinking water.
31	Continue all monitoring programs for drinking water.	Ontario's Drinking Water Surveillance Program has been replaced with Operation Clean Water, Ontario's new drinking water protection regulation. No known health guidelines have been exceeded at the Fort Erie, St. Catharines, Niagara Falls, or Welland plants.
32	Implement a resident attitude monitoring program.	No progress.
35	Public education programs continue and new ones be developed as required.	<p>The Niagara River RAP has not fully developed public education programs targeted toward common stressors and disturbances to inland watersheds.</p> <p>There have been some communication and public education activities associated with the Welland River Strategy and the Niagara River Area of Concern Rural Water Quality Program, but these efforts have not been coordinated or integrated with Niagara River RAP communications activities.</p>
36	Professional education programs continue and new ones be developed as required.	Environment Canada and the MOE continue to provide professional education opportunities through conferences and reports. e.g./ A Framework for Guiding Habitat Rehabilitation in the Great Lakes Areas of Concern.

## Renewed Implementation Action Strategy

### Liaison And Partnership With Niagara Peninsula Conservation Authority Welland River Strategy Committee

In recognition of the similarity between the mission statement of the Niagara River RAP and the goal of the Welland River Strategy, the Niagara River RAP will integrate action activities with the Niagara Peninsula Conservation Authority Welland River Watershed Strategy and the NPCA Rural Water Quality Program with the following objectives.

- a) To produce an annual progress report based on data provided by the Conservation Authority
- b) To offer resources and assistance in guiding, directing and prioritizing Welland River rehabilitation activities.

The strategies and actions implemented for the Welland River watershed will also be applied to all other inland tributaries in the Niagara River area of concern.

The Niagara River RAP will also request that the Welland River Strategy Committee provide an annual report outlining the progress in meeting the action items specified in the Welland River Watershed Strategy. This information will be released to the public and Niagara River RAP partners as part of an annual RAP progress report card.

The Welland River Watershed Action Strategy for addressing the beneficial use impairments common to areas with similar rural and urban land use are as follows.

ISSUE	ACTION	LEAD	PARTNERS
Rural septic systems	<ul style="list-style-type: none"> <li>• Work closely with local Health Units and municipalities to develop education programs to encourage voluntary action to maintain and repair faulty septic systems</li> <li>• Advocate funding programs for maintenance and repair of septic systems</li> <li>• Encourage implementation and evaluation of new technologies for rural septic systems</li> </ul>	Health Units	Municipalities MOE OMAFRA NPCA Local farm organizations Stewardship Councils
Oswego Creek Lagoon Discharge	<ul style="list-style-type: none"> <li>• Encourage Haldimand-Norfolk Region to meet current MOE requirements</li> <li>• The NPCA and Region undertake regular environmental monitoring to track improvements</li> <li>• Encourage implementation of new technology to properly handle rural communal sewage needs.</li> </ul>	Town of Haldimand	MOE NPCA
Glanbrook Landfill Leachate Discharge	<ul style="list-style-type: none"> <li>• Encourage Hamilton-Wentworth Region to implement a long-term solution</li> <li>• Encourage implementation of new technologies and designs for new landfills</li> <li>• Continue to undertake regular environmental monitoring to track improvements.</li> </ul>	Region of Hamilton-Wentworth	Glanbrook Landfill Committee; MOE NPCA DFO
Hamilton International Airport Discharge	<ul style="list-style-type: none"> <li>• Encourage the airport to upgrade deicing material collection and treatment</li> <li>• Undertake regular environmental monitoring to track improvements.</li> </ul>	Hamilton Airport officials	MOE DFO Environment Canada NPCA
Agricultural Practices	<ul style="list-style-type: none"> <li>• Continue the Rural Water Quality Program cost sharing programs to encourage "best management practices" and demonstration sites</li> <li>• Research and develop low cost and practical solutions for manure storage and barnyard runoff</li> <li>• Encourage municipalities to adopt Nutrient Management Plan by-laws</li> <li>• Encourage municipalities to establish local Nutrient Management Advisory Committees to serve as a farm peer review group for complaints related to livestock manure management issues.</li> <li>• Continue to promote the implementation of the Environmental Farm Plan Program.</li> </ul>	OMAFRA NPCA	Federation of Agriculture; Ontario Farm Environmental Coalition; Other farm organizations Municipalities



ISSUE	ACTION	LEAD	PARTNERS
Groundwater Supplies	<ul style="list-style-type: none"> <li>Work with the appropriate agencies to undertake studies of groundwater/surface water interactions to better understand the water balance of the watershed, including studies of water taking and quality issues. Act on recommendations, which result from these studies.</li> </ul>	MOE NPCA MNR	Municipalities  Stewardship Councils
Erosion and Sedimentation: Rural Drainage	<ul style="list-style-type: none"> <li>Continue to work cooperatively with municipalities to inform them about alternative drainage practices and municipal drain construction and maintenance under the Drainage Act.</li> <li>Continue to establish demonstration projects to encourage alternative erosion and sedimentation control methods for rural drainage.</li> </ul>	OMAFRA NPCA	Municipalities MNR DFO Environment Canada
Erosion and Sedimentation: Urban	<ul style="list-style-type: none"> <li>The NPCA is to develop updated stormwater management policies and practices that incorporate MOE/MNR Best Management Practices and encourages our municipalities to adopt them.</li> <li>Encourage municipalities to adopt erosion control by-laws to ensure proper erosion and sedimentation controls are implemented during the construction of new developments.</li> <li>Encourage municipalities to adopt fill by-laws to prevent indiscriminate filling activities.</li> <li>The NPCA should continue its efforts to co-ordinate the enforcement of the Fill, Construction and Alteration to Waterways Regulation and fill by-laws, which are administered by the municipalities.</li> </ul>	Municipalities NPCA	Municipalities MNR MOE DFO NPCA
Erosion and Sedimentation: Recreational Land	<ul style="list-style-type: none"> <li>Encourage privately-owned recreational facilities (i.e. golf courses; campgrounds) and publicly-owned recreational facilities (i.e. municipal parks) to undertake environmentally-friendly drainage, irrigation and creek maintenance practices by hosting workshops, and providing guides to incorporating these alternatives into daily and long-term practices.</li> <li>The NPCA must lead by example and assess its Conservation Area drainage and maintenance practices to ensure that innovative drainage and creek maintenance practices are implemented.</li> </ul>	NPCA	MNR Municipalities Private recreational facilities

ISSUE	ACTION	LEAD	PARTNERS
Road Salt	<ul style="list-style-type: none"> <li>Encourage the Province, through the Ministry of Transportation, as well as the Regional and local municipalities to implement environmentally-friendly winter road maintenance practices that utilize new standards for road salt concentrations and applications</li> </ul>	NPCA	Ministry of Transportation Municipalities MNR; MOE
Combined sewer overflows	<ul style="list-style-type: none"> <li>Continue discussions with the MOE and the municipalities to ensure the complete elimination of CSO's in the watershed.</li> <li>Encourage the Regional Municipalities to develop and implement Water Conservation Strategies</li> </ul>	Municipalities	MOE
Lack of Forest Cover, Wetland and Riparian Habitat	<ul style="list-style-type: none"> <li>Restore buffer zones and wetlands with agriculture-friendly vegetation.</li> <li>The NPCA will re-examine its Private Landowner Programs and develop new strategies to encourage and assist landowners in increasing the amount of forest, wetland and riparian cover on their properties.</li> <li>Undertake extensive communications and education programs in the watershed.</li> <li>Encourage the Province to give further consideration to providing compensation to landowners that create larger buffer zones and wetlands on their properties.</li> <li>Request the Niagara Peninsula Conservation Foundation (NPCF) to set up Restoration Fund, where donations would be tax deductible and the funds used for restoration projects in the watershed.</li> <li>The NPCA should establish a Recognition Award Program to formally acknowledge the efforts of landowners who have undertaken restoration works.</li> <li>The NPCA will assess Conservation Area maintenance practices to ensure that large buffer strips and improved wetland habitats exist and are diversified.</li> </ul>	NPCA	NPCF Regional and Local municipalities; MNR; OMAFRA; MOE; DFO; Niagara Woodlot Association; Various environmental group

## **Monitoring Progress of the Welland River Strategy**

In order to effectively monitor Welland River Strategy implementation and effectiveness, both environmental and implementation monitoring techniques will be used.

The following environmental targets have been developed for all inland tributaries in the Niagara River area of concern:

1. Reducing total suspended sediment loads to <80 mg/L
2. Reducing phosphorous levels to < .03 mg/L
3. Increasing dissolved oxygen levels to >4 ppm
4. Reducing fecal bacteria levels to < 100 E. coli/100 ml
5. Elimination of persistent toxins
6. Increasing forest cover in the watershed to 30 %
7. Increasing wetland resources in the watershed to 10%

Annual sediment load monitoring must occur in order to track improvements. With respect to the forest cover and wetland targets, the NPCA will explore the available resources to utilize the Geographic Information System mapping of land use to update land use changes on a subwatershed basis. As more acreage is placed in natural vegetative states, the NPCA will update the land use mapping to reflect changes. Progress will then be tracked on both the subwatershed and watershed levels. An annual Watershed Report Card will be developed to assist in this regard.

In addition, the NPCA will continue its biological monitoring program in the Welland River watershed. Data in this regard has been collected annually since 1994 and these historical records already show improvements to watershed health. This program will serve as an effective tool to determine the effectiveness of future rehabilitation efforts.

The Welland River Restoration Committee will participate in an Annual Forum wherein achievements will be celebrated, progress will be reported, problems will be resolved and annual action plans will be developed. In addition, a Welland River Technical Committee will be established to provide input on environmental monitoring and will assist in assessing the results through semi-annual meetings. This group will work to develop annual targets to be achieved and guide restoration activities.

## **Liaison and Partnership With Community Groups and other Partners**

Building on existing strengths and formulating partnerships between government and non-profit organizations is the key objective of the Implementation Annex. The Niagara River RAP will continue to identify and pursue opportunities to form partnerships and Task Forces targeted toward developing specific action plans for identified problems. Within these partnerships, the Niagara River RAP will strive to develop model 'terms of reference' for remediation projects by community liaison committees.

Examples of partnerships with successful action plans include the Niagara River Area of Concern Rural Water Quality Program, the Baden Powell Park Naturalization Project, the Grassy Brook Watershed Rehabilitation Strategy, the Humberstone Marsh Rehabilitation Project and stream restoration projects completed by the Friends of Ft. Erie's Creeks group.

## **RAP Implementation Activities**

1. Produce an annual progress report summarizing progress toward meeting the Action specified in the Welland River Watershed Strategy.
2. Liaison with the Niagara Peninsula Conservation Authority Welland River Watershed Strategy activities and encourage the implementation of these strategies to all inland tributaries of the Niagara River Area of Concern.
3. Liaison and partnership with community groups. Building on existing strengths and formulating partnerships between government and non-profit organizations is the key objective of the Implementation Annex. Opportunities to form partnerships and task forces targeted toward developing specific action plans will be identified and pursued. With-in these partnerships, the Niagara River RAP will strive to develop model 'terms of reference' for projects completed by community liaison committees and sub-watershed strategies.

**BENEFICIAL USE IMPAIRMENT RELATED TO:**

**RECOMMENDATIONS THAT CAN NOT BE IMPLEMENTED  
AT THE LOCAL LEVEL  
(ARE FEASIBLE TO IMPLEMENT AT THE FEDERAL OR PROVINCIAL LEVEL)**

A number of recommendations in the Stage II Report can not be implemented at the local level and are only feasible to initiate at the Federal or Provincial level. In the Stage II RAP Report, 11 of the 36 recommendations relate directly to this theme.

The key role of the Niagara River RAP will be to report the Federal and Provincial response to these recommendations to the Niagara River Restoration Council and the public.

**Stage II RAP Goals**

None of the RAP goals can be categorized in this theme area.

**Stage II RAP Recommendations and Current Status**

#	Recommendation	Current Status
1	Establish an International RAP.	Habitat protection and restoration activities are underway on both sides of the border independently. The existing framework, in which the two RAPs work parallel within the context of binational governmental cooperation has proven effective. There is binational participation on the NRTMP.
2	Provincial and federal governments develop an integrated ecosystem approach to management for its agencies.	This commitment is entrenched through the Canada-Ontario Agreement. The Federal government will appoint a representative to the Implementation Structure who will coordinate Federal activities with those of the Province and with the goals of the NRTMP. The Federal government will also ensure that Federal fishery issues are represented on any Implementation Structure.
3	Provincial and federal governments establish specific government funding programs for RAP Implementation	Ontario – The Province will assist by investigating innovative funding alternatives. There is some support to RAP Implementation through allocating some partnership funding to priority projects. The Great Lakes Renewal Foundation will continue to provide funding for projects.  Federal – The Great Lakes Sustainability Fund, EcoAction 2000 and the Department of Fisheries and Oceans will continue to provide funding for projects.
4	Secure recognition of the remedial action plan as having fulfilled some of the requirements of the environmental assessment (EA) process.	The Federal government will harmonize its EA process with that of the province to ensure that projects in support of the RAP are coordinated to avoid overlap and duplication. The Province recognizes that the RAP planning process may have addressed some of the EA requirements, but proponents must still ensure that all EA requirements are met before specific projects recommended in the RAP can be approved.

