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THE NIAGARA RIVER TOXICS MANAGEMENT PLAN

1990 UPDATE

Niagara River Secretariat

September 1990

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I. INTRODUCTION

On February 4, 1987, the heads of four environmental agencies in the U.S. and Canada signed a document known as the "Declaration of Intent" (Appendix I), which outlines the principles to be followed in the pursuit of a common goal to reduce loadings of toxic chemicals to the Niagara River through appropriate joint activities and separate agency activities. The agencies involved are the U.S. Environmental Protection Agency (EPA), Environment Canada (EC), the New York State Department of Environmental Conservation (DEC), and the Ontario Ministry of the Environment (MOE).

The Declaration of Intent, combined with a detailed Workplan, which is updated regularly, is entitled The Niagara River Toxics Management Plan (NRTMP). Through implementation of the NRTMP, the four agencies are committed to significant reductions in toxic chemical loadings to the Niagara River.

II. BACKGROUND

The Niagara River is a 37-mile (60-kilometer) channel that connects Lake Erie to Lake Ontario. Divided into upper and lower reaches by Niagara Falls, it provides 83% of the total tributary flow to Lake Ontario. A map of the Niagara Study Area is included as Figure I.

In February 1981, the Niagara River Toxics Committee (NRTC), made up of technical staff from the four agencies, was established to oversee and coordinate a major bi-national investigation of toxic chemicals entering the Niagara River. After completing its work, the NRTC issued a comprehensive report and recommendations in October of 1984. Soon thereafter, each of the four agencies developed specific action plans and special initiatives in response to that report and its recommendations.

Continued discussions among the four agencies brought about a consensus on the need for a long-term, bi-national commitment on joint and coordinated actions, beginning with river monitoring. By October of 1986 the first attempt at a comprehensive work plan was completed by technical staff from the four agencies. By February of 1987 an overall policy direction had been agreed to, along with specific commitments for the reduction in Niagara River loadings of persistent toxic chemicals of concern by 50% by 1996. The Niagara River Toxics Management Plan officially began with the signing of the Declaration of Intent. The NRTMP Workplan is updated regularly to report progress in meeting Plan commitments, and to present follow-up commitments.

III. ACCOMPLISHMENTS TO DATE

Since the release of the Niagara River Toxics Committee Report in the fall of 1984, the Four Parties, acting individually and together, have undertaken a variety of initiatives. Some of the major accomplishments of the Four Parties since that time are:

- We have reduced the loadings of EPA priority pollutants to the Niagara River from Canadian and U.S. point sources by more than 80 percent, as compared with the levels in 1981-'82.

- We have agreed on sampling and analytical protocols, for monitoring the ambient Niagara River water column; the ambient water quality data developed using these protocols serve as the primary basis for other analytical efforts under the NRTMP.

- We determined that fifteen toxic chemicals are problems in the Niagara River/Lake Ontario ecosystem. We are continuing to assess additional chemical data for possible expansion of this list.

- We determined that a subset of the fifteen problem chemicals has significant Niagara River sources; they are the chemicals subject to the 50 percent reduction requirement of the Declaration of Intent. Ten chemicals are already listed, and we are continuing to assess additional chemical data for possible expansion of this list.

- We quantified the base-year loadings of the ten chemicals to the river from point sources and estimated, by inference, the loadings from non-point sources. These are the basis for specific numerical load reduction targets for point and non-point sources of these ten chemicals by 1996. Consistent with the Declaration of Intent, these targets are 50 percent of the 1986-'87 base year loads. Targets will be refined as the data base is improved.

- We have agreed on a framework for tracking progress in meeting the 50 percent load reduction commitments. The first annual progress report will be issued in December 1990.

- We identified the twenty hazardous waste site clusters in the U.S. estimated to contribute 99 percent of the toxic chemical loading from all hazardous waste sites in the U.S. to the Niagara River. We also presented ambitious schedules intended to drive cleanup of these twenty site clusters. The best estimate of the potential toxic chemical loading from these sites to the river (694 pounds per day or 315 kilograms per day) is expected to be reduced to 8 pounds per day (4 kilograms per day) by 1996.

- We identified certain toxic chemicals entering the Niagara River from Lake Erie at elevated levels. We brought this issue to the attention of the International Joint Commission, and we intend to make specific recommendations to ensure that the responsible jurisdictions address this inter-lake transport issue.

Appendices II and III list all activities completed to date under the auspices of the NRTMP. Appendix II provides the status of NRTMP activities through September 1988, and Appendix III provides the status of activities through April 1990. Each activity is either reported as completed, or brought forward in the same or in modified form in the updated Plan. The purpose of these appendices is to ensure continuity in the planning process, and to allow the reader to see the updated Plan in the context of work performed to date.

IV. THE PLAN

The fundamental goal of the Niagara River Toxics Management Plan is to reduce the loadings of toxic chemicals to the Niagara River. Reductions will be achieved by accomplishing four related objectives[1]:

- Sorting chemicals as a basis for action,
- Implementing programs to reduce the loadings of toxics entering the Niagara River,
- Assessing the success of programs to reduce the loadings of toxics, ensuring a continuing focus on critical inputs, and
- Coordinating NRTMP activities with Remedial Action Plan (RAP) activities.

The activities and schedules of the 1990 Revision of the NRTMP are presented in Appendix IV. A discussion of these commitments follows.

A. SORT

The first objective of the Plan is to sort chemicals as a basis for action.

The Four Parties developed a system for categorizing toxics, which is summarized in Table I. The system is used to determine either that a toxic chemical warrants corrective action on a priority basis, or

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[1] These objectives, which are not listed in order of priority, are being addressed concurrently.

that a toxic can be controlled more routinely through the implementation of existing and developing programs that apply to the control of all toxics.

An ad hoc committee developed a master list of 92 persistent toxic chemicals of concern in the Niagara River; these are the first priority for categorization. A preliminary sorting of these 92 chemicals was completed, in accordance with the 1988 categorization system, using river water column data and Lake Ontario sportfish data. Based on this preliminary categorization, there were 15 toxics that warranted corrective action on a priority basis.

In response to a Niagara River Secretariat charge, the Categorization Committee issued a report in June 1990 on a comprehensive categorization of toxic chemicals for the Niagara River. The report presented two alternative lists of categorized toxic chemicals for the river (distinguished by which data sets are used for categorization) and offered several recommendations for improved categorizations.

The Niagara River and Lake Ontario Secretariats have reviewed the committee report and have formulated an approach to address the questions that resulted in the alternative categorizations in the report. In summary, the Secretariats find that only data meeting the following requirements should be used for categorizing toxic chemicals to drive Category I actions for the river or the lake:

- Quality assurance acceptable to the Four Parties;
- Representative of current conditions; and
- Representative of open-water conditions in the river or lake.

Data not meeting these requirements should be used as an information resource to identify chemicals for monitoring and subsequent categorization, and for other appropriate action. For instance, non-Four Party data should be reviewed for adequate quality assurance/quality control and monitoring repeated if necessary. Monitoring not reflecting current loadings should also be repeated. Criteria exceedances reflecting a localized condition should trigger a Four Party consideration of system-wide monitoring of the chemical.

Evidence of localized problems in the river or the lake should also be referred for Remedial Action Plan (RAP) attention to identify pollutant sources, ensure development of source remediation plans, as appropriate, and report progress in the toxic management plan. If the site of the problem is not located within an Area of Concern identified in the Great Lakes Water Quality Agreement, the problem will be brought to the attention of the individual jurisdictions for appropriate action.

Applying the above data requirements to the Niagara River, the existing list of Category IA chemicals remains the same, but three additional chemicals become Category IB chemicals: arsenic, lead and toxaphene.

The revised categorization is presented in Table II. Based on this categorization:

- There are 18 toxics that warrant corrective action on a priority basis.
- There are 41 toxics that are found only at levels below the most stringent existing standard or criterion; these toxics can be controlled more routinely through the implementation of existing and developing programs that apply to the control of all toxics.
- There is one toxic that must be analyzed using a more sensitive analytical protocol in order to allow a comparison with existing standards and criteria.
- There are 14 toxics for which we have ambient data, but for which there is no standard or criterion.
- There are 342 toxics for which we have insufficient ambient data, but for which we have indication of presence or input to the river; for many of these we also do not have existing standards or criteria.

In addition to the 18 priority toxics, two chemicals also exceeded applicable ambient criteria: iron and aluminum. Although iron and aluminum were included in the list of toxics in the 1989 update of the LOTMP, action on these toxics has been deferred, since the Four Parties have determined that:

- The criteria for iron and aluminum may not be reliable indicators of toxicity. No single number is ideal because of the variety of forms of these metals that may be present in ambient waters; and
- We are not yet in a position to differentiate between loads of these metals originating from natural and anthropogenic sources.

The Binational Objectives Development Committee will be requested to develop a workplan for site-specific investigations for iron and aluminum in lieu of the use of ambient chemical criteria for categorization. In preparation for this bi-national effort, DEC and EPA will initiate discussions of this issue on the U.S. side through the Great Lakes Water Quality Initiative.

As shown in Table III, eighteen Niagara River toxics have been selected for priority attention because they are present in the Niagara River/Lake Ontario ecosystem at unacceptably high levels. Twelve of the eighteen are found in the Niagara River water column at levels that exceed existing standards or criteria. Nine of the eighteen, including three of the twelve just mentioned, are found in Lake Ontario sportfish at levels that exceed existing standards or criteria.

As shown in Table III, ten of the original fifteen priority toxics have significant Niagara River sources. They are the chemicals subject to the 50% reduction commitment in the Declaration of Intent. The first 50% Reduction Progress Report is due December 1990. With that report in hand, the Niagara River Secretariat will recommend adding chemicals to the 50% reduction list, as appropriate, based on the comprehensive categorization completed in June 1990.

In March 1990 the Standards and Criteria Committee provided a report on the adequacy and consistency of water quality and fish tissue standards and criteria for the Niagara River and Lake Ontario (Standards and Criteria Committee, 1990). Based on the committee's report, the Niagara River and Lake Ontario Secretariats prepared an action memorandum to the Coordination Committee, which made the following key recommendations, among others:

- EPA and DEC water column criteria-setting procedures for the protection of human health from carcinogens are based on conservative cancer risk assumptions and incorporate exposures through drinking water and fish consumption.

  The MOE criteria for the substances evaluated in the Standards and Criteria Committee report were set for the protection of aquatic life and do not consider protection of human health. New MOE criteria-setting procedures allow consideration of available fish consumption advisories, but these advisories are developed by Health and Welfare Canada (HWC) not for the purposes of pollution control, but to determine whether fisheries should be open to public or commercial use. Accordingly, these criteria can only be useful in setting an interim target under a toxics management plan, that is, the removal of fish advisories for the waterbody.