#	Recommendation	Current Status
21	A regulation requiring treatment or exchange (or some other technique) to ensure that ballast water cannot be a way for the introduction of exotic species into the Niagara River AOC be enacted.	Transport Canada is involved in research and development in both sampling of biota in ballast tanks, as well as developing procedures, protocols and equipment for taking samples of ballast water without impeding vessels. Transport Canada has also been developing educational material focused on prevention.
22	Continue to protect habitat on both sides of the river as one ecosystem.	The Provincial and the Federal Government will provide support in implementing the identified habitat objectives.
24	Develop a Niagara River Fish Consumption Advisory.	The New York State Department of Environmental Conservation (NYSDEC), in cooperation with the MOE, periodically collect fish for contaminant analysis. The MOE results are published in the annual version of the "Guide to Eating Ontario Sport Fish". Opportunities to better communicate fish advisories specific to the Niagara River will be explored.
25	Conduct research to determine if consumption of water based wildlife is harmful to human health	Health Canada has completed a "Sport Fish and Wildlife Consumption Study in AOCs" in the Toronto, Hamilton and Niagara AOCs. Contact should be made with the Canadian Wildlife Service to determine future activities
34	The Ontario Ministry of Natural Resources develop an 'Introduction of Exotics' supplement to the Project Wild, Fishways and Focus on Forests programs.	The Province supports this in principle, however any additional or supplementary work will be dependent on the availability of staff time and funding resources and the formulation of alternative funding scenarios.
37	Boat owners retain and dispose of grey water at marinas.	The MOE facilitated the creation of the Clean Marine Partnership. This partnership includes 5 national and provincial boating associations, MOE, Environment Canada and Georgian College. The group has implemented a three pronged strategy for reducing water, air and land pollution from recreational boating. <ol style="list-style-type: none"> <li>1. promotion of the distribution and use of clean marine products,</li> <li>2. promotion of pollution prevention practices at marinas and yacht clubs</li> <li>3. public education programs.</li> </ol>

## Renewed Implementation Action Strategy

### Report Federal and Provincial Response to the Public

The Niagara River RAP will continue to report the Federal and Provincial response to these recommendations and the extent to which these recommendations have been implemented.

## THE NIAGARA RIVER RAP IMPLEMENTATION ADMINISTRATION FRAMEWORK

The Implementation Structure recommended in the Stage II document has been reviewed and revised. The Niagara River Restoration Council (NRRC) has assumed some of the functions of the formerly suggested committees.

The renewed implementation framework, based on a Memorandum of Agreement with the Ministry of the Environment and Environment Canada, provides for the Niagara Peninsula Conservation Authority to lead and coordinate the implementation of the RAP. The implementation and administrative strategy will be structured to provide three key functions.

1. Build on existing strengths. The Stage II RAP recommendations will be organized into key theme areas in order to facilitate partnerships with organizations that have clear jurisdictional responsibilities.
2. Compile and communicate an annual progress indicator report, based on data provided by the organizations and agencies responsible for implementing Stage II RAP recommendations.
3. Provide a central focus for all Niagara RAP related activities.

### Stage II RAP Goals

None of the RAP goals relate to this theme area.

### Stage II RAP Recommendations

#	Recommendation	Current Status
1	Establish an International RAP.	Habitat protection and restoration activities are underway on both sides of the border independently. The existing framework, in which the two RAP's work parallel within the context of binational governmental cooperation has proven effective. There is binational participation on the NRTMP.
5	The Niagara River RAP endorses and encourages the process of multi-sectoral liaison committees as the vehicle to facilitate the satisfactory remediation of water quality in the Niagara River AOC.	Fulfilling this recommendation is the key objective of the Implementation Annex.
6	Establish a Geographic Information Systems Repository for the Niagara River AOC.	The digital database developed for the Niagara River RAP is kept at the Niagara Peninsula Conservation Authority. The Conservation Authority does not possess the technical, human or financial resources to maintain and update the database.
7	Develop model "terms of reference" for remediation projects by community liaison committees.	The RAP and the NRRC will develop a 'terms of reference' guidelines for remediation projects for the AOC. A model has been addressed to a certain extent by the development of restoration guidelines for the Great Lakes. The criteria of restoration funding agencies such as the Great Lakes Sustainability Fund, EcoAction 2000, and the Great Lakes Renewal Foundation are all in effect model terms of reference.

#	Recommendation	Current Status
8	Implement the Niagara River Implementation Structure.	A revised Implementation Structure exists.
9	The Niagara River RAP become involved in infrastructure Needs Studies (INS).	A revised mechanism to provide input to infrastructure needs studies exists. The Restoration Council and the RAP have the opportunity to participate in the public consultation programs associated with these studies.

## Renewed Implementation Action Strategy

### The NPCA Assumes the Lead in the RAP Responsibilities, as Specified in the Memorandum of Understanding with Environment Canada and the Ministry of the Environment

The Niagara Peninsula Conservation Authority deliverables and tasks are specified in the Memorandum of Understanding.

The Niagara Peninsula Conservation Authority, with financial support from Environment Canada and the Ontario Ministry of the Environment, has agreed to initiate and coordinate activities for the Niagara River RAP and provide administrative services for the continued development and implementation of the Niagara River RAP.

The Niagara Peninsula Conservation Authority will complete the following tasks:

#### **Administrative:**

1. Develop an annual work plan.
2. Develop a Niagara River RAP Implementation Annex according to the Niagara River Remedial Action Plan Stage II Document, April, 1995, for all sectors, including a prioritized schedule of tasks and reports to be completed.
3. Encourage, guide and coordinate submissions to government and non-government organizations for funding of RAP projects.
4. Act as a liaison between the parties and provide support for the implementation of RAP recommendations.

#### **Community Involvement:**

1. Coordinate stakeholder involvement and consultation process.
2. Provide leadership and direction for community based rehabilitation activities.
3. Provide a focussed client services centre for RAP inquiries and liaison with responsible agencies.
4. Communicate information to the public, as appropriate, on the U.S. Niagara River RAP and the binational Niagara River Toxics Management Plan.

#### **Progress Monitoring:**

1. In consultation with stakeholders, develop targets/delisting criteria for the restoration of beneficial uses in the Niagara River Area of Concern as per the Niagara River Stage II document, 1995.
2. Develop a monitoring program for the Niagara River AOC.
3. Design and implement an annual public forum to highlight progress, future activities and innovation in achieving the RAP goals and provide direction to participating community groups and agencies.
4. Complete an annual Niagara River RAP progress report.
5. Provide day to day supervision of all contractors retained to deliver aspects of this work.



Environment Canada and the Ontario Ministry of the Environment will provide review of proposed activities and completed tasks and provide technical and scientific input to discussions, decisions, information and reports being prepared for public distribution.

### **Implementation and Administrative Framework Functions and the Role of the Niagara River Restoration Council**

The Niagara River RAP and its partners will further develop and implement the Niagara River RAP Implementation Structure and reporting mechanisms specified in this Implementation Annex. The Niagara River Restoration Council is currently developing a business plan detailing their role, responsibilities and funding strategy.

The implementation and administrative strategy will be structured to provide three key functions.

1. Build on existing strengths. The Stage II RAP recommendations will be organized into key theme areas in order to facilitate partnerships with organizations that have clear jurisdictional responsibilities.
2. Compile and communicate an annual progress indicator report, based on data provided by the organizations and partners responsible for implementing Stage II RAP recommendations.
3. Provide a central focus for all Niagara RAP related activities.

## APPENDIX A: RAP IMPLEMENTATION SUMMARY

IMPLEMENTATION ACTION: PERSISTENT TOXIN LOAD	ISSUES	LEAD / PARTNERS
Establish international RAP	Binational participation on the NRTMP.	NPCA
Enforce Regional Sewer By-law	Compliance strategy to ensure objectives of by-law are met.	Region of Niagara
Enforce MISA Programs	Enforce discharge requirements.	MOE
Contaminated sediment testing	Confirmation of absence/presence of contamination at selected sites.	MOE, En. Canada, NPCA
Point source monitoring program	Continuation of NRTMP Niagara River point source monitoring program.	MOE, NRTMP
Industrial point source monitoring	Regulatory self-monitoring through Environmental Compliance of industry and inspections / audit reporting.	MOE, En. Canada, Industry
Landfill monitoring	Continuation of landfill monitoring and reporting including Glanbrook Landfill.	NPCA, MOE
Drinking water taste and odor Program	Monitoring program to reduce taste and odor problems.	Region of Niagara
Drinking water monitoring	Continuation of Drinking Water Surveillance Program.	MOE
Development of Public Education Programs	Targeted programs for the education towards persistent toxin issues.	RAP, NPCA, MOE, NRRC, En. Canada, MNR

**APPENDIX A: RAP IMPLEMENTATION SUMMARY continued...**

<b>IMPLEMENTATION ACTION:</b>	<b>ISSUES</b>	<b>LEAD / PARTNERS</b>
<b>Aesthetics &amp; Habitat Features on the Niagara River</b>		
Improve recreational & scenic resources	Liaise with stakeholders to improve habitat features along the Niagara River.	Niagara Parks Commission, DFO, NPCA, MNR, NRRC
<b>IMPLEMENTATION ACTION:</b>	<b>ISSUES</b>	<b>LEAD / PARTNERS</b>
<b>Tributary Impairment unique to the AOC</b>		
Barriers to fish migration (NPCA owned)	Complete studies to determine impacts and future remediation measures.	NPCA, MNR, DFO. En. Canada
Barriers to fish migration (privately owned)	Inventory of all privately owned structures. Develop education programs to encourage voluntary removal.	NPCA, MNR, DFO
Barriers to fish migration (Welland Canal Siphons)	Assess mechanisms to permit fish migration through siphons.	City of Welland, NPCA, DFO, MNR
Welland Canal Siphon Impact Assessment	Assessment of sedimentation and thermal barriers to fish migration.	City of Welland, NPCA, DFO, MNR
Water level fluctuations	Model study to assess the hydro impacts of water fluctuations and alternative options for restoration	Ontario Power, MOE, DFO, MNR, NPCA, En. Canada

## APPENDIX A: RAP IMPLEMENTATION SUMMARY continued...

IMPLEMENTATION ACTION: Tributary Impairment Common to other areas (Urban & Rural)	ISSUES	LEAD / PARTNERS
Rural septic systems	Develop education and funding programs to ensure proper septic system practices.	Health units
Oswego Park Sewage Lagoon	Regular monitoring to ensure MOE standards are met.	Town of Haldimand
Glanbrook Landfill Leachate discharge	Development of a long term solution to handle leachate waste.	Region of Hamilton-Wentworth
Hamilton International Airport discharge	Ensure proper collection and treatment of discharge.	Airport operator, NPCA
Agricultural Practices	Continue the Rural Water Quality Program for cost sharing and farmer demonstration sites.	OMAFRA, NPCA
Groundwater supplies	Undertake groundwater/surface water taking and quality studies.	MOE, NPCA, Municipalities
Erosion & sedimentation (urban)	Work with municipalities to implement proper drain construction and maintenance.	OMAFRA, NPCA, Municipalities
Erosion & sedimentation (urban)	Develop updated stormwater management policies, erosion control and fill by-laws.	Municipalities, NPCA, MOE, MNR
Recreational Landuse (Sedimentation & erosion)	Encourage private & public recreational facilities to undertake environmentally friendly management practices.	NPCA, MNR, Municipalities, Public and Private sectors
Road Salt	Encourage road maintenance practices that utilize new standards for road salt concentrations and application.	MTO, NPCA, MNR, MOE
Combined sewer overflows	Complete elimination of CSO's.	Municipalities, MOE
Forest, wetland, riparian habitat improvement	Develop new strategies to encourage landowners to increase forest, wetland and riparian cover. Encourage landowner compensation programs. Develop education programs.	NPCA, MNR, En. Canada, NRRC

**APPENDIX A: RAP IMPLEMENTATION SUMMARY continued...**

<b>IMPLEMENTATION ACTION:</b>	<b>ISSUES</b>	<b>LEAD / PARTNERS</b>
<b>RAP ADMINISTRATION FRAMEWORK</b>		
Remediation Project Terms of Reference	Develop terms of reference for community groups to use as guidelines for the implementation of restoration projects.	NRRC, NPCA
Geographic Information Systems (GIS) Repository	Establish a GIS repository for the digital database developed for the Niagara River RAP	NPCA, En. Canada