  In order for the Four Parties to make progress towards consistent standards and criteria, it is important that Canada have water column criteria for the protection of human health. MOE and EC will work with HWC to:

  - Develop a detailed description of HWC's methodology for setting drinking water objectives and allowable daily intake values (ADIs) for fish tissue; and

- Develop a detailed description of HWC's methodology for setting drinking water objectives and allowable daily intake values (ADIs) for fish tissue; and

- Establish provincial water quality objectives based solely on the protection of human health, and not constrained by socio-economic factors. The first priority for setting these ADIs will be the NRTMP Category IA and IB chemicals, and the second priority will be the Category IE chemicals.

o The committee's report recommended that DEC consider the need for human health criteria based on fish consumption for DDT, dieldrin and PCBs. DEC is now developing such criteria for PCBs and will evaluate the need for such criteria for dieldrin and DDT through the Great Lakes Water Quality Initiative.

Since criteria development and standard setting are an ongoing process, it must be recognized that, in response to new scientific knowledge, many of these numbers will be amended and additional standards and criteria developed. As this occurs, the NRTMP will review and re-categorize toxic substances as appropriate.

B. REDUCE

The second objective of the Plan is to implement programs to reduce the loadings of toxics entering the Niagara River.

In order to achieve this objective, the Four Parties have developed commitments under the Plan to reduce the loadings of all toxic chemicals from all categories of sources, that is, to:

o Reduce the loadings from point sources to the river,

o Reduce the loadings from non-point sources to the river,

o Reduce the upstream loadings to the river from Lake Erie, and

o Foster pollution prevention in the basin.

1. Point Sources

Inputs of toxics to the Niagara River from point sources have been identified and are being addressed in accordance with U.S. and Canadian point source plans.

The 1988 Revision of the NRTMP included commitments to:

- o Present Canadian and U.S. plans to reduce the point source loadings of the chemicals on the list for 50 percent reduction, under the Declaration of Intent; and

- o Prepare reports on the overall status of the Canadian and U.S. point source control programs.

To meet these commitments, the Four Parties issued five separate reports. The highlights of these reports are:

- o Since 1981-'82, there has been more than an 80 percent reduction in the loadings of the full range of toxics to the Niagara River from point sources in Canada and the U.S.;

- o We have identified the point source discharges that contribute one or more of the ten chemicals that are targeted for 50 percent reduction by 1996, as compared to the base year of the Declaration of Intent, that is, 1986-'87; and

- o We have plans in place to attain the 50 percent reduction goal for point sources to the river (the U.S. plan is an interim plan).

Beginning with this 1990 Update, the Four Parties will attempt to simplify these reports into a Canadian report and a U.S. report that meet the full range of the point source commitments. Accordingly, the Plan includes commitments for:

- o A Canadian annual point source status report and plan update; and

- o A final U.S. point source plan, and an annual status report and plan update.

2. Non-Point Sources

Unlike point sources, the non-point source components of the Niagara River loadings of the ten chemicals have not yet been directly measured. There is, therefore, no current basis for a comprehensive identification of the individual sources contributing to the non-point loadings.

To proceed as expeditiously as possible to the implementation of non-point control programs, the Four Parties have focused initially on the remediation of hazardous waste sites contributing toxic chemicals to the Niagara River. In November 1989, EPA and DEC issued a report on the hazardous waste sites in the U.S. contributing toxics to the river. The report:

- o Identified the twenty hazardous waste sites in the U.S. estimated to contribute 99 percent of the toxic chemical

loading from all waste sites in the U.S. to the Niagara River; and

- Presented ambitious schedules intended to drive cleanup of these twenty sites. The best estimate of the potential toxic chemical loading from these sites to the river (694 pounds per day or 315 kilograms per day) is anticipated to be reduced to 8 pounds per day (4 kilograms per day) by 1996.

EPA and DEC will refine the loading estimates for these sites to be chemical-specific and will issue a status report and plan update by November 1990, and annually thereafter.

MOE will issue a Canadian hazardous waste sites report on the five Canadian waste sites by September 1990, with status reports and updates annually thereafter.

The Four Parties recognize the need to focus also on non-point sources other than hazardous waste sites. DEC issued non-point source assessment and program status reports in 1989 and 1990, respectively. Annual updates, beginning June 1991, will describe the focused application of these programs to reduce Niagara River non-point source loadings of persistent toxic chemicals of concern. MOE's initial report will be issued by December 1990, with status reports and updates annually thereafter.

3. Upstream Loadings

Six of the fifteen NRTMP priority toxics have significant upstream Great Lakes sources.

The Four Parties alerted the International Joint Commission, by letter dated March 21, 1989, that Lake Erie water entering the Niagara River contains elevated levels of the six toxic chemicals.

The Four Parties now intend to make specific recommendations to ensure that the responsible jurisdictions address this inter-lake transport issue.

4. Pollution Prevention

In order to make further progress towards the goal of virtual elimination of toxic discharges as embodied in the Great Lakes Water Quality Agreement, the Four Parties are committed to evaluating how pollution prevention activities (for example, source reduction) can be incorporated in the Plan.

In particular, the Four Parties have developed Pollution Prevention Initiatives to encourage waste minimization in both the U.S. and Canadian sides of the Niagara River and Lake Ontario Basins (the

Canadian plan is proposed). The pollution prevention initiatives build on, and are complementary to, the existing pollution prevention activities of the individual agencies.

The key objectives of the U.S. plan are to:

- Determine how industrial facilities located in the Niagara River/Lake Ontario basin can better apply pollution prevention techniques to reduce their releases of toxic chemicals to air, land, and water; and
- Develop a joint industry/governmental initiative on pollution prevention.

The key objectives of the proposed Canadian plan are to:

- Facilitate and highlight government-industry cooperation in achieving source control and zero discharge of toxic substances under the LOTMP;
- Increase industry and municipal awareness of existing nonregulatory programs of MOE and EC which support source control and attainment of zero discharge;
- Identify opportunities for partnership or information sharing leading to the development and implementation of pollution prevention projects; and
- Provide a visible means of documenting and tracking progress of specific commitments made to source control and zero discharge within the Lake Ontario/Niagara River geographic context.

At the same time, the United States and Canada are working to reach agreement on a pollution prevention plan at the national level. The Secretariat will ensure that the bi-national proposal and the Four Party proposal are not duplicative and will encourage use of the Four Party initiatives as a pilot for the bi-national proposal.

C. ASSESS

The third objective of the Plan is to assess the success of programs to reduce the loadings of toxics, ensuring a continuing focus on critical inputs.

The starting point for measuring progress in reducing toxic chemical loadings to the Niagara River is a coordinated long-term monitoring program in the river itself. Accordingly, the Four Parties have:

- Developed and implemented a mutually acceptable sampling and analysis program using state-of-the-art high volume techniques

to quantify the change in the loading of toxic chemicals in the river water column over time and distance;

- Collected three years of data from this intensive monitoring of toxic chemical loadings at the source (Ft. Erie) and mouth (Niagara-on-the-Lake) of the river;

- Issued annual summaries of these Upstream/Downstream monitoring data for two years (when the third annual summary is issued, it will provide the first basis for identifying a trend in the differential loading of toxic chemicals in the river); and

- Continued to improve the river monitoring program by:

  - Expanding the number of chemicals monitored;

  - Confirming the representativeness of the data from the Niagara-on-the-Lake station, and initiating a sampling program to verify the representativeness of the Ft. Erie station; and

  - Incorporating improvements identified from field and laboratory audits.

The Four Parties have developed and issued a Framework for 50% Reduction Progress Report for the NRTMP. This report:

- Detailed how to prepare an annual report, using Niagara River ambient and source data, and documenting progress toward attainment of the goal of 50 percent reduction of problem toxics;

- Identified how best to present statistically valid year-to-year comparisons of river loadings data; and

- Revised the protocol for adding chemicals to the list of priority toxics for 50 percent reduction.

The first progress report will be issued by December 1990 and will incorporate the results of:

- The Upstream/Downstream Report for April 1988 - March 1989, and a re-analysis of data from prior years in accordance with the Framework for 50% Reduction Progress Report;

- Point source loadings reports for 1986/'87, 1987/'88, and 1988/'89;

- A report presenting initial estimates of comprehensive non-point source loadings, based on readily available information; and

- o A report on gains and losses of toxic chemicals in the river system.

The 1990 NRTMP Update also includes a number of other assessment-related commitments:

- o A workplan to improve the independent estimates of non-point source loadings;
- o A report on the representativeness of the Ft. Erie sampling station;
- o Recommendations to guide the development of a consistent set of adequately protective, enforceable standards for the Niagara River;
- o Expansion of the chemicals monitored in the Niagara River, as necessary;
- o Recommendations on the need for a biomonitoring program;
- o Development of a Niagara Falls, New York groundwater model; and
- o A comparison of the existing Niagara River downstream load to estimates of the load that would allow attainment of standards and criteria in Lake Ontario.

D. COORDINATE

The fourth objective of the Plan is to coordinate activities with Remedial Action Plan (RAP) activities.

There are three RAPs in the Niagara River basin: the Buffalo River, the New York Niagara River RAP and the Ontario Niagara River RAP. the status of the RAPs follows.

The Stage I Buffalo River RAP was completed in November 1989 and formally submitted to the International Joint Commission for review in January 1990. A Remedial Advisory Committee was formed early in 1990 to assist the DEC in implementation of the RAP. The first annual report of the RAP was published in June 1990. The Buffalo River Remedial Action Plan Annual Report outlines commitments made in the Stage I RAP and the status of those commitments. Accomplishments since the Stage I RAP was published are listed as well as a schedule of activities for the next fiscal year.

A draft report on the Ontario Niagara River RAP has been completed and reviewed by the RAP Writing Team and the PAC Technical Committee; a re-draft is almost finished. A final Stage I draft is expected to be released for comment by September 1990.

The New York Niagara River RAP was initiated in October 1989 with the formal appointment of the Niagara River Action Committee. This citizen committee has held monthly meetings since then and has formed subcommittees on Land Use, Public Outreach and Water Quality that meet regularly. The NRAC has started compiling and evaluating data and information in order to assist DEC in drafting the problem definition phase of the RAP.

The individual Niagara River RAPs have appointed several members to an International Advisory Committee. The IAC has met several times since its first meeting in the fall of 1989. They are communicating with both RAP groups on issues and topics of mutual interest.

This Plan Update provides an additional opportunity for coordination between the NRTMP and the RAPs. The NRTMP will refer data reflecting localized conditions in the Niagara River basin to the RAPs for their verification, investigation of contaminant sources, development of control strategies, as appropriate, and report back to the Secretariat.

V. ORGANIZATION

The Four Parties have established the integrated management structure shown in Figure II to implement the Niagara River and Lake Ontario Toxics Management Plans, and to keep them current. The elements of the structure that are relevant to the NRTMP are described below.

A. Niagara River Coordination Committee

The Coordination Committee consists of senior managers from each of the four jurisdictions. They are publicly responsible for meeting the individual agency and Four Party commitments in the NRTMP.

B. Niagara River Secretariat

The Secretariat is the working staff of the Coordination Committee. All NRTMP reporting to the Coordination Committee is done through the Secretariat. It is responsible for drafting NRTMP updates and status reports for review and issuance by the Coordination Committee. The Secretariat will schedule meetings, record and distribute minutes of the meetings, and ensure that the Coordination Committee is kept well informed on all activities in the NRTMP.

C. Standing Technical Committees

Three committees perform technical activities in support of the NRTMP.

1. River Monitoring (RMC) - The RMC is responsible for all technical and scientific aspects of the Four Party ambient river monitoring program.

2. Point Source (PSC) - The PSC is responsible for assisting the Secretariat in coordinating Four Party activities related to point source loading to the Niagara River.

3. Non-Point Source (NPSC) - The NPSC is responsible for assisting the Secretariat in coordinating Four Party activities related to non-point source loadings to the Niagara River.

Three committees perform technical activities in support of both the Niagara River and Lake Ontario Toxics Management Plans.

4. Categorization (CC) - The CC categorizes toxics for action based on existing data and existing standards and criteria, and recommends the collection of additional data and the development of new standards and criteria, as appropriate.

5. Standards and Criteria (SCC) - The SCC reviews existing standards and criteria for consistency and adequacy relative to the purposes of the Niagara River and Lake Ontario Plans, and recommends individual agency actions to develop new or revised standards and criteria.

6. Fate of Toxics (FTC) - The FTC develops mathematical models of pollutant fate to relate pollutant inputs to levels of toxics in the ambient water column, sediment and biota.

One committee performs technical activities in support of the Lake Ontario Toxics Management Plan:

7. Ecosystem Objectives Work Group (EOWG) - The EOWG, which was established by EPA and Environment Canada under the terms of the Great Lakes Water Quality Agreement, develops ecosystem objectives and indicators for Lake Ontario.

Detailed revised charges to these committees will be prepared by the Niagara River and/or Lake Ontario Secretariats once the 1990 updates of the NRTMP and LOTMP have been adopted by the Coordination Committee.

VI. PUBLIC INVOLVEMENT

The goal of the public involvement process is to facilitate the attainment of our environmental goal for the Niagara River by providing a forum for public consultation and involvement in the continued development and implementation of the NRTMP.

Since the inception of the Niagara River Toxics Management Planning effort, the Four Parties have been committed to public involvement in the development and implementation of the Plan. As the Four Party effort matured, however, it became apparent that improvements could be made in the public involvement process. The Four Parties, therefore, established an ad hoc committee of agency communication representatives to propose improvements.

In November 1989, after consultation with a number of involved citizens, the ad hoc work group issued the report Public Involvement Workplan Proposal: Niagara River/Lake Ontario Toxics Management Plan (Bibliography #20). The proposal was accepted by the Coordination Committee, and the ad hoc work group was asked to develop a work plan implementing the proposal. In April 1990, the ad hoc work group completed its charge and issued the report Public Involvement Workplan (Bibliography #21).

Consistent with the recommendations of the group, the salient features of the NRTMP public involvement process are described below:

A. Citizen Involvement on Standing Technical Committees

In order to facilitate effective public involvement on the six standing technical committees that report to the Coordination Committee:

- Two citizens, one Canadian and one U.S., have been added as full members of each of the committees; their travel expenses are reimbursed consistent with standard government practices.
- Additional interested citizens have been added as correspondents; they receive minutes of meetings and of conference calls, and technical products for review and comment.

Committee Membership will be reviewed annually.

B. Public Involvement in the Formulation of Secretariat Recommendations to the Coordination Committee

In order to ensure effective public involvement in the formulation of Secretariat recommendations to the Coordination Committee, the

Secretariat will conduct public consultation workshops on the plan updates. In addition, the Secretariat will conduct issue-oriented public consultation workshops, as needed.

In each case the Secretariat will prepare an Issues for Discussion Document to facilitate a dialogue with the public at the workshop, and a Public Responsiveness Document to summarize the comments received and the actions recommended to address the comments. The Public Responsiveness Document will be used to ensure that the Coordination Committee is aware of the public's views at the time it is called on to make policy choices.

C. Coordination Committee Open Meetings

Consistent with longstanding practice, the Coordination Committee conducts all of its meetings in public, in the Niagara area:

- Providing advance notification of meetings;
- Making documents available in advance of the meetings;
- Presenting issues in understandable terms at the meetings; and
- Encouraging questions and comments from the public at the meetings.

These open meetings play a critical role in ensuring public involvement and are a key mechanism for ensuring public accountability.

D. Other Outreach Activities

The Four Parties will also undertake a number of other outreach activities related to the NRTMP:

- The Secretariat will maintain a bibliography of all NRTMP documents; copies of the bibliography and all documents will be available at the Repositories listed in Table IV.
- The Secretariat will prepare articles about the NRTMP for inclusion in RAP newsletters.
- The Secretariat will visit RAP sites to discuss the NRTMP.
- The Four Parties will improve the existing NRTMP mailing list.
- The Secretariat will prepare a number of documents to enhance communication with the public:
  - A project overview;

- A timetable of activities; and

- A flyer for the potentially involved public.

o The Four Parties will seek to enhance media relations with respect to NRTMP activities:

- Developing press releases prior to meetings and workshops; and

- Ensuring the availability of a media coordinator at these meetings and workshops.

TABLE I

CATEGORIES OF TOXICS

I. Ambient Data Available

A. Exceeds enforceable standard

B. Exceeds a more stringent, but unenforceable criterion

C. Equal to or less than most stringent criterion

D. Detection limit too high to allow complete categorization

E. No criterion available

II. Ambient Data Not Available

A. Evidence of presence in or input to the River

B. No evidence of presence in or input to the River

TABLE II

PRELIMINARY CATEGORIZATION
NIAGARA RIVER TOXICS

Categories IA and IB (18 Toxics)

- arsenic
- benz(a)anthracene
- benzo(a)pyrene
- benzo(b)fluoranthene
- benzo(k)fluoranthene
- chlordane
- chrysene
- DDT & metabolites
- dieldrin
- dioxin (2,3,7,8-TCDD)
- hexachlorobenzene
- lead
- mercury
- mirex/photomirex
- octachlorostyrene
- PCBs (total)
- tetrachloroethylene
- toxaphene

Category IC (41 Toxics)

- aldrin
- barium
- BHC (total) (hexachlorocyclohexane)
- benzene
- bis(2-ethylhexyl)phthalate
- cadmium
- carbon tetrachloride
- chromium (total)
- cobalt
- copper
- 1,2-dichlorobenzene
- 1,3-dichlorobenzene
- 1,4-dichlorobenzene
- di-n-octyl-phthalate
- endosulfan (total)
- endrin
- fluoranthene
- heptachlor & heptachlor epoxide
- hexachlorobutadiene
- manganese
- methoxychlor
- methylene chloride

- nickel
- pentachlorobenzene
- pentachlorophenol
- phenol
- pyrene
- selenium
- 1,2,3,4-tetrachlorobenzene
- 1,2,4,5-tetrachlorobenzene
- 2,3,4,5-tetrachlorophenol
- 2,3,5,6-tetrachlorophenol
- tetrahydrofuran
- toluene
- 1,2,3-trichlorobenzene
- 1,2,4-trichlorobenzene
- 1,3,5-trichlorobenzene
- 2,4,5-trichlorophenol
- 2,4,6-trichlorophenol
- vanadium
- zinc

Category ID (1 Toxic)

- chloroform

Category IE (14 Toxics)

- acetone
- chlorinated dibenzofurans
- 2-chlorotrifluorotoluene
- 4-chlorotrifluorotoluene
- dichlorobromomethane
- 2,4-dichlorotrifluorotoluene
- 3,4-dichlorotrifluorotoluene
- heptanone
- hexane
- methylethylketone
- molybdenum
- strontium
- 2,3,6-trichlorotoluene
- 2,4,5-trichlorotoluene

TABLE III

NRTMP PRIORITY TOXICS

	N.R. WATER EXCEEDANCES[1]	L.O. FISH EXCEEDANCES[2]	SIGNIFICANT NR SOURCES[3]
o arsenic	X		?
o benz(a)anthracene	X		X
o benzo(a)pyrene	X		X
o benzo(b)fluoranthene	X		X
o benzo(k)fluoranthene	X		X
o chlordane		X	
o chrysene	X		
o DDT & metabolites	X	X	
o dieldrin	X	X	
o dioxin		X	X
o hexachlorobenzene		X	X
o lead	X		?
o mercury	X		X
o mirex/photomirex		X	X
o octachlorostyrene		X	
o PCBs	X	X	X
o tetrachloroethylene	X		X
o toxaphene		X	?

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1 These seven chemicals were identified from a master list of persistent toxic chemicals as exceeding water quality standards, criteria or guidelines at Niagara-on-the-Lake.

2 These nine chemicals were identified from a master list of persistent toxic chemicals as exceeding fish tissue standards, criteria or guidelines in Lake Ontario.

3 These ten chemicals were identified as having significant Niagara River sources, based on a significant positive differential load (i.e., a positive differential load $\geq$ 25% of the total load as measured at Niagara-on-the-Lake), or based on the existence of known current Niagara River sources.

? The significance of Niagara River sources of these chemicals will be determined based on the data in the Progress Report due December 1990.

TABLE IV

NRTMP REPOSITORIES

United States

U.S.EPA
Public Information Office
Carborundum Center
345 Third Street, Suite 530
Niagara Falls, New York 14303
(716) 285-8842

NYS Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202
(716) 847-4590

Atlantic States
Legal Foundation, Inc.
658 West Onondaga St.
Syracuse, New York 13204
(315) 475-1170

Canada

City of Niagara Falls
Planning & Development Dept
Attn: Gretchen de Boer
4310 Queen Street
Niagara Falls, Ontario
L2E 6X5
(416) 356-7521

Niagara River Coordinator
Environment Canada
25 St. Clair Avenue East
Toronto, Ontario
M4T 1M2
(416) 973-1107

Niagara River Improvement
Project
Ontario Ministry of the
Environment
119 King Street East
12th Floor
Hamilton, Ontario L8N 3Z9
(416) 521-7720