## APPENDIX B – 2 YEAR ACTION PLAN

LEAD / PARTNERS	Year 1 PROJECT	ESTIMATED COST
NPCA	<p><b>Education and Communications-</b> Develop &amp; implement program to:</p> <ul style="list-style-type: none"> <li>• Promote wetland/riparian and forest cover habitat restoration &amp; establishment.</li> <li>• Promote environmentally friendly roadside ditch maintenance and municipal drain maintenance practices.</li> <li>• Promote the improvement of habitat features along the Niagara River corridor.</li> <li>• Develop targeted programs for the education towards persistent toxin issues.</li> </ul>	\$10,000.00
NPCA	<b>Establish international RAP</b>	\$0.00
NPCA	<p><b>Agricultural Stewardship and Monitoring Program</b></p> <ul style="list-style-type: none"> <li>• Continue to administer Welland River Water Quality program for cost-sharing and demonstration projects programs in the farming community.</li> </ul>	\$150,000.00
NPCA	<p><b>Initiate study to determine impacts on barriers to fish migration</b></p> <ul style="list-style-type: none"> <li>• Determine remediation options for NPCA owned structures.</li> <li>• Inventory all privately owned structures which are barriers to fish migration.</li> <li>• Develop education program to encourage voluntary removal.</li> </ul>	\$20,000.00
NPCA	<b>Liaison with the Niagara Peninsula Conservation Authority Welland River Strategy</b>	\$0.00
NPCA	<b>Improve and Update Urban/Rural Stormwater Management Policies and Programs</b>	\$10,000.00
NPCA	<b>Promote proper drain construction and maintenance</b>	\$10,000.00

**APPENDIX B – 2 YEAR ACTION PLAN continued...**

<b>LEAD / PARTNERS</b>	<b>Year 1 PROJECT</b>	<b>ESTIMATED COST</b>
Region of Niagara	<b>Compliance strategy to ensure objectives and enforcement of regional sewer by-laws are met</b>	\$20,000.00
NCPA	<b>Develop and administer tributary water quality monitoring program for area of concern</b>	\$140,000.00
MOE	<b>Continuation of Drinking Water Surveillance Program and MISA program enforcement</b>	\$?
MOE	<b>Enforcement of Safe Drinking Water Protection Regulation</b>	\$?
MOE, NRTMP	<b>Continuation of NRTMP Niagara River point source monitoring program</b>	\$250,000.00- \$350,000.00
Brock University	<b>Develop a program to monitor the impacts of road salt application in the AOC. Promote practices that will utilize new standards for concentrations and applications</b>	\$0.00
City of Welland	<b>Removal of Sediment in Old Welland Canal Siphons</b>	\$2,400,000.00
Ontario Power Generation	<b>Model study to assess the hydro impacts of water fluctuations on the Welland River and alternative options for restoration</b>	\$180,000.00
NRRC	<b>Develop terms of reference for community groups to use as guidelines for the implementation of restoration projects.</b>	\$1,000.00
Hamilton International Airport	<b>Continue tributary monitoring program for de-icing and stormwater management practices</b>	\$2,000.00
Region of Hamilton-Wentworth	<b>Continue to develop leachate elimination and monitoring program at Glanbrook Landfill</b>	\$12,000.00
Region of Haldimand-Norfolk	<b>Regular monitoring of Oswego Park sewage lagoons to ensure compliance</b>	\$5,000.00

**APPENDIX B – 2 YEAR ACTION PLAN continued...**

LEAD / PARTNERS	Year 2 PROJECT	ESTIMATED COST
NPCA	<p><b>Education and Communications-</b> Continue to implement programs to:</p> <ul style="list-style-type: none"> <li>• Promote wetland/riparian and forest cover habitat restoration &amp; establishment.</li> <li>• Promote environmentally friendly roadside ditch maintenance and municipal drain maintenance practices.</li> <li>• Promote the improvement of habitat features along the Niagara River corridor.</li> <li>• Develop targeted programs for the education towards persistent toxin issues.</li> </ul>	\$10,000.00
NPCA	<p><b>Agricultural Stewardship and Monitoring Program</b></p> <ul style="list-style-type: none"> <li>• Continue to administer Welland River Water Quality program for cost-sharing and demonstration projects programs in the farming community.</li> </ul>	\$150,000.00
NPCA	<p><b>Continue liaison with the Niagara Peninsula Conservation Authority Welland River Strategy</b></p>	\$0.00
NPCA	<p><b>Develop Tree Planting Program</b> – focus on increasing forest cover on private properties and increasing the extent of the riparian zones</p>	\$5,000.00
NPCA	<p><b>Develop GIS repository for Niagara River digital database</b></p>	\$50,000.00
NPCA	<p><b>Implement the remediation option for NPCA owned barriers to fish migration</b></p>	\$40,000.00
NPCA	<p><b>Initiate education program targeted towards the voluntary removal of structures which are barriers to fish migration</b></p>	\$100,000.00
NPCA	<p><b>Undertake a Groundwater Study and Develop water taking and quality studies</b></p>	\$75,000.00
NPCA	<p><b>Continue to improve and Update Urban/Rural Stormwater Management Policies and Programs</b></p>	\$10,000.00
NPCA	<p><b>Continue to promote proper drain construction and maintenance</b></p>	\$10,000.00



**APPENDIX B – 2 YEAR ACTION PLAN continued...**

<b>LEAD / PARTNERS</b>	<b>Year 2 PROJECT</b>	<b>ESTIMATED COST</b>
NPCA	<b>Develop education and funding programs to ensure proper septic system practices.</b>	\$40,000.00
Ontario Power Generation	<b>Implement the determined solution to address the hydro impacts on water fluctuations in the Welland River</b>	\$2,100,000.00
Brock University	<b>Continue to promote practices that will utilize new standards for concentrations and applications of road salt</b>	\$0.00
NRTMP	<b>Continuation of NRTMP Niagara River point source monitoring program</b>	\$250,000.00- \$350,000.00
Region of Niagara	<b>Continue strategy to ensure objectives and enforcement of regional sewer by-laws are met</b>	\$20,000.00
Municipalities	<b>Reduce CSO's and direct Industrial Discharges</b>	\$100,000.00
NPCA	<b>Continue to administer tributary water quality monitoring program for area of concern</b>	\$140,000.00
MOE	<b>Continuation of Drinking Water Surveillance Program and MISA program enforcement</b>	\$?
Hamilton International Airport	<b>Continue tributary monitoring program for de-icing and stormwater management practices</b>	\$2,000.00
Region of Hamilton-Wentworth	<b>Continue to develop leachate elimination and monitoring program at Glanbrook Landfill</b>	\$12,000.00
Region of Haldimand-Norfolk	<b>Regular monitoring of Oswego Park sewage lagoons to ensure compliance</b>	\$5,000.00

## APPENDIX C – PROVINCIAL RESPONSE TO THE RAP

December 9, 1996

Public Advisory Committee  
573 Glenridge Avenue  
P.O. Box 3040  
St. Catharines, Ontario  
L2R 7E3

On behalf of the Province of Ontario, I would like to take this opportunity to commend the Niagara River Public Advisory Committee, local stakeholders, and other participants for their time, effort and drive in the development of the Niagara River Stage 2 Recommended Plan. The high level of community involvement is evidence of the dedication that Niagara River citizens have toward the restoration of environmental quality in this Area of Concern.

The Province of Ontario recognizes and supports the goals and desired beneficial uses for the Niagara River Remedial Action Plan as stated in the Stage 2 Recommended Plan, The Cleanup Connection. The Province agrees that the strategy detailed in the report is sound and will result in the attainment of the environmental goals for Ontario's inputs to the Niagara River. The Province also concurs, in principle, with the Recommendations detailed in the report, with the exception of Recommendations #3, 26, 27, and 28 which are not currently supported due to either technical, policy, or economic reasons. Explanations surrounding the recommendations and selected others are presented in the attached table.

As the Niagara River community has been proceeding with Remedial Action Plan (RAP) development, I am pleased to indicate that the Province of Ontario has contributed approximately \$24 million to implement actions in the Niagara River Area of Concern, thereby furthering your efforts to restore beneficial uses in the Area of Concern, thereby furthering your efforts to restore beneficial uses in the Area of Concern.

The Ontario Ministry of Environment and Energy (MOEE) has contributed over \$22 million since 1990 for implementation projects in the Niagara River area. Of this, \$21.7 million has supported water and sewage projects in the municipalities encompassed by the RAP, through such programs as the former MOEE Direct Grants and Beaches Programs, the Province's jobsOntario Capital Fund, and most recently, the Municipal Assistance Program. Financial support for implementing your recommendations has also been provided by MOEE through its Clean Up Rural Beaches program, Household Hazardous Wastes Program, Environmental Education and Awareness Program, and Environmental Research Program.

The Ministry of Environment and Energy has also provided \$915,000 since 1987 for the development of the RAP, including technical studies, administrative support, public involvement, communications and outreach activities.

To do our part to meet the provincial goal of reducing the debt and the deficit, the province is reducing spending, and focussing on fair, efficient and effective methods to enhance and protect the environment. My ministry is currently exploring mechanisms to stimulate investment in environmental rehabilitation on a basin-wide level and locally. MOEE is exploring innovative partnership arrangements and will be encouraging Public Advisory Committees (PACs) and other community organizations to use this information to forge broader partnerships. We look forward to sharing this information with you and assisting the Niagara River RAP to secure new sources of funding.

In accordance with the 1994 Canada-Ontario Agreement (COA) MOEE will continue to provide strategic and policy direction, focussed funding and in-kind service such as scientific expertise to the Niagara River communities. MOEE will continue to work with you on finalizing an effective implementation framework, and assist you in achieving the restoration of the nine beneficial uses that have been identified as impaired.

Opportunities to harmonize implementation of selected RAP recommendation with the municipal official planning process and municipal programs have been researched by MOEE in consultation with the Ministry of Municipal Affairs and Housing (MMAH). A draft document was forwarded to you in September of this year. We hope that the instructional workshop which was held in association with the release of this document and the Ontario Public Advisory Council (OPAC) Annual Conference assisted you in learning more about opportunities for RAPs to influence municipal planning, programs, and policies. MMAH will also participate in the implementation of the Niagara River RAP through the review of Official Plans from the Area of Concern municipalities.

The Ministry of Natural Resources (MNR) provides research and assessment information and expertise, compliance monitoring, and legislative and policy support for the protection of natural heritage features such as fish and wildlife habitat. Within this context, MNR has contributed money and staff resources to the implementation of the RAP program. To date, the Ministry of Natural Resources has contributed \$82,000 for projects in the Niagara River RAP area. MNR will continue to protect Ontario's natural heritage features and areas in Areas of Concern in partnership with RAP technical teams and stakeholders.

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has provided and will continue to provide farmers with advice on various farm management practices, including manure and milkhouse washwater management, nutrient management, soil testing, cropping and tillage practices, and control of soil erosion. In addition to technical advice, printed information in the form of fact sheets and best management practices publications on practical options for conserving soil and improving water quality are produced in cooperation with industries and other government agencies. Payments to date to farm operations under the Environmental Farm Plan Program Incentive (April 1994-March 1997) within the Niagara River Area of Concern have been approximately \$35,155. Investments by these farms toward on-farm environmental improvements to date have been approximately \$134,605. Under OMAFRA's Land Stewardship II program (September 1990-March 1994), payments to farm operations within the Niagara River Area of Concern were approximately \$987,900. These payments were in support of on-farm environmental improvements implemented during this period.

OMAFRA is currently involved in a project across Southern Ontario with a number of farm operators and other agencies to examine in-field variability of crop production. Expected benefits of developing site specific crop management systems include more efficient utilization of crop inputs, improved economic returns to producers, and enhanced environmental protection. Within the Niagara River Area of Concern, an annual expenditure of approximately \$16,700 is anticipated to further develop site-specific cropping systems. Fiscal 1994/95 was the first year of this five-year effort. OMAFRA will continue to provide staff time and expertise for technical and advisory services to the agricultural community in the area of environmental sustainability.

As stated above, provincial ministries are continuing the high level of cooperation we have established with federal agencies to identify new and innovative funding opportunities to assist communities in fulfilling RAP recommendations. The community tool-kit which we assisted OPAC in producing was the first of our findings to be made available to you. Our findings will continue to be forwarded to you as they become available.

On behalf of the Province, let me restate that I admire the achievements that the Niagara River Public Advisory Committee, RAP Team and area stakeholders have made to date. Your ongoing perseverance and dedication is most appreciated and respected.