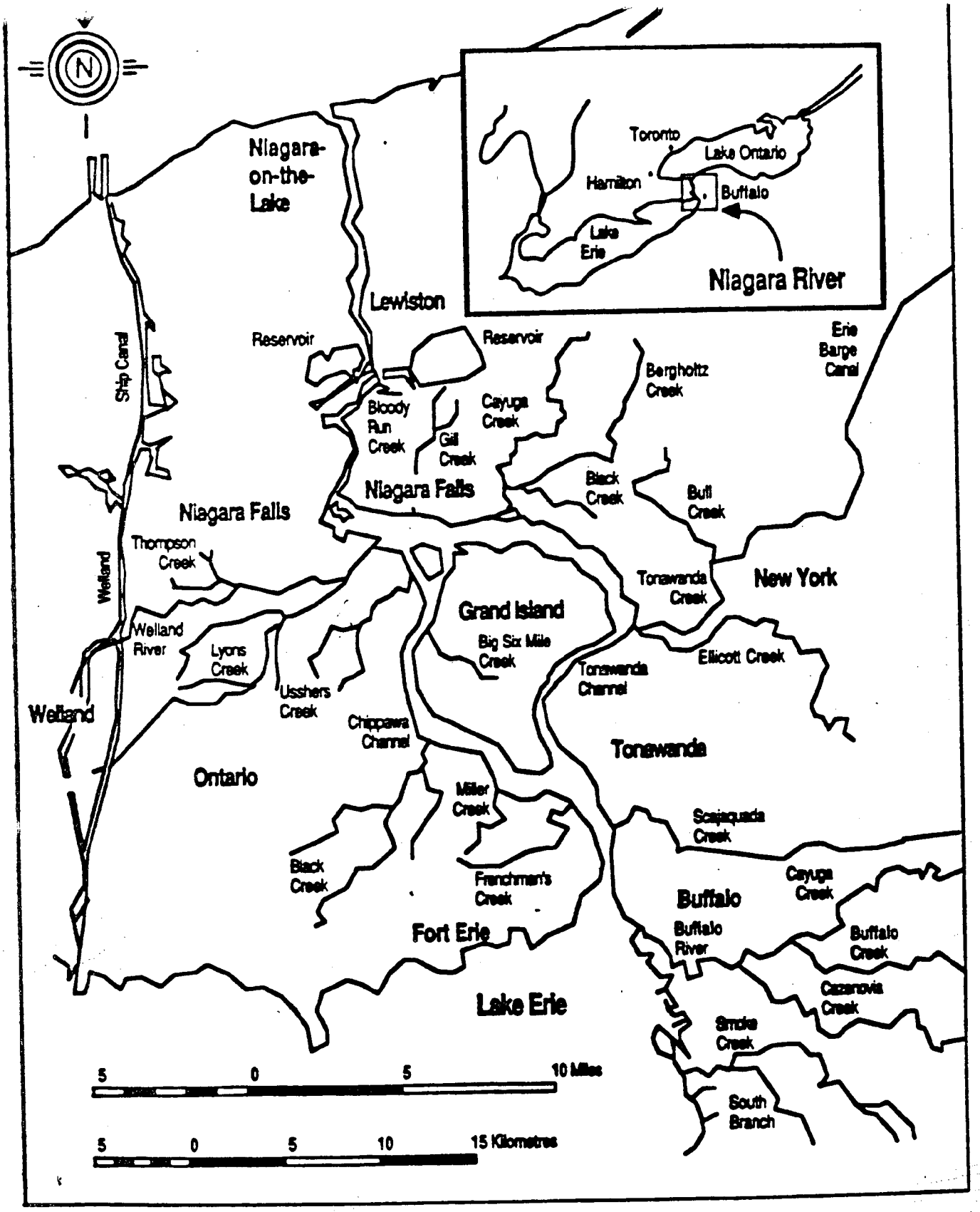
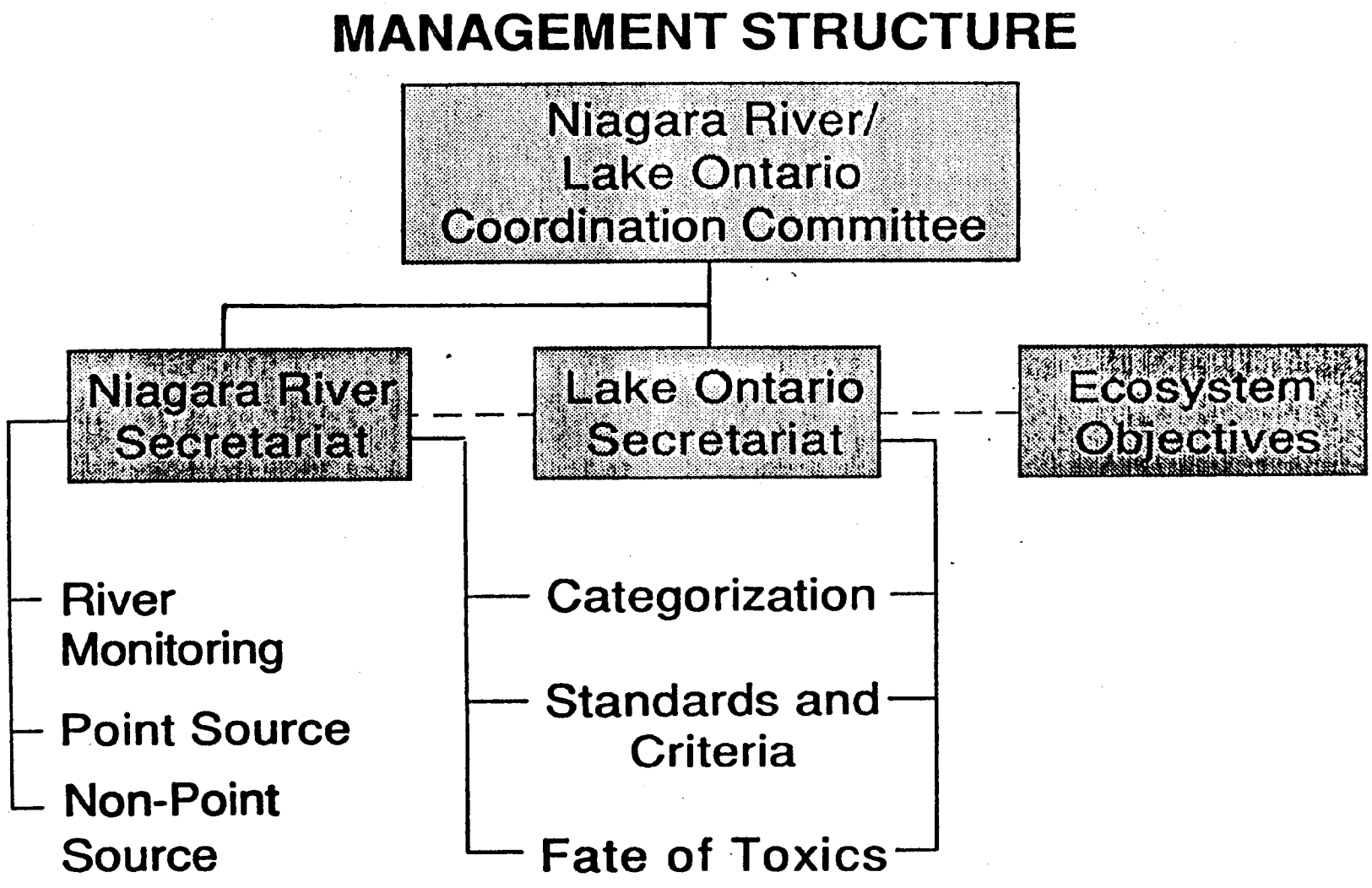


Figure I. Map of Niagara River Area

Figure II.


MANAGEMENT STRUCTURE
Niagara River/
Lake Ontario
Coordination Committee
Niagara River
Secretariat
Lake Ontario
Secretariat
Ecosystem
Objectives
River
Monitoring
Point Source
Non-Point
Source
Categorization
Standards and
Criteria
Fate of Toxics

DECLARATION OF INTENT

SIGNED FEBRUARY 4, 1987

PURPOSE

The purpose of this Declaration is to ensure that a management strategy is adopted which enables the Parties to move in a directed and coordinated manner toward the objective of achieving significant reductions of toxic chemical pollutants in the Niagara River in accordance with timetables and specific activities. The Parties commit themselves to using the authority provided by their domestic laws and regulations to this end. This is consistent with the goal of virtual elimination of toxic discharges, as agreed upon in 1978 by the Governments of the United States and Canada under the Great Lakes Water Quality Agreement.

In October 1986, the Parties released the first edition of a four-party Work Plan which establishes timetables and a set of specific activities to be undertaken. This Declaration in conjunction with that document, together form The U.S. - Canada Niagara River Toxics Management Plan, hereinafter referred to as the The Plan. (See Appendix 1).

THE PARTIES DECLARE THEIR INTENT TO:

Adopt and implement The Plan as a dynamic and evolving framework within which the United States and Canadian agencies will cooperatively take appropriate steps leading to a significant reduction in toxic chemical pollutants from point and non-point sources to the Niagara River, in a manner consistent with federal, state and provincial laws.

In so doing, and in order to achieve the goals of The Plan as stated in this Declaration of Intent, the Parties will:

1. Jointly establish a common basis for identifying, assessing and quantifying toxic chemical loadings into the Niagara River;

   Individually identify and establish priorities for control measures to reduce loadings;

   Individually implement chemical pollutant control activities in the Niagara River;

   Individually and jointly monitor and evaluate the success of control activities.

2. Take into account applicable water quality and drinking water standards and set as a target a reduction level of 50% for

9. Submit The Plan and progress reports to the International Joint Commission as part of the Commission's Remedial Action Plan program for the Great Lakes.

10. Adopt the following goals for each component of The Plan:

a) River Monitoring

- determine the toxic chemical loadings to the Niagara River from Lake Erie (input);
- determine toxic chemical loadings from the Niagara River to Lake Ontario (output);
- determine toxic chemical loadings from sources along the Niagara River by comparing the difference between the output from the river and input from the river from upstream sources (input-output differential river monitoring identified by the NRTC);

Attempts will be made to determine the loadings with sufficient confidence to measure the effectiveness of the control programs.

b) Point Sources

- determine toxic chemical loadings from industrial and municipal facilities;
- estimate allowable toxic chemical loadings from industrial and municipal sources as provided in regulatory specifications;
- estimate reduction of toxic chemical loadings as a result of implemented control measures and scheduled reductions based on planned control measures;
- implement remedial and control programs so as to achieve the maximum possible reduction of toxic chemical loadings to the Niagara River;

c) Non-Point Sources

- estimate toxic chemcial loadings from tributaries and leaking hazardous waste disposal sites;
- estimate reductions in toxic chemical loadings as a result of implemented control measures, and scheduled reductions based on planned control measures;

Executed this 4th day of February, 1987

For the United States
Environmental Protection Agency

Mr. Lee Thomas
Administrator

For Environment Canada

The Honourable Tom McMillan
Minister

For the New York State Department
of Environmental Conservation

Mr. Henry G. Williams
Commissioner

For the Ontario Ministry of the
Environment

The Honourable Jim Bradley
Minister

Appendix II.

Accomplishments to Date

February 1987 - September 1988

TABLE 1

RIVER MONITORING

FEB 1987 - SEPT 1988

GOAL		ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I. Determine toxic chemical loadings from sources along the Niagara River by comparing the difference between the output from the river and the input to the river from upstream sources (input-output differential river monitoring identified by the NRTC).	1.	Prepare the list of analytical parameters which will be investigated.	All Jurisdictions (RMC)	November 1986 COMPLETED	Completed. November 1986 "Niagara River Sampling Protocol."
	2.	Validate the monitoring methodology to be used.	All Jurisdictions (RMC)	Within 6 months of implementation of new methodologies	Brought forward as Activity R-207.
	3.	Establish procedures for revising and updating methodologies.	All Jurisdictions (RMC)	January 1987 COMPLETED	Sampling protocols document completed Feb.1987. Procedures for analytical protocols included in Analytic Protocol Document (Completed Dec.'87)
	4.	Develop sampling program design (frequency of sampling and number of samples required).	All Jurisdictions (RMC)	November 1986 COMPLETED	Completed November 1986. "Sample Size Requirements."
	5.	Develop written sampling, analytical and quality control procedures for Ft. Erie and Niagara-on-the-Lake stations (Operations Manual).	All Jurisdictions (RMC)	October 1987 COMPLETED	Sampling protocol document completed in Oct. 1986. Updated in June 1988. Analytic Protocol document completed in December 1987.

TABLE 1

RIVER MONITORING

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I. Continued	6. Agree on interpretation of the existing data (12/84-3/86) at Ft. Erie and Niagara-on-the-Lake stations.	All Jurisdictions (RMC)	November 1986	Completed November "Upstream/Downstrea Niagara River Monit ata. 1984-1986." COMPLETED
	7. Provide scientific advice to the Coordination Committee on the development of criteria by which the results of the long-term monitoring program will be evaluated so that the effectiveness of ongoing corrective actions can be determined. Propose modifications to the list of analytical parameters as needed.	All Jurisdictions (RMC)	Continuous	Advice provided as appropriate based c results of project view/evaluation and results of data int pretation. Incorporated into Activities R-101 and R-200.
	8. Determine what additional monitoring activities (ongoing or future) should become part of the four jurisdiction data base.	All Jurisdictions (RMC)	Continuous	Initial efforts foc on the development, implementation, and optimization of the basic Ambient Water Quality Monitoring Program. Incorporated in Activity R-205.

TABLE 1

RIVER MONITORING

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I. Continued	9. Develop a procedure for data management and exchange.	All Jurisdictions (RMC)	May 1988 COMPLETED	Completed April 1988.
	10. Exchange data according to developed procedures.	All Jurisdictions	Continuous	Brought forward as Activity R-208.
	11. Report on interpretation of river monitoring data (3/86-3/87).	All Jurisdictions (RMC)	January 1988 COMPLETED	Completed in Jan. 1988 "Upstream/Downstream Niagara River Monitoring Data 1986-1987."

TABLE 2

POINT SOURCES

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I. Determine toxic chemical loadings from industrial and municipal facilities.	1. Continue collection of self monitoring data.	NYSDEC MOE	Continuous	DEC data is collected under SPDES program. MO data in Industrial Monitoring Information System(IMIS) annual report Incorporated in Activit P-300.
	2. Continue expanded compliance monitoring program in accordance with NRTC recommendations. (Includes initial direct monitoring of 10 major point sources compatible with river monitoring.)	MOE NYSDEC USEPA	COMPLETED	DEC has completed the '85-'86 expanded compliance monitoring program MOE's program is Niagar Monitoring Information System(NIAMIS); outline in the PSMC's report fo Activity #3.
	3. Review current and proposed point source monitoring program, compare them to NRTC recommendations and identify other areas that should be addressed for the purpose of defining an appropriate point source monitoring program.	All Jurisdictions (PSMC)	September '87 COMPLETED	Final completed Oct.'87 "Comparison of Present Future Four Party Point Source Programs and comparison to the Niagara River Toxics Recommendations."

TABLE 2

POINT SOURCES

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
1. Continued.	4. Determine toxic chemical loadings.	MOE NYSDEC	August 1987 COMPLETED	Reports on toxic chemical loadings were released by MOE and NYSDEC in September 1987. See Activities #7 and #8.
	5. Develop a procedure for data management and exchange.	All Jurisdictions (PSMC)	September 1987 COMPLETED	Final October '87:"Point Source Monitoring Committee, Four Party Agreement for Information Exchange."
	6. Exchange data according to developed procedures.	All Jurisdictions (Secretariat)	Continuous	Brought forward as Activity P-200.

TABLE 2

POINT SOURCES

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I. Continued.	7. Report on Point Source Monitoring Data 4/85-3/86 and determine toxic chemical loadings.	MOE NYSDEC	August 1987 COMPLETED	MOE Point Source repo and NYSDEC Point Sour report were released September 1987.
	8. Report on Point Source Monitoring Data 4/86-3/87 and determine toxic chemical loadings.	MOE NYSDEC	March 1988 COMPLETED	MOE Activity complete Sept.'87 and included report for Activity # NYSDEC report to be available October 198
	9. Continue agencies compliance monitoring programs.	MOE NYSDEC USEPA	Continuous	Incorporated in Activity P-300.
II. Estimate allowable toxic chemical loadings from industrial and municipal sources as provided in regulatory specifications.	1. Calculate the toxic chemical loading from 10 major point sources based upon regulatory specifications and compare with measured loadings.	USEPA NYSDEC	October 1987 COMPLETED	Comparison of NYSDEC regulatory specifications completed. Comparison to permit loadings contained in Appendix C of NYSDEC's Report on Point Source Monitoring Data. Activity final October 1987
		MOE	November 1986 COMPLETED	Report completed 11/86 "Update, Toxic Chemical Loadings From Atlas Specialty Steels."

TABLE 2

POINT SOURCES

FEB 1987 - SEPT 1988

GOAL		ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
III. Estimate reduction in toxic chemical loadings as a result of implemented control measures and scheduled reductions based on planned control measures.	1.	Develop schedules for implementation of control programs.	NYSDEC USEPA	March 1987	Control programs in U.S are in NYSDEC permits.
			MOE	COMPLETED	All MOE control Orders have been met. Detailed surveys have been initiated at all industries and municipal wastewater treatment plants to determine whether or not further control programs are required. Incorporated in Activity P-300.
	2.	Identify reductions in toxic chemical loadings to the Niagara River based on controls introduced since the NRTC report.	USEPA NYSDEC	October 1987 COMPLETED	Comparison of Pt. Source data with NRTC report in Tables IV & 3.8 and Appendix D of the NYSDEC Point Source Report issued in September 1987
			MOE	August 1987 COMPLETED	Reductions in toxics covered in MOE's Point Source Report issued Sept. 1987. MISA program introduced scheduled controls on point source discharges (MISA document June 1986).

TABLE 2

POINT SOURCES

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
	3. Forecast reductions in toxic chemical loadings in Niagara River.	All Jurisdictions (Secretariat)	July 1987 COMPLETED	The Accord signed Feb. 1987 established the goal of 50% reduction persistent toxic chem loads of concern in the Niagara River by 1996. More specific forecast will be developed through future Plan Activity P-101.
IV. Implement remedial and control programs so as to achieve the maximum possible reduction of toxic chemical loadings to the Niagara River.	1. Take enforcement actions when required.	MOE NYSDEC USEPA	Continuous	Incorporated in Activity P-300.
	2. Monitor court-ordered remedial schedule for Niagara Falls WWTP.	USEPA NYSDEC	Continuous	Incorporated in Activity P-300.
	3. Develop methods for mirex and heptachlor analysis in wastewater (lower detection limits)	NYSDEC USEPA	November 1986 COMPLETED	The permittee has agr to use a detection li sufficiently low to m required permit limit for these chemicals. Therefore, new method are not needed. Comple November 1986.
	4. Evaluate and reissue draft second round of permits.	NYSDEC USEPA	December 1986 COMPLETED	All 2nd round permits issued except NFNY WW Permits available for inspection at NYSDEC Region 9 office.
	5. Implement and enforce pre-treatment programs at POTW's.	NYSDEC USEPA	Continuous	Incorporated in

TABLE 2

POINT SOURCES

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
IV. Continued	6. Provide technical assistance to municipalities for enforcement in the Pretreatment Program.	USEPA NYSDEC	Continuous	Incorporated in Activity P-300.
	7. Promote waste reduction, pretreatment and good housekeeping.	MOE	Continuous	Ministry has provided financial support to a "Household Special Was Day" in Niagara Falls, Ontario. Brought forward as Activity P-301.
	8. Institute pre-regulation phases of Municipal- Industrial Strategy for Abatement (MISA).	MOE	November 1986 COMPLETED	Work initiated by Nove ber 1986.
	9. Establish first Industrial Regulation under MISA.	MOE	January 1988	Interim Status reporte in "MISA Update"(Vol I #2 Feb'88). Activity i ified in revised Plan reflect Niagara intere Organic chemical sect monitoring regulation to be promulgated December 1988. Incorporated in Activity P-300.

TABLE 3

NON-POINT SOURCES

FEB 1987 - SEPT 1988

	GOAL		ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I.	Estimate toxic chemical loadings from non-point sources.	1.	Attempt to use river monitoring data in conjuction with point source data to estimate the magnitude of the non-point source loading to the Niagara River.	All Jurisdictions (Secretariat)	November 1987 COMPLETED	See Table 9.
		2.	Develop areawide groundwater hydrogeology model for Niagara Falls, N.Y.	USEPA	1st Report July 1987 COMPLETED	Phase I complete. Stat Reports prepared March 1987 and July 1987. Phase II underway. Continuing work brough forward as Activity N-103.
		3.	Conduct areawide Water Resources evaluation of eastern part of Niagara Peninsula.	MOE	October 1987 COMPLETED	Project completed. "Water Resources of the Niagara Frontie and the Welland River Drainage Basin." Will be available for distribution after printing.
		4.	Develop a procedure for data management and exchange.	All Jurisdictions (NPSMC)	September 1987 COMPLETED	Completed October, 19

TABLE 3

NON-POINT SOURCES

FEB 1987 - SEPT 1988

GOAL		ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I. Continued.	5.	Exchange data according to developed procedures.	All Jurisdictions (NPSMC)	Continuous	Brought forward as Activity N-201.
II. Estimate reduction in toxic chemical loadings as a result of implemented control measures and scheduled reductions based on planned control measures.	1.	Identify reductions, (for hazardous waste sites) if possible, in toxic chemical loadings to the Niagara River based on control programs introduced since the NRTC report.	USEPA MOE	Continuous	EPA Niagara River Actio Report-Aug 1987 update; "Potential Contaminant Loadings to the Niagara River from U.S. Hazardous Waste Sites" March 1988. MOE: Clam and sediment monitoring was carried out in summer of 1987. Tributary monitoring is underway. Tributary loading report projected for completion December 1988 Brought forward as Activities N-301 and N-302

TABLE 3

NON-POINT SOURCES

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
II. Continued.	2. Develop schedules for implementation of control measures.	USEPA NYSDEC MOE	August 1987 COMPLETED	EPA/DEC: Schedules h been included in the Niagara River Action Plan updated by EPA conjunction with NYS This report was rele & available August 1 MOE: Additional nonp source data collecte the summer of 1987 t address this activit Report due December Brought forward as Activities N-100 and N-102.
	3. Identify baseline nonpoint source loadings to the Niagara River in accordance with the Declaration of Intent.	All Jurisdictions (Secretariat) COMPLETED		Initial estimate prepared based on ri monitoring and point source data. See Table 9.
III. Implement remedial and control programs so as to achieve the maximum possible reduction of toxic chemical loadings to the Niagara River.	1. Continue investigations and evaluate proposed remedial activities at landfill sites and monitor follow up actions as required for the five Ontario sites identified by the NRTC.	MOE	Continuous	Reports of all 5 sit have been prepared. Further required stu at Cyanamid Niagara Falls, with company doing investigation at present time. Brought forward as Activity N-100.