Sincerely,

Norm Sterling  
Minister

6E050118.LTR

## NIAGARA RIVER REMEDIAL ACTION PLAN

### COMMENTS ON RECOMMENDATIONS

RECOMMENDATION	TOTAL ESTIMATED COST	PROPOSED IMPLEMENTATION PARTNERS	PROVINCIAL RESPONSE
<p>3. Provincial and federal governments establish specific government funding programs for RAP implementation.</p>	<p>Agency Staff Time</p>	<p>Federal government agencies Provincial government agencies</p>	<ul style="list-style-type: none"> <li>• Due to the shift away from granting programs to provision of technical and policy advice, the province does not support this recommendation as stated, and will assist by investigating innovative funding alternatives.</li> <li>✓ In 1996/97, Ontario continued to support the implementation of the RAP recommendations through allocating some partnership funding to priority projects.</li> </ul>
<p>4. Secure recognition of the Remedial Action Plan as having fulfilled some of the requirements of the Environmental Assessment process.</p>	<p>Agency Staff Time</p>	<p>MOEE EC</p>	<ul style="list-style-type: none"> <li>• Although the RAP planning process is likely to address several aspects of Class EA requirements, proponents must ensure that all legal EA requirements are met before the specific projects identified in the RAP can be considered approved.</li> <li>✓ As the RAP planning process may have addressed some of the EA Act or Class EA requirements, the information developed through the RAP can be built upon to satisfy outstanding EA requirements. RAPs can harmonize their process with that of the Class EA by ensuring legal requirements for the Class EA are met.</li> </ul>
<p>13. Prepare and implement a rural non-point source pollution remediation strategy.</p>	<p>\$9,200,000</p>	<p>Niagara Peninsula Conservation Authority EC MOEE OMAFRA Farmers</p>	<ul style="list-style-type: none"> <li>• Although the province supports the preparation and implementation of a rural non-point source pollution remediation strategy, some of the programs identified as part of the strategy are no longer currently funded by MOEE. Funding for the CURB program and others listed on page 57 of</li> </ul>

<p>(Cont'd)</p> <p>13. Prepare and implement a rural non-point source pollution remediation strategy.</p>	<p>\$9,200,000</p>	<p>Niagara Peninsula Conservation Authority EC MOEE OMAFRA Farmers</p>	<p>The Cleanup Connection was terminated as of March 31, 1996.</p> <ul style="list-style-type: none"> <li>• The province is supportive of the intent of the legislation aimed at ensuring mandatory septic system reinspection every 15 years, and the legislation is now under assessment as part of the regulatory review initiative currently ongoing across MOEE.</li> <li>✓ MOEE has retained staff resources to promote innovative solutions to rural environment problems.</li> <li>✓ MOEE and OMAFRA will continue to work with the conservation authorities, farm, and rural organizations to promote landowner awareness and action to improve rural water quality on a watershed basis.</li> <li>✓ The province will continue to work in partnership with the Niagara Peninsula Conservation Authority and the cooperating farmers to monitor and report on the efficiency and effectiveness of the experimental artificial constructed wetlands.</li> </ul>
<p>26/27. Continue monitoring municipal and industrial point sources under the Niagara River Toxics Management Plan (NRTMP) and publish results.</p>	<p>Agency Staff Time</p>	<p>MOEE NRTMP</p>	<ul style="list-style-type: none"> <li>• Quarterly point source NRTMP monitoring, which has been ongoing since 1986, is currently being reviewed by NRTMP committees; a new workplan to direct NRTMP activities beyond 1996 is being developed for presentation to the public.</li> <li>• In the last 2-3 years of monitoring, end of pipe concentrations have been acceptable against Ontario standards set for all surface waters in the province. Based on this fact and indications that the 50% point source reduction goal has been met, the recommendation has been made to discontinue point source monitoring.</li> <li>✓ A commensurate effort will be contributed by MOEE through biomonitoring in the vicinity of these discharges. Biomonitoring has been</li> </ul>

<p>(Cont'd) 26/27. Continue monitoring municipal and industrial point sources under the Niagara River Toxics Management Plan (NRTMP) and publish results.</p>	<p>Agency Staff Time</p>	<p>MOEE NRTMP</p>	<p>by the public and committed to by the NRTMP committees as a more persuasive and reliable indicator of environmental "health" than chemical data alone.</p>
<p>28. Landfills continue to be monitored regularly, as determined by monitoring results.</p>	<p>\$25,000/review</p>	<p>MOEE EC</p>	<ul style="list-style-type: none"> <li>• This recommendation calls for annual reporting for all five sites unless the interpretation of the hydrogeology and monitoring data warrant either less frequent reporting or a total cessation.</li> <li>✓ An example of where this might be appropriate is where the existing maximum concentrations of contaminants-of-concern are consistently at trace levels at the property boundary(s) of the waste site and these concentrations are not expected to increase.</li> </ul>
<p>37. The Ontario Ministry of Natural Resources develop an "Introduction of Exotics" supplement to the Project Wild, Fishways, and Focus on Forests programs.</p>	<p>\$20,000</p>	<p>OMNR</p>	<ul style="list-style-type: none"> <li>• The province supports this recommendation in principle, however, any additional or supplementary work will be dependent upon the future availability of resources (agency staff time and funding) and the formulation of alternate funding scenarios.</li> </ul>
<p>37. Boat owners retain and dispose of grey water at marinas.</p>	<p>Not available</p>	<p>MOEE Ontario Marina Operators Assoc. local marinas sport stores</p>	<ul style="list-style-type: none"> <li>• In response to boating industry's willingness to play a leadership role in protecting the environment, MOEE facilitated the creation of a business, government and academic partnership as an alter native to the regulatory approach.</li> <li>• The Clean Marine Partnership presently consists of five national and provincial boating associations, MOEE, EC's Environmental Choice Program, and Georgian College.</li> <li>✓ During the past year, the partnership has</li> </ul>

<p>(Cont'd)  34. The Ontario Ministry of Natural Resources develop an "Introduction of Exotics" supplement to the Project Wild, Fishways, and Focus on Forests programs.</p>	<p>Not available</p>	<p>MOEE  Ontario Marina Operators Assoc.  local marinas  sport stores</p>	<p>focussed on a public awareness and environmental education program for boaters.  ✓ The partnership members are now implementing a three-pronged strategy for reducing water, air and land pollution from recreational boating in Ontario:  - promotion of the manufacture, distribution and use of clean marine products  - promotion of pollution prevention and reduction operating practices at marinas and yacht clubs  - continuation of their environmental education and public awareness campaign aimed at boaters, marinas and yacht clubs.</p>
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## FEDERAL GOVERNMENT'S RESPONSES TO THE RECOMMENDATIONS

This section contains the formal response of the Federal Government of Canada to all those recommendations in the Stage 2 RAP Report which require support from one or more federal agencies or departments. It also contains a description of federal actions, already completed, which have supported projects related to the recommendations.

Preceding each response, is a statement of the corresponding recommendation from the Stage 2 report. This is followed, where available, by the estimated total cost, and a list of all the agencies (federal or otherwise) involved in supporting or implementing projects connected with the recommendation. A slash is used to separate the proposed lead agencies (listed first) from those which have been identified as partners. Federal agencies, wherever they appear in the list, are given in bold type. It should be noted that the estimated total cost, as well as the proposed lead and partner agencies, are all listed essentially as they appear in the Stage 2 Report, and so will not necessarily match what is contained in the federal response or the description of actions to date.

## FEDERAL GOVERNMENT'S RESPONSES TO THE RECOMMENDATIONS

The recommendations in this category are general in nature, and have the function of supporting and facilitating the implementation of the more specific recommendations which occur later in the report.

### RECOMMENDATION # 1

#### Establish an International RAP

**TOTAL ESTIMATED COST** Agency staff time

**AGENCIES RESPONSIBLE** EC, MOEE / EPA, NYSDEC

#### RESPONSE

The federal government and the provincial government of Ontario both strongly support the concept of an international RAP, and there has also been some effort made at the Public Advisory Committee level toward this goal. It should be noted, however, that the government of New York State, while it supports binational projects, has not given its support to the concept of a binational RAP. Until such support is forthcoming, it will be difficult to make progress on this recommendation.

The existing framework, in which the two RAPs work in parallel within a context of binational inter-governmental cooperation, has proven to be an effective means for implementing some of the objectives contained in the two remedial action plans. It is recognized that this cooperative framework does not allow a completely integrated ecosystem approach to remediation. Nevertheless, there are many examples where it has either contributed to, or has the potential to contribute to, the implementation of remediation and monitoring projects, and even public involvement activities. Most of these examples derive from the joint participation of the two countries in various binational committees set up for the purpose of surveillance or control. For instance:



- Environment Canada, through its membership in the Niagara River Toxics Management Plan, has ongoing contact with agencies of the three other jurisdictions. The overall goal of the NRTMP is to "achieve significant reductions of toxic pollutants in the Niagara River", and to this end, it has identified a series of activities in its workplan. Primary among these is Environment Canada's Upstream/Downstream monitoring program, which uses differential concentrations between the head and mouth of the river to determine the loading rates of toxic chemicals along its length. This program, which has been the backbone of the NRTMP since 1986, has also played a key role in the in the RAP process. Both the Stage 1 and Stage 1 Update reports used its data to document exceedences of water quality objectives, to document sources for numerous chemicals in the river, and to generally better define the problems caused by toxic substances in the river. The program has also been an indispensable source of information for determining the efficacy of remedial programs to reduce the loading of toxic substances along the river. Since 1987, EC has spent in excess of \$2M (exclusive of salaries) in support of this activity, and will continue to support it until at least the end of 1997.
- It has been recognized by its member agencies that the framework of the NRTMP may provide opportunities for binational public involvement activities. Decisions on this, however, are pending the outcome of an upcoming workshop at which the NRTMP will examine its post-1996 role.
- Environment Canada, through its Environmental Services Branch has involvement with the International Niagara Board of Control. This has produced close ties with a number of U.S. government agencies at both the state and federal level. Although the mandate for this board is to oversee various orders and directives of the International Joint Commission (IJC) concerning water levels and flows, it can nevertheless make a valuable contribution to RAP objectives by providing a regular forum for communication between Canadian and U.S. agencies, and by facilitating bilateral action to address issues on the Niagara River. Issues that have been addressed in this way include erosion control on Strawberry Island to protect habitat, and control of potential shoreline infilling activities on the river.

The federal government will continue to be involved in these and other binational activities and will utilize any opportunities provided by such involvement to develop support for an international RAP. It will also continue to support future activities by stakeholders that contribute towards the development of binational cooperation.

## **RECOMMENDATION # 2**

**Provincial and federal governments develop an integrated ecosystem approach to management for its agencies.**

**TOTAL ESTIMATED COST** Agency staff time

**AGENCIES RESPONSIBLE** Management Board of Cabinet (Ontario),  
Federal Cabinet / federal government  
agencies, provincial government agencies

## **RESPONSE**

The federal government supports this recommendation and reaffirms its strong commitment to cooperative management practices which are based on sound ecological principals and which are well coordinated with those of its provincial partner agencies in the RAP program. This commitment is entrenched in the Canada-Ontario Agreement and in the existing structure of the RAP program. Evidence of it can be seen in the coordination that exists among the federal and provincial agencies that are currently addressing issues of drainage, wetlands loss, and effluent control requirements in the Welland River watershed. It is recognized, however, that the overall complexity of the RAP program in this AOC, and in others, will create some serious and unique challenges, and so the federal government commits itself to develop and use modern and efficient management tools that will facilitate an integrated approach to ecosystem restoration. Furthermore,

the federal government will appoint a representative to the implementation structure who will coordinate federal activities with those of the provincial government and with the goals of the Niagara River RAP. The federal government will also insure that federal fishery issues have representation on any implementation structure that will be set up.

### **RECOMMENDATION # 3**

**Provincial and federal governments establish specific government funding programs for RAP implementation.**

**TOTAL ESTIMATED COST** Agency staff time

**AGENCIES RESPONSIBLE** Federal Government, Ontario Provincial Government / Federal and provincial government agencies

### **RESPONSE**

The federal government, through Great Lakes 2000 and COA, is committed to funding Remedial Action Plans, and it does this through program funds established to meet departmental responsibilities and mandates. The largest of these is the Great Lakes 2000 Cleanup Fund, which is managed by Environment Canada for the primary purpose of supporting the remediation activities in each of Canada's 16 Areas of Concern. This fund was created in 1989, and to date has provided \$43M of financial support to about 230 cleanup and rehabilitation projects many of which have demonstrated new and innovative technologies.

Additional support for RAP implementation activities may also be obtained through Health Canada's Health Effects Program, Environment Canada's Action 21 Community Funding Program, and the Federal Government's Green Plan. Federal agencies also provide assistance through in-kind research, and through monitoring and operational support.

### **RECOMMENDATION # 4**

**Secure recognition of the remedial action plan as having fulfilled some of the requirements of the environmental assessment process.**

**TOTAL ESTIMATED COST** Agency staff time

**AGENCIES RESPONSIBLE** MOEE (EA Branch and Regional Offices), EC / no proposed partners

### **RESPONSE**

Under the Canadian Environmental Assessment Act, the federal government is committed to ensure that an environmental assessment is completed for all projects which it undertakes, funds, or for which it provides land, or gives regulatory approval. The federal government will harmonize its EA process with that of the province, in accordance with the bilateral agreement on EA harmonization, to ensure that projects in support of the RAP, and which are subject to both federal and provincial EA processes, are coordinated in such a way as to avoid overlap and duplication.

It is recognized that the RAP process has made a major contribution in the documentation of the problems and issues in IJC Areas of Concern, and in the identification of initiatives and actions to be undertaken to resolve these problems. This documentation in itself, however, does not fulfill the full requirements of the CEAA, given the general, non-project specific nature of the RAP and its public consultation effort. At the same time, the documentation, through its extensive investigation of the existing environmental conditions and the alternative courses of remediation, will become an important component of EAs that will be required

for any future projects to be developed in support of the RAP. The determination of EA requirements to ensure compliance with CEAA will be made by federal departments potentially having a Responsible Authority role with respect to any given proposed project, in conjunction with the Canadian Environmental Assessment Agency.

## **RECOMMENDATION # 6**

### **Establish a Geographic Information System repository for the Niagara River Area of Concern.**

**TOTAL ESTIMATED COST** The cost of maintaining a GIS repository at Brock University has not been estimated

**AGENCIES RESPONSIBLE** Brock University / EC, HC, MOEE, OMNR, NPCA, OMAFRA, Region of Niagara, City of Niagara Falls

## **RESPONSE**

The federal government supports the establishment of a GIS facility and a GIS inventory for available data. If the decision is made to locate them at Brock University, DOE-ESB and HC are willing to transfer GIS data and maps to the repository free of charge. However, the federal government is unable, through direct funding, to establish, maintain, or operate a GIS repository for the Niagara River Area of Concern.

The Great Lakes Information Management Resource (GLIMR, see recommendation #35) and the Niagara River Digital Atlas have been developed by the DOE and can be accessed through the internet free of charge. The hard copy (i.e., paper copy) of the atlas will, however, have a cost associated with it. Other GIS based data sets which exist and which are presently being developed within DOE and HC will be made available to the Niagara River RAP.

## **FEDERAL ACTIONS TO DATE**

- In 1993, Environment Canada (Ontario Region) initiated the development of a Niagara River Digital Atlas to provide a common database of environmental and water quality information. Although strictly speaking, this activity was not undertaken within the RAP program, it is important to realize that the primary purpose was to organize data on the Niagara River which would be useful in determining the success of clean-up programs. The Atlas is a database which integrates different types of information in a Geographic Information System (GIS). Information contained includes base mapping data ( rivers, roads, etc.), contaminant loadings from industrial and municipal facilities, water quality monitoring of the Niagara River and biomonitoring of fish and mussels. Environment Canada has incorporated all the information as it was provided by the various agencies, and has not attempted any correction or further interpretation of any of the information submitted. Contributors to the Atlas include the Environmental Services Branch, the Environmental Conservation Branch, and the Monitoring and Systems Branch of Environment Canada - Ontario Region.
- Health Canada has undertaken a pilot project to explore how spatially displaying information can help identify scenarios in which people are exposed to environmental contaminants. The maps produced will integrate information on the recreational use of the watershed with point and non-point source contaminant data. Some maps will incorporate fishing and angling data. Environment Canada's Environmental Services Branch provided GIS formatted data sets to the project (delivery date, March 31, 1996). The maps are currently being designed and produced by HC.
- Environment Canada, through the Environmental Services Branch, GL2000 CuF and the Canadian Wildlife Service (CWS), is in a partnership with OMNR, and OMOEE, in a project known as the Niagara

Natural Heritage System. GIS land use classification using Landsat satellite imagery allows for the identification of priority habitat rehabilitation sites in upland habitats (forests and riparian zones) in the AOC watershed. CWS will continue to provide technical support as the project evolves to evaluate rehabilitation priorities in aquatic habitats (wetlands, littoral zones, in-stream) as part of a delisting strategy for the AOC. The GIS database will be transferred by mid summer, 1996, to a location in the AOC with training provided by EC-ESB.

## **RECOMMENDATION # 8**

### **Initiate the Niagara River RAP Implementation Structure,**

**TOTAL ESTIMATED COST** Cost to operate the NPICC, PAC and the Niagara Implementation Centre is estimated at \$60K per year.

**AGENCIES RESPONSIBLE** EC, MOEE / Agencies with implementation responsibility

## **RESPONSE**

The federal government is committed to participating within an implementation framework. The entire RAP implementation structure is currently under development, and roles and functions of the committees within the structure have still to be determined in consultation with the participating agencies. Environment Canada will provide funding to support the implementation structure, the amount of which is subject to negotiation with the other implementation partners.

Since 1990, Environment Canada has provided \$453.8K to support the Public Advisory Committee (PAC) through its public involvement and communications budget. Although Environment Canada is committed to ensuring that public involvement continues to be an integral part of all stages within the RAP program, it recognizes that support to the PACs cannot continue indefinitely. In recognition of this, the COA RAP Steering Committee is developing a sunset policy that will outline when and how long funds will be available. Nevertheless, Environment Canada will continue to provide funds for maintaining the PAC office for FY 96/97 and 97/98. This includes rent for the PAC office and salary dollars at a reduced level for the public liaison coordinator (based on a change in role and function). Federal commitments to support the PAC office beyond this time will be judged on the basis of any new COA policy on sunseting.

## **MUNICIPAL WATER QUALITY RECOMMENDATIONS**

Environment Canada is also looking at opportunities that would allow for the most efficient use of resources.

For example, it may be appropriate to integrate some of the RAP and NRTMP public involvement support. Further consideration regarding this is pending the outcome of the proposed May, 1996 NRTMP workshop.

These recommendations refer to the urban sewage collection and treatment systems. They address the environmental issues associated with the treatment and disposal of sewage collected through the municipal and regional "pipes in the ground" systems.

## **RECOMMENDATION # 9**

**The Niagara River RAP become involved in Infrastructure Needs Studies (INS).**

**TOTAL ESTIMATED COST** Volunteer time

**AGENCIES RESPONSIBLE** Niagara Partners in Cleanup Committee / PAC, Non-Government Organizations, Region of Niagara Area Municipalities

## **RESPONSE**

The federal government is not named as a partner in this recommendation. Nevertheless, it should be noted that through the Canada-Ontario Infrastructure Works Program, the federal government has made a commitment to fund one third of the cost of new municipal infrastructure improvement projects (up to a maximum amount based on the population). Through this Infrastructure Works Program, Industry Canada has approved funding to the following ongoing projects, and claims for payment have been received from the municipalities:

- City of Niagara Falls - Storm sewer installation, watermain replacement, sewer separation/Stanley Ave. Alexander Ave. Inglis St. - Approved assistance \$276.7K.
- City of Niagara Falls - Replacement of existing watermains, separate CSO system / Park St. Cataract Ave. Zimmerman Ave. - Approved assistance \$490K.
- City of Niagara Falls - Separation of CSO system / Victoria Ave. (Ferry St. to Roberts St., Hwy#420) - Approved assistance \$700K.
- Town of Niagara-on-the-Lake - Sewer separation / Mississauga Beach - Shakespeare Ave. Shore Rd. Oak Dr. Dixie Ave. Wesley Ave. Addison Ave. - Approved assistance \$164.9K.

Furthermore, through Environment Canada's Great Lakes 2000 Cleanup Fund, the federal government will support pilot scale or demonstration projects which are required as a result of Infrastructure Needs Studies, provided that they satisfy the appropriate funding requirements. A good example is provided by the Fort George Constructed Wetland Project . This is an experimental project to see if a constructed wetland can improve the treated sewage from the wastewater treatment plant at Niagara-on-the-Lake, and to determine if it can do so on a year round basis in a cold climate. The wetland will have a subsurface flow and an ability to 'drain down', which promotes the degradation of the organic matter and removal of the nutrients found in the treated sewage. Total support provided for this project through the Cleanup Fund to date is \$95K. The project is also funded by the U.S. Environmental Protection Agency, Region of Niagara, MOEE, and Friends of Fort George.

## **RECOMMENDATION # 11**

**The Region of Niagara continue to work towards implementing a water pollution control plant optimization program for all its plants.**

**TOTAL ESTIMATED COST** The region of Niagara has budgeted \$240K for the WPCP Optimization Program

**AGENCIES RESPONSIBLE** Region of Niagara / MOEE

## **RESPONSE**

The federal government supports this recommendation. Through the Great Lakes 2000 Cleanup Fund, Environment Canada will continue to support new and innovative technologies which optimize the performance of existing infrastructure, and which meet the funding criteria.

## **FEDERAL ACTIONS TO DATE**

- Environment Canada, through the GL 2000 Cleanup Fund, has supported a voluntary participation project which aimed at reducing extraneous flows to sewer systems. Just as the "blue box" recycling program has led to an increased awareness of the need to reduce solid waste, this project, which has been completed, aimed at bringing about a similar awareness of individual contributions to water pollution. Removing extraneous flows reduced the production of waste water and helped to optimize existing sewer infrastructure. In this way treatment capacity was "created", because wastewater was less diluted by extraneous flows. This will result in fewer overflows and bypasses to the natural environment. This project also reviewed municipal by-laws affecting disconnect programs and the success of disconnect projects in Ontario municipalities. The final report, which is in preparation, will make recommendations for effective disconnect programs and also communicate results to other municipalities through a workshop. Total support provided by the Cleanup Fund for this project was \$34.3K. The City of Niagara Falls and the Ontario Ministry of Environment and Energy also supported this project.

## **WATER QUALITY RECOMMENDATIONS FOR RURAL NON-POINT SOURCES**

These recommendations address the environmental issues stemming from agricultural and other practices in the rural areas of the Niagara River AOC.

### **RECOMMENDATION # 13**

**Prepare and implement a rural non-point source pollution remediation strategy.**

**TOTAL ESTIMATED COST** The cost of remediating all rural non-point sources of pollution in the AOC is estimated to be \$9.2M.

**AGENCIES RESPONSIBLE** NPCA / EC (Great Lakes Cleanup Fund), MOEE, OMAFRA, farmers in the AOC

### **RESPONSE**

The federal government supports this recommendation. Since 1994, Environment Canada has been providing support through its Cleanup Fund for an Agricultural Implementation Strategy and Remediation Program in the Niagara River AOC. Although the program was initially conceived to extend over an eight to ten year period, the CuF makes its funding commitments on an annual basis, and is presently examining its level of support for the 1996/97 fiscal year.

The first phase of the program was completed in March 1995, with the release of the Agricultural Implementation Strategy Report, which contained recommendations for reducing ecosystem damage caused by rural non-point source pollution in the Welland River watershed. The report was based on data obtained from the ongoing water quality monitoring program (see recommendation 29) and on results of a survey which contacted more than 500 landowners in the targeted subwatersheds. The next phase of the program is now underway, and will implement demonstration projects to verify the effectiveness of the report's recommendations. Over the next year, if funding is approved, the program will complete 10 demonstration projects for soil erosion and conservation tillage, as well as 50 high priority water quality improvement demonstration projects, including 15 livestock fencing projects, 15 manure storage projects, and 15 milkhouse washwater

projects. Total support provided by the Cleanup Fund for this project up to the end of 95/96 has been \$256K. The Niagara Peninsula Conservation Authority, Ontario Ministry of Environment and Energy, Ontario Ministry of Agriculture, Food and Rural Affairs, Niagara Region Public Health Services, Royal Bank, and local land owners are also funding this project.

Environment Canada, through its Environmental Services Branch, will also contribute to the development of a non-point source remediation strategy by making available its expertise in hydrologic and hydraulic analysis and modelling.

## **RECOMMENDATION # 14**

**Farmers in the Niagara River AOC be encouraged to follow sound farming practices such as recommended in the Environmental Farm Plan Program.**

**TOTAL ESTIMATED COST** Additional costs to operate the Environmental Farm Plan, above what is already budgeted, are not anticipated.

**AGENCIES RESPONSIBLE** Ontario Farm Environmental Coalition / farmers in the AOC, AAFC, OMAFRA

## **RESPONSE**

The federal government supports this recommendation and is presently encouraging all farmers in the Niagara AOC, through the Canada Ontario Agriculture Green Plan, to implement sustainable environmental practices, particularly those recommended through the environmental farm planning (EFP) process. Approximately \$3 million is being provided by Agriculture and Agri-Food Canada to the Ontario Farm Environmental Coalition to implement the environmental farm planning program throughout Ontario from 1992 to 1997. During the same period, AAFC is funding "on a first come first served" basis a \$5 million incentive program to assist farmers implement environmental solutions or new management practices which effectively address a "poor" or "fair" rating identified on their approved EFP Action Plan. Within the Niagara River AOC, as of January 1996, there were a total 170 participants in the EFP workshops, and the total amount of funding in the AOC for both programs was \$130.41K.