TABLE 3

NON-POINT SOURCES

FEB 1987 - SEPT 1988

GOAL		ACTIVITY	RESPONSIBLE PARTY	COMPLETION PROJECTED DATE	OUTPUT/STATUS
III. Continued.	2.	Investigate, study and remediate the 61 sites identified by the NRTC in New York.	USEPA NYSDEC	Continuous	Current status of sit included in Niagara River Action Plan. Brought forward as Activity N-100.
	3.	Complete initial investigation on 46 sites outside 3 mile band along river.	NYSDEC	December 1987 COMPLETED	Findings included in "Final Report: NYSDEC Niagara River Impleme tation Plan." Comple January 1988.
	4.	Complete NYS Hazard Ranking Scheme.	NYSDEC	December 1987	Report expected in January 1989. Brought forward as Activity N-300.
	5.	Evaluate sediment contamination transport in the Buffalo River.	NYSDEC	October 1986	A modeling study has been partially comple to assess contaminant transfer by sediments. The project is postpor until appropriate meth odology becomes avail- able. Will be incorpo ated in Activity N-10
	6.	Report on sediment survey of the Adam Beck Hydro Reservoir and provide data on upper Niagara tributary monitoring.	MOE	November 1986 COMPLETED	Completed."Contaminant concentrations in bott sediments of the Adam Beck Reservoir and Nia ara River Bar Dredgeat (April 1987)."1983 Nia ara River Tributary Survey by C.J. Hart." (June 25, 1986)

TABLE 3

NON-POINT SOURCES

FEB 1987 - SEPT 1988

GOAL		ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
III. Continued.	7.	Bring active hazardous waste facilities under RCRA permit requirements.	USEPA NYSDEC	Draft Permit schedules:	Draft permit schedule for Land Disposal - December 1987.
				Incineration- October 1987 Storage and Treatment- December 1992	Brought forward as Activity N-300.
	8.	Continue enforcement activities.	USEPA NYSDEC MOE	Continuous	Brought forward as Activity N-300.
	9.	Investigate stormwater runoff at selected industrial sites.	USEPA	December 1987	Completed.
				COMPLETED	"Buffalo River Stormwater Sampling Progra Report" February 1988

TABLE 4

CHEMICALS OF CONCERN

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT / STATUS
I. Identify and maintain a list of chemicals of concern (as determined by the NRTC with further monitoring, research and priorities established by Board) within the Niagara River ecosystem and promote the establishment of uniform environmental and human health criteria for these chemicals.	1. Develop New York State criteria for aquatic biota to protect fish-eating birds and animals.	NYSDEC	October 1986 COMPLETED	Report released 10/87. Title: "Niagara River Biota Contamination Project: Flesh Criteria for Protection of Piscivorous Wildlife."
	2. Prepare a status report on criteria development and use by the four agencies.	All Jurisdictions (Secretariat)	1st Report July 1987 2nd Report [illegible] COMPLETED	Compilation of MOE and NYSDEC water quality criteria regulatory guidelines final October 1987. Status report issued January 1988.
	3. Develop a mutually agreed upon list of persistent chemicals.	All Jurisdictions (RMC & PSMC)	August 1987 COMPLETED	Master list of persistent toxic chemicals in the Niagara River was accepted by the Coord. Committee November 4, 1987. This list will be used for selecting chemicals subject to 50% reduction.
	4. Identify persistent toxic chemicals of concern subject to the 50% reduction required in the Declaration of Intent.	All Jurisdictions (Secretariat)	March 1988 COMPLETED	Completed. Initial list selected.

TABLE 5

TECHNICAL AND SCIENTIFIC COOPERATION

FEB 1987 - SEPT 1988

GOAL	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	OUTPUT/STATUS
I. Carry out research, technical and scientific programs to assist the four jurisdictions in addressing problems of the Niagara Frontier.	1. Review all research activity among the jurisdictions that may apply to the Niagara Frontier.	All Jurisdictions (Secretariat)	October 1987	Compilation of jurisdictional research activities in Niagara Frontie complete. Summary available 1/88. COMPLETED
	2. Develop bioaccumulation factors for Niagara River toxics in biota.	USEPA NYSDEC	November 1988	Press release on preliminary data issue June 1987. Brought forward as Activity C-104.
	3. International Symposium on Toxics in the Niagara: A Shared Challenge.	All Jurisdictions (Secretariat)	August 1987	Symposium held Feb. 3-1987. Summary Report circulated to interest parties in August 1987 COMPLETED
	4. Point Source Monitoring Technical Workshop	All Jurisdictions (Secretariat)	January 1988	Workshop incorporated into Sept 12-14, 1988 Point Source Workshop at the Canada Centre f Inland Waters at Burlington, Ontario. COMPLETED
	5. Hydrogeology Technical Workshop	All Jurisdictions (Secretariat)	May 1988	Held in Niagara Falls, N.Y. - May 26,1988. COMPLETED
	6. Zero Discharge Seminar	All Jurisdictions (Secretariat)	September 1987	Held in Buffalo, N.Y. September 15-17, 1987. COMPLETED

Appendix III.

Accomplishments to Date

Period Ending April 1990

RIVER MONITORING

OCTOBER 1988 - SEPTEMBER 1989

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
Objective 1: Reduce the inputs of identified priority toxics.				
R-101	Prepare report on adding octachlorostyrene to the Upstream/Downstream river monitoring program.	All Agencies (RMC)	March 1989 COMPLETED	Sampling of octachlorostyrene began April 1989. Data will be reported in 1991.
R-102	Prepare an annual report documenting progress toward attainment of the goal of 50% reduction of problem toxics using ambient and source data.	All Agencies (NRS)	June 1989	"Framework for 50% Reduction Progress Report" (Bibliography #15) details how to prepare annual report; first report wil be prepared by December 1990. Brought forward as Activity III 140.

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
Objective 2: Determine if there are additional toxics which warrant priority attention.				
R-200	Report on the feasibility of modifying the chemicals sampled and analyzed in the river monitoring program (In response to the recommendations of the Toxics Categorization Committee).	All Agencies (RMC)	September 1989 COMPLETED	Thirty-one additional chemicals are now being sampled & analyze Further additions/deletions wil be considered based on recommendations of the Toxics Categorization Committee, and c the results of the EPA-funded screening analysis of selected chemicals in the Niagara River Follow-up included in Activity III-500.
R-201	Review DOE report on the representativeness of the Niagara-on-the-Lake station; prepare a workplan to examine the representativeness of the Ft.Erie monitoring station.	All Agencies (RMC)	September 1989 COMPLETED	Report on the Niagara-on-the-L station reviewed and accepted. (Bibliography #11) Ft. Erie station representativeness stu workplan was received and endorsed by RMC. Sampling at t Buffalo water intake at Lake E will begin in April 1990. Foll up included in Activity III-20
R-202	Conduct initial field and laboratory audits, using established protocols, and prepare reports on recommended changes or improvements.	All Agencies (RMC)	March 1989 COMPLETED	Audits completed and reports accepted by RMC with recommendation that changes suggested by the audit teams b incorporated in revised protoc (Bibliography #5).

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
R-203	Report on feasibility of lowering detection limits of category 1D chemicals (Detection limit too high to allow complete categorization).	All Agencies	September 1989	Draft Categorization report (per Activity C-200) identifies one such chemical: chloroform. Pending final review of the report, the feasibility of a lower detection limit for chloroform will be evaluated. Follow-up included in Activity III-300.
R-204	Assess the feasibility of estimating "recombined whole water" concentrations and loadings with confidence limits; if feasible, prepare using 1987-88 data, and incorporate the analyses in next Upstream/Downstream report.	All Agencies (RMC)	COMPLETED	Reported in '87-'88 Upstream/Downstream report. (Bibliography #6)
R-205	Report on the need for, and feasibility of, including a biomonitoring component in the river monitoring program.	All Agencies (RMC)	COMPLETED	RMC recommendation provided in June, 1989 letter (Bibliography #8); recommendation is for agencies to continue existing biomonitoring programs and to report periodically to the Coordination Committee on their findings. RMC recommendation to be reviewed by NRS. Follow-up included in Activity III-600.

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
R-206	Recommend how best to present statistically valid year to year comparisons of Niagara River loadings data using ambient and source data.	All Agencies (RMC)	COMPLETED June 1989	See "Framework for 50% Reductic Progress Report" (Bibliography #15).
R-207	Validate new monitoring methodologies.	All Agencies (RMC)	Within 6 months of implement-ation.	Ongoing. Follow-up included in Activity III-500.
R-208	Exchange data according to developed procedures.	All Agencies (RMC)	Continuous	Ongoing. Follow-up included in Activity III-100.
R-209	Prepare 1987-88 Upstream/Downstream report.	All Agencies (RMC)	COMPLETED March 1989	"Joint Evaluation of Upstream/Downstream Niagara Riv Monitoring Data for the period April 1987 to March 1988" prepared by the Niagara River Data Interpretation Group, Niagara River Monitoring Committee (Bibliography #6). Follow-up included in Activity III-100.

POINT SOURCES

COTOBER 1988- SEPTEMBER 1989

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
Objective 1: Reduce the inputs of identified priority toxics.				
P-100	Prepare U.S. and Canadian reports which identify significant sources of priority toxics and provide specific abatement schedules, or identify technical, legal or regulatory impediments.	USEPA NYSDEC MOE	March 1989 COMPLETED	A final MOE Point Source Report (Bibliography #10) and an interim DEC/EPA point source report (Bibliography #9) have been completed. These reports were referred to the Point Source Committee for a consistency review. A final DEC/EPA report will be completed by August 1990. Follow-up included in Activities II-100 and II-110.
P-101	Prepare U.S. and Canadian reports recommending how to refine point-source estimates of priority toxics.	USEPA NYSDEC MOE	March 1989	Preliminary recommendations are provided in EPA/DEC, MOE, and DEC reports. (Bibliography #9,10,12) These recommendations have been referred to the Point Source Committee for a consistency review. Follow-up included in Activity III-110.

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
Objective 2: Determine if there are additional toxics which warrant priority attention.				
P-200	Exchange point source data according to developed procedures.	All Agencies (PSC)	Ongoing	Follow-up included in Activity III-110
Objective 3: Implement existing and developing programs for the control of all toxics.				
P-300	Prepare U.S. and Canadian Point Source Program Status Reports.	USEPA NYSDEC MOE	June 1989	Canadian report completed (Bibliography #17); U.S. report to be completed as part of Activity II-100. Follow-up included in Activities II-100 a II-110.
P-301	Prepare report on how best to incorporate source reduction in the NRTMP. (This report will cover both point and non-point sources. See Activity N-303)	All Agencies (NRS)	September 1989	Proposal currently being developed by NRS. Follow-up included in Activity II-500.
P-302	Prepare U.S. and Canadian reports summarizing progress in reducing the point source loadings of the full range of toxics monitored in municipal and industrial treatment plant effluents.	USEPA NYSDEC MOE	COMPLETED September 1989	Canadian report completed (Bibliography #17). U.S. report completed. (Bibliography #12) Follow-up included in Activitie II-100 and II-110.