## **FEDERAL ACTIONS TO DATE**

Although the idea for the Environmental Farm Plan Program originated with the Ontario Farm Environmental Coalition, it has been supported by the federal government, through Green Plan funding, since 1992. Environmental Farm Plans (EFPs) are documents voluntarily prepared by farm families to raise their awareness of environmental conditions on their farm. These plans enable them to rectify existing problems and also to realize the economic benefits that may result from changes in management practices.

## **RECOMMENDATION # 15**

**Additional funding per farm business be given to the Environmental Farm Plan Incentive Program operating in the Niagara River AOC**

**TOTAL ESTIMATED COST** There will be no additional costs since the number of farmers participating in the program is less than originally anticipated.

**AGENCIES RESPONSIBLE** Ontario Farm Environmental Coalition / farmers in the AOC, AAFC, OMAFRA

## RESPONSE

The federal government supports this recommendation. In its original form, the program provided a \$500 incentive, per farm business, to encourage participation in the program and to help finance those changes identified in the EFP. In response to a request by the Ontario Farm Environmental Coalition, the Canada-Ontario Environmental Sustainability Accord Committee on September 15, 1995, approved a province-wide increase in the EFP incentive from \$500 to \$1500; this in an attempt to increase farmer participation in the

## SEDIMENT RECOMMENDATIONS

environmental farm planning process.

These recommendations address the environmental issues associated with contaminated sediment in the rivers and tributaries of the Niagara River AOC.

It should be noted that a Welland River Cleanup Committee, chaired by the Niagara Region Peninsula Conservation Authority, has been in existence since 1993. This committee's focus has been to coordinate the activities of all stakeholders and water users in the lower Welland River, with the aim of achieving Recommendations 16 through 18. The goals and objectives of this committee are consistent with those of the Stage 2 Report.

### RECOMMENDATION # 16

**The lower Welland River (downstream of the Welland airport) be the priority focus of any sediment assessment.**

**TOTAL ESTIMATED COST** Estimated cost is \$4.0M (with silt curtain) or \$3.5M (without silt curtain).

**AGENCIES RESPONSIBLE** Welland River Cleanup Committee / members of the Welland River Cleanup Committee

## RESPONSE

The federal government supports this recommendation and is willing to provide the following assistance:

- Environment Canada, through its Environmental Services Branch, will contribute to the sediment assessment of the Lower Welland River through its expertise in hydrologic and hydraulic analysis and modeling and by facilitating access to river level and flow data. This support will be provided both in terms of in-kind staff contributions and Great Lakes 2000 Cleanup Fund supported work in fiscal year 1996-97
- Environment Canada, through the Great Lakes 2000 Cleanup Fund, will continue to support a full scale sediment removal demonstration project on the Welland River Reef. Environment Canada's CWS will provide technical advice for wetland rehabilitation and for developing the monitoring protocol for pre and post-remediation. The initiation of this full scale sediment remediation project was based on the success of the sediment removal and treatment demonstrations at the Atlas Steel site in the Welland River in 1991. The Technology selected was an Amphibex dredge which uses a hydraulic suction bucket to excavate sediment and pump the slurry to a nearby treatment facility. Sheet piling has been installed along the water's edge to isolate the contaminated river sediment from the floodplain. Following the removal of the contaminated sediment, clean granular material will be backfilled against the piling to create a more natural slope condition. This final component of the project is scheduled for completion by the end of spring, 1996. The total support provided by the Cleanup Fund for this project up to the end of



fiscal year 95/96 was \$1106K. Partners include Ontario Ministry of Environment and Energy, the Ontario Ministry of Natural Resources, Welland River Cleanup Committee, Atlas Specialty Steels, Niagara Region, Niagara Peninsula Conservation Authority, and the City of Welland.

There was a clear understanding, endorsed by the Welland River Cleanup Committee, that a two-phased approach be used to address the contaminated sediment issues on the Welland River. With the completion of the tasks identified above, the first phase, i.e., the cleanup of the Welland River Reef, will have been essentially completed. Phase two, which itself consists of five parts, will then address the remediation requirements of the floodplain and wetland areas of the Welland River. The five parts of this phase are as follows:

- (1) Collection of background information. Identification of data gaps and methodologies. Definition of ecological, social and economic goals.
- (2) Collection of additional "need to know" information, and identification of potential problem areas.
- (3) Definition of alternatives, based upon monitoring of 1995 shoreline treatment and control areas. Impact assessment and risk assessment.
- (4) Implementation of cleanup and rehabilitation in areas requiring remedial action.
- (5) Long term physical, chemical and biological monitoring. Assessment of project success by comparison of results with pre-established goals.

Although Environment Canada supports this approach, its level of support for the second phase is still under consideration, and will be based on the number of partners and the viability of the ultimate plan.

## **FEDERAL ACTIONS TO DATE**

Environment Canada, through the Great Lakes 2000 Cleanup Fund, has provided financial support for the following sediment removal and treatment projects:

- Sediment Removal - Welland River Pilot Scale Demonstration Project: A dredge was used to remove moderately contaminated sediment from the Atlas Steel site on the Welland River, in November 1991. The sediment slurry was transported in a floating and land-based flexible pipeline to the Atlas North Filtration Plant for pre-treatment by Acres International Limited/Derrick Environmental Services Corporation. The total amount provided by the Cleanup Fund for this project was \$315K. The Ontario Ministry of Environment and Energy and Atlas Specialty Steels also provided funds for this project.
- Sediment Treatment - Welland River Pilot Scale Demonstration: A pre-treatment demonstration using sediment removed from the Welland River was conducted using a solids-liquids separation technique proposed by Acres/Derrick. This project, which was completed in late 1995, received a total of \$206.6K from the Cleanup Fund. The project was also supported by the Ontario Ministry of Environment and Energy, Atlas Specialty Steels, and Acres/Derrick.

## **RECOMMENDATION # 17**

**Potentially contaminated locations be prioritized for review, assessment and remediation.**

**TOTAL ESTIMATED COST** agency staff and volunteer time

**AGENCIES RESPONSIBLE** Niagara River RAP (Sediment Working Group) / PAC

## **RESPONSE**

In 1993, zones in the lower Welland River (south of the McMaster Ave. sewer) were identified and prioritized in anticipation of a full scale reef cleanup. This prioritization was based upon historic survey data collected

by MOEE/Brock University and Acres International (on behalf of Atlas Specialty Steels). In 1994, a Welland River Reef Cleanup Committee, chaired by the NPCA, instituted sediment characterization work relating to an eight kilometre stretch of the lower Welland River. A floodplain working group was created which commenced development of a remediation strategy. Part of its strategy was the characterization, identification, and prioritization of sediment quality with a view towards development of a floodplain remediation strategy.

The further assessment of the Level 2 sites is ongoing and will receive federal support as described in the response to recommendation #18.

## **RECOMMENDATION # 18**

**Test potentially contaminated sediment sites to confirm absence / presence of contamination.**

**TOTAL ESTIMATED COST** Resampling can be conducted within existing industry and government agency program budgets. Remediation costs are dependent on study findings and so have not been estimated.

**AGENCIES RESPONSIBLE** MOEE (Frenchman Creek and Sir Adam Beck Reservoir), Cytex (Thompson Creek) / MOEE, EC

## **RESPONSE**

The federal government supports this recommendation. Environment Canada, through the Environmental Protection Branch - Ontario Region and the Great Lakes Cleanup Fund will provide advice on remediation strategies and financial support for any project which satisfies the funding requirements of the Contaminated Sediment Assessment Program. In addition, where contaminated sediments occur in beaches or other locations where body contact occurs, and where there is sufficient reason to believe that the contaminant profile may pose a risk to people using those sites, Health Canada's Health Effects Program will be a partner in testing those sites.

## **BIOTA / HABITAT RECOMMENDATIONS**

These recommendations address the environmental problems of biota and habitat degradation in the Niagara River AOC.

## **RECOMMENDATION # 19**

**Prepare a natural heritage strategy for the Niagara River AOC.**

**TOTAL ESTIMATED COST** The cost has not been determined.

**AGENCIES RESPONSIBLE** Region of Niagara, EC (CWS) / NPC, NPCA, MOEE, OMNR, Niagara Falls Naturalists, Peninsula Field Naturalists, Niagara River RAP

## **RESPONSE**

The federal government supports this recommendation, and through the Environmental Services Branch, the CuF, and the CWS, has constructed a GIS database for the AOC which allows for the identification of priority

habitat rehabilitation sites in forested and riparian habitats throughout the AOC watershed. That is, the GIS database has been completed, and the analysis stage of testing the targets and identifying areas for rehabilitation has now begun. Environment Canada will continue to provide advice on the strategy's implementation. The strategy includes the identification of natural habitat targets and uses a GIS database and spatial analysis to identify terrestrial areas for protection and rehabilitation. The strategy will be expanded to include aquatic areas in 1996/97. The project's federal costs to date have been about \$35K with an additional \$10K planned for 1996/97.

The federal government, through Environment Canada's Cleanup Fund, is presently examining its funding over the next fiscal year for an interagency project that will study the "Options for Restoring the Physical and Ecological Stability of the Welland River". The project, which began in December 1995 and has already received \$48K from the CuF, will examine changes in the basin hydrology and sedimentology caused by land use changes, water diversions, historical dredging, and increased erosion. It will also document and define the extent of these impacts on the Welland River ecosystem and will develop and analyze alternative strategies for restoring physical and ecological stability. Environment Canada-OR, through the Environmental Services Branch, will monitor bottom sediments and floodplain soils in the lower Welland River, including the "reef" area, and will also document the potential remedial alternatives and their impacts on levels, flows and sedimentation. A report will also be prepared by EC-OR, through Great Lakes and Corporate Affairs, on the value of wetlands, fisheries, and other functions of the Welland River. Inventories and results of studies will be shared with other clean-up programs in the AOC, and extensive use will be made of mapping and GIS products. The funding for fiscal year 1996/97, if approved, will consist of \$162.5K from the CuF, and in-kind contributions of \$20K from the Environmental Services Branch, Great Lakes and Corporate Affairs, and NWRI.

Support for this program is also being provided by OMOEE, OMNR, NPCA, Ontario Hydro, Friends of the Welland, the Welland River Clean Up Committee, and the Regional Municipality of Niagara.

Environment Canada-OR, through the Cleanup Fund, is also examining its level of support, over the next fiscal year, for a habitat rehabilitation study of Willoughby Marsh. This marsh and its tributaries provide habitat for many fish and wildlife species. However, extensive municipal drainage systems surround the marsh, and its water supply has been adversely affected by changes in drainage patterns associated with development. This has contributed significantly to the degradation of water quality and the loss of wetland and creek habitat. The objective of the project, which began in 1994, is the restoration and enhancement of those hydrologic and hydrogeologic functions upon which biological production in the marsh depends. The first phase, which concentrated on collecting biological, hydrological, hydrogeological, and physical data, has now been completed and documented. The second phase, which is ongoing and will continue into 1997, if funding is provided, will focus on public involvement and will communicate the results of the first phase to the affected landowners. Total funding for this project through the Cleanup Fund has been \$56.8K. The Ontario ministry of Natural Resources is also funding this project.

## **RECOMMENDATION # 21**

**A regulation requiring treatment or exchange (or some other technique) to ensure that ballast water cannot be a way for the introduction of exotic species into the Niagara River AOC be enacted.**

**TOTAL ESTIMATED COST** Agency staff time

**AGENCIES RESPONSIBLE** DFO, Transport Canada / OMNR

## **RESPONSE**

The federal government appreciates the importance of preventing exotic species from entering the waters of the Great Lakes. Ships entering Canadian waters with ballast on board pose the greatest potential hazard, and consequently the federal government has created a set of "guidelines" which these ships must follow. It is important to recognize that any Canadian-bound ship entering the seaway must first pass through U.S.

waters, and consequently is subject to American as well as Canadian regulation. In fact, any ship in violation of the Canadian "voluntary guidelines" for the control of ballast water is automatically in violation of U.S. law and subject to prosecution. Furthermore, any ship master who refuses to provide information or knowingly provides false information concerning ballast water is guilty of a number of offenses under Part 15 of the Canada Shipping Act. The existing guidelines, therefore, have the necessary degree of enforceability. The federal government will, however, make any changes that are needed so that Canadian regulations are complementary to U.S. legislation, insuring that vessels entering the Great Lakes are not subject to differing or inconsistent legislative regimes.

Since the ships with ballast on board are controlled by enforceable regulation, they do not pose the greatest immediate hazard. This distinction belongs to the ships which have no ballast on board, but which, nevertheless, may contain exotic species in their unpumpable ballast residue. Since these ships comprise 92-95% of the vessel traffic, and are not covered by the above mentioned guidelines, it is important that some other means be found to prevent them from accidentally introducing exotic species into the waters of the Great Lakes. The federal government therefore commits itself:

- Through Transport Canada, to develop, demonstrate and evaluate treatment measures which are designed to kill organisms taken on with ballast water, and to do this by the year 2000.
- Through Transport Canada, to carry out an R&D study to review the effectiveness of the existing voluntary guidelines and to examine other proposed technologies for controlling the introduction of nuisance aquatic species into the Great Lakes Basin. It is expected that these activities will be completed by mid April 1996.