NON-POINT SOURCES

OCTOBER 1988 - SEPTEMBER 1989

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
Objective 1: Reduce the inputs of identified priority toxics.				
N-100	Prepare U.S. and Canadian reports which identify the waste sites with the greatest potential for contributing priority toxics to the River, and provide specific remediation schedules.	USEPA/ NYSDE MOE/DOE	COMPLETED June 1989 December 1989	U.S. report completed, November 1989 (Bibliography #16). Canadian report expected May 1990. Follow-up included in Activities II-200 and II-210.
N-102	Develop schedules for the implementation of other non-point source control programs for priority toxics.	USEPA NYSDEC MOE DOE		As independent source-by-source estimates of non-point loadings become available. (See Activity N-301.) Follow-up included in Activities II-300 and II-310.
N-103	Develop areawide groundwater hydrogeology model for Niagara Falls, NY.	USEPA	September 1991	On schedule. Brought forward as Activity III-700.
Objective 2: Determine if there are additional toxics which warrant priority attention.				
N-201	Exchange non-point source data according to developed procedures.	All Agencies (NPSC)	Ongoing	Follow-up included in Activity III-120.

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
Objective 3: Implement existing and developing programs for the control of all toxics.				
N-300	Prepare U.S. and Canadian Non-point Source Program Status Reports.	USEPA/ NYSDEC DOE/MOE	COMPLETED February 1990 February 1990	U.S. commitment met through tw NYSDEC reports: Non-point Sour Assessment Report, February 19 and Non-point Management Progr November 1989. (Bibliography #3,18) Canadian report will be completed by December 1990. Follow-up included in Activiti II-300 and II-310.
N-301	Assess available non-point source data and evaluate the potential for deriving non-point source loading estimates directly.	All Agencies (NPSC)	COMPLETED March 1989	NPSC report completed, October 1989 (Bibliography #13). Follo up included as Activity III-12
N-302	Prepare annual reports, based on direct estimates, summarizing progress in reducing non-point source loadings.	USEPA/ NYSDEC DOE/MOE		The "Framework for 50% Reducti Progress Report" explains how annual reports will be develop An initial report will be developed by October 1990. Follow-up included in Activity III-120.
N-303	Prepare report on how best to incorporate source reduction in the NRTMP. (This report will cover both point and non-point sources. See Activity P-301)	All Agencies (NRS)	September 1989	Proposal currently being developed by the NRS. Follow-u included in Activity II-500.

CHEMICALS OF CONCERN

OCTOBER 1988- SEPTEMBER 1989

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPELETION DATE	COMMENTION/STATUS
Objective 1: Reduce the inputs of identified priority toxics.				
C-100	Determine the feasibility of preparing Level I mathematical models for the Category IA and IB toxics in the Niagara River.	All Agencies (FTC)	COMPLETED September 1989	Level I modelling has begun; initial results will be available in November 1990. Follow-up included in Activity III-130.
C-101	Review protocol to add chemicals to list of priority toxics for 50% reduction. This includes a reassessment of the appropriateness of using 25% as the percentage of the load required to establish the Niagara River as a primary source of a toxic chemical of concern.	All Agencies (NRS)	COMPLETED June 1989	The "Framework for 50% Reduction Progress Report" (Bibliography #15) addresses this issue.
C-102	Recommend additional chemicals to be added to list of those subject to 50% reduction.	All Agencies (NRS)	Continuous	Follow-up included in Activity I 110.

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
C-103	Develop improved matrices showing the Niagara River differential loadings of priority toxics, and the point and non-point components of those differential loadings.	All Agencies (FTC, RMC, PSC, NPSC)	September 1989	The "Framework for 50% Reductic Progress Report" has been completed; work can now begin o the development of improved matrices. The first set of improved matrices will be available by December 1990. Follow-up included in Activity III-140.
C-104	Develop bioaccumulation factors for Niagara River toxics in biota.	USEPA NYSDEC	November 1988	Data analysis complete. The report: Lake Ontario TCDD Bioaccumulation Study has been peer reviewed. The final report will be issued by June 1990. Follow-up included in Activity III-800.
	Objective 2: Determine if there are additional toxics which warrant priority attention.			
C-200	Categorize all chemicals on the list of 92 persistent toxic chemicals of concern.	All Agencies (CC)	March 1989	Draft report completed. Brought forward as Activity I-100.
C-201	Categorize additional chemicals to the extent that data are available.	All Agencies (CC)	March 1989	Draft report completed. Brought forward as Activity I-100.
C-202	Prepare report recommending additions or modifications to standards and criteria (in response to the recommendations of the Categorization Committee).	All Agencies (SCC)	September 1989	Final report completed. (Bibliography #19) Follow-up included in Activity III-400.

COMPLETED

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
C-203	Prepare a letter alerting the International Joint Commission to the problem of upstream Great Lake sources of priority chemicals and requesting the responsible jurisdictions to take corrective actions.	All Agencies (CC)	December 1988 COMPLETED	Letter dated March 21, 1989 from Coordination Committee to IJC (Bibliography #4). Follow-up included in Activity II-400.
C-204	Review categorization periodically to reflect changes in standards and criteria.	All Agencies (CC)	Continuous	Draft report completed. Follow-u included in Activity I-100.

TECHNICAL AND SCIENTIFIC COOPERATION

OCTOBER 1988- SEPTEMBER 1989

ACTIVITY		RESPONSIBLE PARTY	RPOJECTED COMPLETEION DATE	COMMENT/STATUS
Objective 3: Implement existing and developing programs for the control of all toxics.				
T-300	Prepare an annual report on new and emerging technologies applicable to hazardous waste landfill site remediation.	All Agencies	November 1988 COMPLETED	EPA/DEC - Superfund Innovative Technology Evaluation Program, February 1988 (Bibliography #1) MOE - Inventory of Innovative Hazardous Waste Treatment Site Remediation and Monitoring Technology Projects in Ontario, January 1989. (Bibliography #2) EC - Hazardous Waste Site Remediation: Innovative Technology Development- Great Lakes Environment Office, Apri 1989. (Bibliography #7)

REMEDIAL ACTION PLANS

OCTOBER 1988- SEPTEMBER 1989

RAP = Remedial Action Plan

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
Objective 3: Implement existing and developing programs for the control of all toxics.				
A-300	Develop Niagara River (Ontario) Remedial Action Plan (RAP).	MOE DOE		Follow-up included in Activity IV-100.
	- Initiate RAP		COMPLETED December 1988	
A-301	Develop Niagara River (New York) RAP	NYSDEC		
	- Initiate RAP		COMPLETED November 1989	Follow-up included in Activity IV-100.
A-302	Establish an international advisory committee	NYSDEC MOE	COMPLETED To be determined	Format for the committee has bee established. The two committees will hold their first bi-nationa committee meeting in March 1990 Follow-up included in Activity IV-100.
A-303	Develop a common statement of environmental problems and goals for the River.	NYSDEC MOE	To be determined	Draft common statement was written in April 1990. Final statement expected by June 1990. Follow-up included in Activity IV-100.

	ACTIVITY	RESPONSIBLE PARTY	PROJECTED COMPLETION DATE	COMMENT/STATUS
A-304	Develop Buffalo River RAP	NYSDEC		
	- Complete draft		March 1989 COMPLETED	
	- Final		January 1990 COMPLETED	See Bibliography #14. Follow-up included in Activity IV-100.

Appendix IV.

Niagara River Toxics Management Plan

1990 UPDATE

Table of Commitments

NRS=Niagara River Secretariat
LOS=Lake Ontario Secretariat
RMC=River Monitoring Committee
PSC=Point Source Committee
NPSC=Nonpoint Source Committee
CC=Categorization Committee
FTC=Fate of Toxics Committee
SCC=Standards and Criteria Committee

Niagara River Toxics Management Plan
1990 UPDATE

NRS=Niagara River Secretariat
LOS=Lake Ontario Secretariat
RMC=River Monitoring Committee
PSC=Point Source Committee
NPSC=Nonpoint Source Committee
CC=Categorization Committee
FTC=Fate of Toxics Committee
SCC=Standards and Criteria Committee

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE*	COMMENT
	I. Sort Chemicals as a Basis for Action			
I-100	Prepare Categorization of Chemicals Report			
	- Initial comprehensive report	CC	May 1990	
	- Annual update	NRS	Sep 1991	
I-110	Report on adding to 50% reduction list for priority toxics			
	- 1990 report	NRS	Dec 1990	
	- Annual update	NRS	Dec 1991	
	II. Implement Programs to Reduce the Loadings of Toxics Entering the Niagara River			
II-100	Prepare U.S. point source plan			The U.S. point source report will present U.S. point sourc loadings and the plan to redu those loadings.
	- Final plan	EPA/DEC	Sep 1990	
	- Status report and plan update	EPA/DEC	Sep 1991	

* All completion dates in the NRTMP 1990 Update are projected dates (last day of the month) for transmittal of final committee or agency reports to the Niagara River Secretariat. These reports will be made available at repositories within two weeks and will be tabled for discussion, as appropriate, at the next scheduled Coordination Committee meeting.

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
II-110	Prepare Canadian point source plan			The Canadian point source pla will present Canadian point source loadings, and the plar reduce those loadings.
	- Status report and plan update	MOE	Dec 1990	
II-200	Prepare U.S. waste sites report			The existing U.S. waste sites report presents hazardous was site loadings estimates and t plan to reduce those loadings
	- Refine loadings estimates to be chemical-specific .	EPA	Nov 1990	
	- Annual status report and plan update	EPA/DEC	Nov 1990	
II-210	Prepare Canadian waste sites report			The Canadian waste sites repo will present waste site load estimates and recommended activities to reduce those loadings.
	- Initial report	MOE	Sep 1990	
	- Annual status report and plan update	MOE	Sep 1991	
II-300	Prepare U.S. report on other nonpoint source control programs			Focus is on nonpoint sources other than hazardous waste sites. Existing reports describe U.S. nonpoint sourc programs and their status. Annual updates will describe focussed application of thes programs to reduce identifie Niagara River nonpoint sourc loadings. (See Activity III 120).
	- Annual status report, and plan update	EPA/DEC	Jun 1991	

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
II-310	Prepare Canadian report on other nonpoint source control programs			Focus is on nonpoint sources other than hazardous waste sites. Initial report will describe existing Canadian nonpoint source programs and their status. Annual updates will describe the focussed application of these programs reduce identified Niagara Rive nonpoint source loadings (See Activity III-120).
	- Initial report	MOE/DOE	Dec 1990	
	- Annual status report and plan update	MOE/DOE	Dec 1991	
II-400	Formulate specific recommendations to ensure that the responsible jurisdictions address the inter-lake transport issue	NRS	Dec 1990	
II-500	Undertake Niagara River/Lake Ontario Pollution Prevention Initiative			The Pollution Prevention Initiative will build on, and complementary to, existing pollution prevention activiti of the individual agencies.
	- Develop proposal	NRS/LOS	Oct 1990	
	- Implement proposal	NRS/LOS	to be determined	

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
	III. Assess the Success of Programs to Reduce the Loadings of Toxics, Ensuring a Continuing Focus on Critical Inputs			
III-100	Prepare Upstream/Downstream Report			
	- Report for Apr 1988 - Mar 1989	RMC	Sep 1990	
	- Report for Apr 1989 - Mar 1990	RMC	Jun 1991	
	- Re-analysis of data from prior years in accordance with 50% Reduction Framework	RMC	Oct 1990	
III-110	Prepare point source loadings report	PSC	Sep 1990	The report will present loadi for 1986/1987, 1987/1988, and 1988/1989; the report will a present recommendations for improvements in point source monitoring programs to meet requirements of the "Framewo for 50% Reduction."