## **FEDERAL ACTIONS TO DATE**

In 1996, Transport Canada provided technical and R&D support to a demonstration project on ballast water control technology.

In 1995, Transport Canada carried out a R&D study in the Welland Canal in which sampling was carried out on the biota in the ballast tanks of all upbound vessels. Samples were taken from ships in Ballast and from those reporting No Ballast on Board. Sediment samples were also taken, and analysis is now underway. This study is also expected to analyze the amount of ballast water actually entering the Great Lakes.

In 1994, Transport Canada supported an R&D project which developed procedures, protocols and equipment for taking samples of ballast water and sediment without impeding Seaway vessels. These were tested and proven to be effective even in adverse end of season conditions, and have been instrumental in obtaining convictions against vessels violating the "guidelines".

Transport Canada has been actively involved in the development of educational material for seaway customers and for the general public. This material has taken the form of video tapes, pamphlets and documents, and focusses on preventing the introduction of exotic species to the waters of the Great Lakes.

## **RECOMMENDATION # 22**

**Continue to protect habitat on both sides of the Niagara River as one ecosystem.**

**TOTAL ESTIMATED COST** No additional costs are anticipated.

**AGENCIES RESPONSIBLE** OMNR, NYSDEC / EC, USEPA, USFWS, CWS, DFO

## **RESPONSE**

The federal government supports this recommendation and has an agreement with the government of Ontario on a procedure for reviewing and approving all projects likely to affect fish habitat. Under this procedure, projects that do not result in harmful alteration or destruction of fish habitat proceed through the provin-

cial permitting system without the involvement of the federal government. The remaining projects are referred to the Federal Department of Fisheries and Oceans for authorization pursuant to Section 35(2) of the Fisheries Act. According to DFO's Policy for the Management of Fish Habitat, authorizations are issued on the condition that the proponent implements measures to compensate for harmful or disruptive alterations in the habitat. Authorizations are denied if adequate compensation is not possible or if unacceptable loss of habitat is likely to occur. Authorizations are also subject to review under the Canadian Environmental Assessment Act.

The federal government also supports the concept of information being shared among the various jurisdictions in the AOC. Therefore, the federal government agrees to provide the American agencies with information the CWS has collected over the last two years in waterfowl surveys along the Canadian side of the river. In addition, the CWS will provide a copy of the report entitled "Identifying Habitat Rehabilitation Targets and Priorities in Great Lakes Areas of Concern: Upland Systems", which contains information to set habitat targets.

It is also the view of the federal government that while the Great Lakes Wetlands Action Plan did not identify Niagara area wetlands as priorities for securement, any habitat rehabilitation project should have a securement component built into it.

## **RECOMMENDATION # 23**

**Municipal planning documents incorporate ecologically based policies and design criteria.**

**TOTAL ESTIMATED COST** Agency staff time

**AGENCIES RESPONSIBLE** Region of Niagara / Area municipalities, OMNR, NPCA, NPC, EC, MOEE

## **RESPONSE**

The federal government supports this recommendation. Whenever a municipal planning process in the Niagara River AOC involves federal lands or legislation, the federal government will communicate this fact to the municipality involved, and thereby facilitate the inclusion of ecologically based policies into the planning documents.

It should be noted that the Fonthill Area Office of OMNR, the Regional Municipality of Niagara and the Niagara Parks Commission cooperate with DOE-ESB-OR on a goodwill basis and circulate development proposals that could potentially affect water levels and flows in the Niagara River. Comments, suggestions, and recommendations are provided in return, if planning and development has the potential to produce an ecological and/or international impact.

Another means for implementing this recommendation is through the information provided by the Natural Heritage System (see recommendation #6, third bullet). This system is strongly supported by the RMN's planning department, who see the GIS, and the habitat identification work that will result, as a valuable tool that will be useful in their natural areas protection planning, and in the formulation of their Official Plans.

## **HUMAN HEALTH RECOMMENDATIONS**

These recommendations are designed to reduce human exposure to environmental contaminants by eliminating some of the main exposure pathways.

## **RECOMMENDATION # 24**

**Develop a Niagara River Fish Consumption Advisory.**

**TOTAL ESTIMATED COST** The cost of this recommendation has not been determined. However, most of the cost will be agency staff and volunteer time.

**AGENCIES RESPONSIBLE** MOEE / CIPHI, Region of Niagara Health Department, local angler organizations, cultural group support organizations (local/provincial), OMNR, DFO, McMaster University, Health Canada (Great Lakes Health Effects Program), and NYSDEC

## **RESPONSE**

The issue of different consumption advisories in Canada and the United States for some chemicals has been discussed in different forums, including those under the International Joint Commission (IJC), for at least the last two decades. Until the recent U.S. Great Lakes Initiative (GLI), there were differences even between individual Great Lakes states. The GLI, in part, is intended to ameliorate this.

It must also be remembered that Fish Consumption Advisories in Ontario apply to the whole province as well as the Canadian portions of the Great Lakes. Similarly, the New York State Consumption Advisories apply to all of the state of New York as well as the New York waters of Lakes Erie and Ontario. It would be extremely difficult, therefore, to deal specifically with the Niagara River situation without regard for this broader context. Notwithstanding this over-riding difficulty, the NRTMP is currently considering, as part of its Public Information Plan, the preparation of fish advisory guides in many languages and distribution to a wider audience. These guides should have common information for both Canada and the United States. Decisions on the acceptance of this approach are still pending.

The federal government, through Health Canada, will also:

- Integrate the results of the "Sport Fish and Wildlife Consumption Study in Areas of Concern" into the development of a Niagara River Fish Consumption Advisory. The consumption study will provide data specific to the Niagara River AOC across fishing seasons over two years. In particular, it will focus on consumption patterns, and will identify groups of people whose consumption of specific fish and aquatic wildlife species may pose a hazard to their health. It will also examine problems that arise when people fail to comply with existing advisories, or consume species for which no advisory has been developed.
- Provide advice on the design and communication of products such as pamphlets, videos, public forums or information sessions, etc.
- Participate, through the Foods Directorate, in setting fish consumption advisories based on tolerable daily intakes (TDIs) of contaminants measured in skinless, boneless fillets.

## **RECOMMENDATION # 25**

**Conduct research to determine if consumption of water based wildlife is harmful to human health.**

**TOTAL ESTIMATED COST** For the Niagara River AOC, the total cost is estimated at \$30K.

**AGENCIES RESPONSIBLE** Health Canada / CWS, OMNR

## **RESPONSE**

The federal government supports this recommendation, and through Health Canada, is administering the "Sport Fish and Wildlife Consumption Study in AOCs" on the shores of the Toronto, Hamilton, and Niagara Areas of Concern. The purpose of the survey is to gain a better understanding of fish and wildlife consumption patterns as well as people's perceptions as to the benefits and problems related to consuming these natural resources. This information will enable the study team to identify specific groups in these communities who could be ingesting environmental contaminants at levels which may pose an unacceptable risk. Follow-up work may include a variety of education initiatives to increase awareness about how to minimize exposure to environmental contaminants when eating sport fish or wildlife. A detailed dietary survey will provide greater insight into the relative nutritional value of these resources.

## **FEDERAL ACTIONS TO DATE**

In 1995, through Health Canada, the "Sport Fish and Wildlife Consumption Study in AOCs" was designed and carried out in the Niagara AOC for the summer and fall fish and wildlife harvesting seasons. A report will be available in April 1996. Results will be disseminated to the RAP Team and PAC.

## **SURVEILLANCE AND MONITORING RECOMMENDATIONS**

In order to track the effectiveness of remediation measures it is necessary to have systematic procedures for observing and measuring the state of the ecosystem and any changes that may occur in that state. Such procedures are the focus of the recommendations in this section.

### **RECOMMENDATION # 28**

**Landfills continue to be monitored regularly, as determined by monitoring results.**

**TOTAL ESTIMATED COST** Based on past experience, the cost of reviewing the five sites is estimated at \$25K per review.

**AGENCIES RESPONSIBLE** MOEE / EC(NRTMP)

## **RESPONSE**

The landfill sites identified in the RAP Stage 2 Report have been monitored by the NRTMP, of which EC is a member. Although the NRTMP is currently examining its post 1996 role, it anticipated that this monitoring program, in some form will continue. It should be noted that the CN site at Niagara Falls, has been the only one under federal jurisdiction. CN, however, has been recently privatized, and so it must now assume some responsibility for the monitoring activities.

### **RECOMMENDATION # 29**

**Develop and implement a Welland River and ( Niagara River ) tributaries monitoring program.**

**TOTAL ESTIMATED COST** The estimated cost of the monitoring program is \$32K.

**AGENCIES RESPONSIBLE** MOEE (WCR) / NPCA

**RESPONSE**

The federal government supports this recommendation. In 1995, Environment Canada-OR, through its Monitoring and Systems Branch, and in cooperation with OMOEE, developed a strategy for a full monitoring program on the Welland River and its tributaries. The strategy, which has now been approved and is being implemented, includes six monitoring stations, three of which will be on the Welland River and three on its tributaries. One will be supported under the Canada-Ontario Cost Share Agreement, and the remaining five will be operated and maintained by EC under the terms of a memorandum of understanding with OMOEE. Most sites will measure flow, suspended sediment loads, and water levels, with many sites having a semi-continuous data logging capability. In addition to this, two of the Welland River stations will be equipped with multi-sensor Hydrolab H20's, which measure six water quality parameters (temperature, conductivity, turbidity, total dissolved solids, dissolved oxygen, and redox) on an hourly basis and record the information on a data logger.

The preparation and testing of instrumentation, as well as field reconnaissance and some preliminary evaluations were completed by MSB in 1995. Installation of the new equipment will take place in April 1996. The commitment of EC's Monitoring and Systems Branch for FY 96/97 will be the salaries and time of the individuals required for the efficient and effective collection of water quality, sediment loads and discharge information on the Welland and tributaries. This commitment also includes the reduction and preparation of the data for presentation and interpretation, but does not include operation and maintenance costs, which are expected to be \$9.44K per year and will be covered by the above mentioned MOU.

Environment Canada, through its Environmental Conservation Branch, is also prepared to cooperate with OMOEE in developing a program that will be better able to measure organics at the low levels at which they would probably occur in the tributaries (i.e., technology transfer).

**RECOMMENDATION # 30**

**Taste and odour program (results) be monitored (drinking water).**

**TOTAL ESTIMATED COST** Monitoring costs have not been estimated.

**AGENCIES RESPONSIBLE** Region of Niagara

**RESPONSE**

Although it is not named as a partner, the federal government supports this recommendation, and through Health Canada, agrees to review and comment on results and provide advice on request.

**FEDERAL ACTIONS TO DATE**

Health Canada was involved in the review of the drinking water data during the preparation of the Stage 1 report for the Niagara River AOC.

**RECOMMENDATION # 33**

**Support and encourage participation in Canadian Wildlife Services' community based wildlife monitoring programs.**

**TOTAL ESTIMATED COST** No additional costs are anticipated.



**AGENCIES RESPONSIBLE** EC (CWS) / Niagara Partners in Cleanup Committee  
**RESPONSE**

It should be noted that most of these community based wildlife monitoring programs are led by non-governmental organizations, and not the Canadian Wildlife Service. They are carried out by volunteers who make wildlife observations at fixed points along established survey routes, with one route being assigned to each volunteer. Participation, unfortunately, has been disappointingly small, with the Marsh Monitoring Program, for example, having only one volunteer on the Canadian side of the Niagara River, and five on the U.S. side. Nevertheless, the CWS will continue to encourage volunteers to participate in these programs and will assist in the summary and provision of information such as the February 1996 "Wildlife Watchers Report on Monitoring" which is now available.

## STEWARDSHIP AND EDUCATION RECOMMENDATIONS

These recommendations address the need to raise peoples awareness of environmental issues and to change their customs, attitudes and habits by facilitating their access to information.

### RECOMMENDATION # 35

**Public education programs continue and new ones be developed as required.**

**TOTAL ESTIMATED COST** The cost has not been estimated.

**AGENCIES RESPONSIBLE** Region of Niagara, NPCA, OMAFRA / various other agencies.

### RESPONSE

The federal government supports this recommendation, and commits itself:

- Through Health Canada, to continue to provide information upon request, to participate at public events, and to provide Great Lakes Health Effects Program resource material. Health Canada will also continue to update the questions and answers used by the educational software mentioned below.
- Through Environment Canada, to continue to provide information and documentation about the RAPs program to the public and, in cooperation with MOEE, to update and expand, semiannually, the information provided on the internet through the Great Lakes Information Management Resource (GLIMR - see below). Additional documentation will be made available to the public through Great Lakes Corporate Affairs, in the form of brochures, displays, and fact sheets such as the State of the Environment Fact Sheet on the Niagara River, which was prepared by ECB-OR to educate the public about the environmental quality of the Niagara River and what is being done to clean it up.
- Through the Environmental Services Branch of Environment Canada - OR, to provide information on international obligations and treaty requirements.

### FEDERAL ACTIONS TO DATE

DFO, with support from EC and HC has produced the software for an educational computer game which is used on a rotating basis at schools, libraries, and events around the AOC. By using computer graphics and

a series of questions and answers, the game provides the user with an entertaining tutorial on various environmental issues pertinent to the AOC. The questions, which may be selected by category, focus on human health issues and on the physical and biological components of the Niagara River ecosystem. Health Canada has provided Great Lakes Health Effects Program resource material (technical reports, study summaries, fact sheets, educational material, reference material) to the PAC on request for distribution to the public.

Through its public involvement program, EC has supported various education activities undertaken by the Public Advisory Committee. These have included the resource centre at the PAC office, repositories of resource material in the local public libraries, presentations to local schools, participation in science fairs, open houses for school children, as well as participation in the yellow fish road program.

In 1994, the federal government, through Environment Canada - Ontario Region, responded to the rising demand for electronically available information by creating the Great Lakes Information Management Resource (GLIMR) which is now available to the general public through the internet (at [www.cciw.ca/glimr](http://www.cciw.ca/glimr)). The purpose of GLIMR is to provide information about the Great Lakes in a user friendly manner, via an interactive computer network. Examples of information available on GLIMR are as follows:

- Remedial Action Plan Update: This document, authored primarily by the RAP coordinators, and RAP teams, with additional input from the COA RAP Steering Committee, reviews the history and current status of the Remedial Action Plan Program in Ontario. It describes the program and its participants, and highlights the actions that have, and will continue to be taken to rehabilitate and restore the Great Lakes Basin. For each of the Canadian Areas of Concern, including the Niagara Region, this document provides a summary of the environmental problems and the status of the development and implementation the Remedial Action Plan.
- Summaries of environmental monitoring information (eg., the Upstream/Downstream Niagara River Monitoring Program) and reports on same (also available on hard copy format) prepared by the Environmental Conservation Branch of Environment Canada.
- The Niagara River Digital Atlas. For a description of this atlas, see the text following recommendation #6.

## **RECOMMENDATION # 36**

**Professional education programs continue and new ones be developed as required.**

**TOTAL ESTIMATED COST** The cost has not been estimated.

**AGENCIES RESPONSIBLE** MOEE / Region of Niagara, area municipalities, NPCA, Niagara Partners in Cleanup Committee, professional associations, OMNR

## **RESPONSE**

The federal government supports this recommendation and will provide support as follows:

- Environment Canada's Cleanup Fund, will support the Symposium on Constructed Wetlands in Cold Climates to be held at Niagara-on-the-Lake, June 4-5, 1996. The purpose of this symposium is to bring together researchers, government agencies, municipalities, and representatives of other organizations that may be interested in the state-of-the-art of this new technology. The objective is to facilitate and stimulate discussion on the application of this technology in cold climates for the management of municipal wastewater and stormwater with a focus on design, operational performance and environmental issues. Total support provided by the Cleanup Fund for this symposium and the publication of its proceedings will be \$12.5K. The symposium will also be supported by the Regional Municipality of Niagara,

OMOEE, USEPA, the Canadian Water and Wastewater Association, and the Water Environment Association of Ontario.

- Health Canada's Great Lakes Health Effects Program has produced a 400 page handbook on health and the environment for use by health professionals, public health units and community health centres. Upon completion, this Handbook for Health Professionals will be distributed to its target audience in the Niagara Region.
- Through Health Canada's GLHEP, a package of educational classroom material is being prepared which will assist school teachers in integrating health and environmental information in the curriculum.

## FEDERAL ACTIONS TO DATE

Through Environment Canada's CWS, a document has been recently prepared which will assist the members of RAP teams and Public Advisory Committees in identifying upland habitat rehabilitation needs and priorities. This report, which is entitled "Identifying Habitat Rehabilitation Targets and Priorities in Great Lakes Areas of Concern: Upland Systems", also describes the application of the natural heritage system approach to habitat rehabilitation.

### **The following text has been removed temporarily for later insertion at various parts of the report.**

Through this Infrastructure Works Program, Industry Canada has approved funding to the following projects, which are now underway:

- City of Niagara Falls - Replacement of sanitary sewers / Rolling Acres Drive (Cambridge St. to limits) - Approved assistance \$66.67K
- Regional Municipality of Niagara - Trunk sewer installation under QEW to Ontario St. Pumping Station / Lot 16, 17 Conc.1 Ontario St. - Approved assistance \$181.67K.
- Regional Municipality of Niagara - Sewer, forcemain and standby power upgrades / Kalar Rd. Sewage Pumping Station - Approved assistance \$566.67K.
- Regional Municipality of Niagara - Equipment and structure replacement of Main St. Pumping Station / Pt lot 28, Con.2 - Approved assistance \$166.67K.
- Township of Dunnville - Sunfish Creek stormwater conveyance improvements (channelization) - Approved assistance \$171.08K.
- Township of Dunnville - Watermain, sanitary sewer, flow diversion channel / part lot 3, RPlan 69/lots 1-13, RPlan 1407/Mounton con.1 from Canborough, part lot 1 - Approved assistance \$184.6K.
- Regional Municipality of Niagara - Phase 1: Backwash waste equalization. Phase 2: Filter upgrades and SCADA system installed (computer system) / Decew Falls WTP 2700 Decew Rd. - Approved assistance \$1.53M.
- Town of Niagara-on-the-Lake - Replacement of sanitary sewer (extension where needed)/ King St. Gage St. - Approved assistance \$130K.
- City of Welland - Watermain reconstruction / South Pelham Rd.(Foss Rd. to Thorold Rd.), Storm sewer reconstruction / Griffith to Lincoln St. (Lyons Creek storm sewer) - Approved assistance \$372.7K.
- City of Welland - Grading, terracing, rip rap placement, and topsoil for bank stabilization/ West side of the southern reach of the Old Welland Canal - Approved assistance \$198.3K.

Since 1987, Environment Canada has spent in excess of \$2M (exclusive of salaries) in support of this important activity, and will continue to support it until at least the end of 1997.

Commitment to the NRTMP has resulted in the four jurisdictions accelerating regulatory activities in the Niagara River basin. These activities have tended to focus on the following four areas:

- (1) To contain and clean up contaminated groundwater plumes and soil at known industrial sites with the intent of stopping off-site migration of contaminants;

- (2) To target point source effluents for effective treatment and pollution prevention through permits, control orders, and other regulatory processes;
- (3) To clean up contaminated sediments from the bottoms of tributaries to the river; and,
- (4) To continue to track down unidentified sources, verify contaminant contributions, and reduce or eliminate them.

The success of these activities is now becoming evident in the concentrations and trends in concentrations in the ambient monitoring data. Examples include:

- (1) Reductions in the concentrations of octachlorostyrene (OCS) and hexachlorobutadiene (HCBD) as shown by the Upstream/Downstream monitoring data (both these chemicals are detected only at the downstream station, indicating that the sources are along the Niagara River); and,
- (2) Reductions in the concentrations of PCBs after sediment remediation at Gill Creek, as shown by the biomonitoring data.

The federal government supports this recommendation and is willing to provide the following assistance:

- Environment Canada, through the Great Lakes 2000 Cleanup Fund, will continue to support an agricultural implementation strategy in the Welland River watershed (and at other priority sites in the AOC) which began in fiscal year 94/95. Up to 50 hectares of no-till or conservation tillage will be demonstrated, and up to 60 water quality improvement projects, based on the landowner contact program, will be initiated including 20 livestock fencing projects, 20 manure storage projects, and 20 milkhouse washwater projects.

## APPENDIX D – RAP PARTICIPANTS

Name	Affiliation
Jennifer Vincent	GLCUF 2000, Environment Canada
Janette Anderson	Environment Canada
Stuart Niven	Fisheries & Oceans Canada
John Bacher	Chair, Niagara River Restoration Council
Joe Furgal	Regional Municipality of Niagara, Public Works Department
Corwin Cambray	Regional Municipality of Niagara, Planning & Development Services
Don Campbell	Regional Municipality of Niagara, Planning & Development Services
Lee Kennaley	Regional Municipality of Haldimand-Norfolk, Planning & Development Services
Joe Givens	Regional Municipality of Haldimand-Norfolk, Health Services Department
Guy Papparella	Regional Municipality of Hamilton-Wentworth, Planning & Development Department
Caroline Floroff	Regional Municipality of Hamilton-Wentworth, Planning & Development Department
The Director	Regional Municipality of Hamilton-Wentworth, Public Works Department
Ronald T. Sparks	Clerk, Town of Dunnville
Henri Benemeer	Drainage Superintendent, Town of Dunnville
Janice Lankester	Clerk, Town of Haldimand
Craig Grice	Councillor, Town of Haldimand
Morgan Pirie	Township Planner, Township of Glanbrook
Michael Higgins	Planner, Township of Wainfleet
Joad Durst	Area Supervisor, Ontario Ministry of Natural Resources
Wally Rozenberg	Ministry of the Environment, Hamilton Area Office
Cherlene Vieira	Ministry of the Environment, Hamilton Area Office
Dave Brown	Brock University, Environmental Policy Institute
Irene Rota	Waterfront Regeneration Trust
John Ogryzlo	Niagara College Environment, Horticulture & Agribusiness
Lisa Campbell	Niagara College Environment, Horticulture & Agribusiness
Win Laar / Allan Veall	Niagara Falls Nature Club
Debbie Whitehouse	Niagara Parks Commission
Elmer Miskolczi	Friends of Fort Erie's Creeks/Fort Erie Conservation Club
Mark McDonnell	Private Citizen
Alfred Marinelli	Port Colborne District Conservation Club
Al Oleksiuk	Canadians for a Clean Environment
Krista Morrison	C.E.R.T.I.
Maggie Smiley	President, Peninsula Field Naturalists
Margherita Howe	Operation Clean Niagara Region
Jane Aaviku	Friends of the Welland River
Dennis Beresh	Regional Niagara Public Health Department
Dave Young	Regional Niagara Public Health Department
Robert Cotteril	Director, City of Port Colborne, Operations, Planning & Development
Tom Doherty	Director of Operations, City of Thorold
Dave Renshaw	Director Public Works, Town of Fort Erie
Ewald Kuczera	Director Public Works, Town of Niagara-on-the-Lake
Cathy Sipos	Administrative Manager, Township of West Lincoln
Ian Brindle	Brock University, Chemistry Department
David Watt	Mgr. Of Infrastructure, Municipal Works City of Niagara Falls
Gus Marcello	City Engineer, City of Welland
Don Cook	City of Welland
Jamie Hodge	Director of Operations, Town of Pelham
Bob Slattery	Area Supervisor, Ontario Ministry of the Environment, Niagara District Office

Gail Kratzberg	Great Lakes Program Coordinator, Water Policy Branch, Ontario Ministry of the Environment
David Heyworth	City of Niagara Falls, Planning Department
Ken Durham	Private Citizen
Mark Neufeld	Environmental Farm Plan
David Watt	City of Niagara Falls, Engineering Department
Norm Vaughan	Niagara North Federation of Agriculture
Donna Speranzini	Soil & Crop Specialist, Ontario Ministry of Agriculture, Food & Rural Affairs
Walter Hyslop	Hamilton-Wentworth Federation of Agriculture
Mary Lou Garr	Representative, Niagara North & South, Ontario Federation of Agriculture
Allan MacKinnon	Environmental Coordinator, Atlas Specialty Steels
George Slaney	Manager Environmental Services, Cytec Canada Inc.
Henry Swierenga	Ontario Federation of Agriculture
Bob Osborne	Ontario Power Generation
Tony Van Oostrom	Ontario Power Generation
Steve Fraser	Environmental Manager, GenCorp Automotive
Tim Currah	Environment Manager, OxyChem Durez Canada
Mike Waher	Sr. Environmental Engineer, Geon Canada Inc. / Niagara Chemical Plant
B. C. Howlett	General Supervisor Environment, Stelpipe Limited
Anne Yagi	Ontario Ministry of Natural Resources
Bob Lewies	Private Citizen
John Dunn	Chair , CAER Group
Deanna Nicolson	Niagara River RAP
Lianne Davies	Niagara River RAP
Charles Pryer	Private Citizen
Phyllis Kerkhoven	Private Citizen
Sam McGibney	IENACT
Kris Johnson	IENACT
Ross Emerson	Private Citizen
Ron Steele	Niagara Commodity Council
Lennie Aarts	Private Citizen
Peter Aarts	Private Citizen
Bill Loeffen	Private Citizen
Bill Wagter	Private Citizen