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
III-120	Develop a comprehensive report on nonpoint source loadings			
	- Develop initial estimates based on readily available information	NPSC	Oct 1990	
	- Develop a workplan for improving these estimates	NPSC	Oct 1990	
	- Develop improved U.S. nonpoint source loadings estimates according to the workplan	EPA/DEC	To be determined	
	- Develop improved Canadian nonpoint source loadings estimates according to the workplan	MOE/DOE	To be determined	
	- Develop improved estimates of total U.S. and Canadian loadings that build on detailed U.S. and Canadian efforts.	NPSC	To be determined	
III-130	Report on Gains/Losses	FTC	Nov 1990	
III-140	50% Reduction Progress Report	NRS	Dec 1990	Report will be prepared for NRS by the Ad Hoc 50% Reduct Progress Report Work Group.

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
III-120	Develop a comprehensive report on nonpoint source loadings			
	- Develop initial estimates based on readily available information	NPSC	Oct 1990	
	- Develop a workplan for improving these estimates	NPSC	Oct 1990	
	- Develop improved U.S. nonpoint source loadings estimates according to the workplan	EPA/DEC	To be determined	
	- Develop improved Canadian nonpoint source loadings estimates according to the workplan	MOE/DOE	To be determined	
	- Develop improved estimates of total U.S. and Canadian loadings that build on detailed U.S. and Canadian efforts.	NPSC	To be determined	
III-130	Report on Gains/Losses	FTC	Nov 1990	
III-140	50% Reduction Progress Report	NRS	Dec 1990	Report will be prepared for NRS by the Ad Hoc 50% Reduct Progress Report Work Group.

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
III-200	Conduct Ft. Erie Station Representativeness Study			This study is being carried o by the NYSDEC on behalf of th RMC.
	- Complete Data Collection	RMC	Mar 1991	
	- Draft Report	RMC	Jan 1992	
	- Final Report	RMC	Mar 1992	
III-300	Resolve Ambient Data Detection Level Issues	RMC	To be established	Categorization report will identify chemicals for which detection levels are an issue (See Activity I-100).
III-400	Recommend development of standards and criteria			
	- Screen category IE chemicals to identify those warranting criteria development	SCC	Mar 1991	The report of the Standards a Criteria Committee presents screening criteria.
	- Resolve inadequacies and inconsistencies in standards and criteria for category IA and IB chemicals			The report of the Standards a Criteria Committee identifies number of inconsistencies and inadequecies.
	- Identify priority activities and responsible parties	NRS	Sep 1990	Based on recommendations contained in the report of t Standards and Criteria Committee.
	- Implement NRS recommendations	All Agencies	To be determined	

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
III-500	Monitor for additional chemicals			
	- Screen chemicals in the Niagara River for potential addition to the Upstream/ Downstream Network	RMC	Mar 1991	EPA is conducting this study behalf of the River Monitorin Committee.
	- Expand chemicals sampled in the Upstream/Downstream network, as necessary, based on the recommendations of the Data Interpretation Group, the recommendations included in the Categorization report (Activity I-100), and the results of the screening analyses cited above.	RMC	To be determined	EC operates the Upstream/Downstream network using protocol agreed upon by the Four Parties. The RMC shc recommend which parameters tc monitor. If monitoring costs escalate, EC may seek cost-sharing arrangements.
III-600	Evaluate need for a biomonitoring program	NRS	Nov 1990	
III-700	Develop Niagara Falls, New York Groundwater Model	EPA	Sep 1991	Improved groundwater flow estimates from each site wil available by August 1990.
III-800	Compare existing Niagara River downstream load to estimates of the load that would allow attainment of standards and criteria in Lake Ontario		Dec	
	- Comparison based on Level I estimates.	NRS	Dec 1990	

ACTIVITY NUMBER	ACTIVITY/OUTPUT	RESPONSIBLE PARTY	COMPLETION DATE	COMMENT
	- Comparison based on Level II estimates.	NRS	to be determined	

IV. Coordinate NRTMP Activities with RAP Activities

IV-100	Annual Progress Reports on RAPs			
	- Niagara River			
	- Ontario	MOE	Jul 1990	
	- New York	DEC	Jul 1990	
	- Buffalo River	DEC	Jul 1990	
IV-110	Actions based on Coordination Committee review of the RAP Progress reports			
	- Recommendations to RAPs	NRS	Ongoing	
	- Actions on recommendations from RAPs	NRS	Ongoing	

APPENDIX V

PUBLIC RESPONSIVENESS DOCUMENT

Niagara River Toxics Management Plan

Niagara River Secretariat

September 1990

Introduction

On February 4, 1987, the Four Parties (the U.S. Environmental Protection Agency (EPA), Environment Canada (EC), the New York State Department of Environmental Conservation (DEC), and the Ontario Ministry of the Environment (MOE)) signed a document known as the "Declaration of Intent" which outlines the principles to be followed in the pursuit of a common goal to reduce loadings of toxic chemicals to the Niagara River through appropriate joint activities and separate agency activities. The Declaration of Intent, combined with a detailed Workplan, is entitled The Niagara River Toxics Management Plan (NRTMP). The NRTMP Workplan is updated regularly to report progress in meeting Plan commitments, and to present follow-up commitments.

The Four Parties are in the process of updating the Niagara River Toxics Management Plan for the third time -- reporting progress on commitments in the 1988 Update and proposing follow-up commitments to continue progress in reducing the load of toxics entering the river. The revisions to the Niagara River Toxics Management Plan have not been major, although a number of refinements and new commitments have been added in the 1990 Update.

On June 19, 1990 the Niagara River Secretariat held a Public Workshop in Niagara Falls, Ontario on the draft 1990 Update of the Plan. Attachment I is the Issues for Discussion document, which the Secretariat developed to help focus the discussion at the workshop. From this document the Niagara River Secretariat identified six questions that it will soon have to prepare recommendations on and for which public input would be most useful.

The workshop opened with a plenary session which included an overview of the 1990 NRTMP Update and an overview of the Issues document. The participants were then divided into three break-out groups, each of which included a facilitator, a recorder and a resource person from the Secretariat.

Each group was presented with the six questions that had been identified by the Secretariat for discussion. Comments were sought on these questions and on other issues from the Issues document that a group wished to address in addition to or in place of the selected questions. At a closing plenary session, the facilitators reported results from each of the break-out groups. Attachment II lists the participants and presents a complete set of the public's questions and recommendations as reported in the closing session. Following is a summary of the views expressed at the workshop and the Secretariat's response. Following the last question and response is the Secretariat's response to a number of other questions and comments made at the workshop that do not fit within the questions designated by the three break-out groups.

Question #1: What suggestions do you have for improving the process used by the Secretariat to sort chemicals?

What the Public Says

There was general agreement that the process used to sort chemicals in the Plan is a logical one. Concern was expressed, however, that:

- Lists of Category IA chemicals (exceed an enforceable standard) should be kept separate from Category IB chemicals (exceed a more stringent but unenforceable standard);
- Communicating the process to the public could be improved by using layman's terms in a series of articles on the Plan, and by distributing to municipalities, etc., profiles on why each toxic is targeted for 50% reduction;
- The data used to sort chemicals should be expanded to include information on any presence of the chemical in the basin; and
- We need a process for finding chemicals we are not looking for.

Response

The NRTMP includes separate lists for Category IA and IB chemicals in order to permit the Four Parties to evaluate the need to develop enforceable standards for IB chemicals. However, the Four Parties believe that all analytic efforts under the Plan, such as the Fate of Toxics modeling, should be applied to both Category IA and IB chemicals, that is, to all chemicals exceeding standards, whether the standards are enforceable or not. Accordingly, lists of priority chemicals developed for analytic activities will include both lists of priority chemicals.

As indicated in the Public Involvement Plan adopted by the Four Parties last year, the Four Parties agree to communicate the Plan in layman's terms in a series of articles for local newspapers and RAP newsletters. We will include a description of the sorting process in these articles. We also believe that distributing information on toxic chemicals is a productive initiative and may reap additional benefits if directed to municipalities and industries that may be contributing toxics loadings to the river.

In deriving the Category IIA list of toxics, all data indicating presence or input of a chemical to the river should be reviewed. This includes the Toxics Release Inventory (TRI) and other source

data bases, pre-1986 data, localized data, etc. The chemicals should be prioritized for system-wide monitoring in the water column and/or biota, considering toxicity, persistence, suspected prevalence, mobility, and other appropriate factors. Once ambient data are available, they would be compared with available standards and criteria to classify the chemical in one of the Category I groupings. This is our primary mechanism for finding chemicals we are not looking for.

Question #2: What are the pros and cons of alternative views of the kinds of data used for categorization?

What the Public Says

The general consensus was that:

- All data should be included in the sorting process;
- Public resource constraints require that the most severe problems be tackled first; and
- Relying on only open-river data risks missing chemicals diluted by the large flow of the Niagara River.

Regarding the appropriate use of localized data (that is, data collected to determine whether toxics are migrating into the river from a point source, or a non-point source such as a waste site), some thought that localized data should be used to deal with local area problems, and others expressed concern that the local problem may not stay local.

Response

The Secretariat believes that all data should be considered in developing plans to reduce toxic chemicals in the river and lake. However, toxic chemicals need to be categorized for the Niagara River in order to provide a logical basis for determining appropriate system-wide actions for each chemical and for setting toxics management plan priorities.

Placing a chemical into Category IA or IB drives a series of river-wide management actions, such as developing improved ambient and loadings data, and modeling the transport and fate of toxics in the river and Lake Ontario as a basis for more comprehensive control programs. In addition, it is from these priority toxics that the Four Parties identify the toxics for 50% reduction. The Four Parties must have reasonable assurance that the chemicals placed in Category IA or IB merit this high priority and resource-intensive attention.

Accordingly, the data used to place a chemical in Category I must be representative of current open-water conditions in the Niagara River, or downstream of the river, in Lake Ontario. At present, the water column data collected at Niagara-on-the-Lake and fish tissue data from open-water species in the river and lake are the primary data to define the open-water conditions in the river.

All data showing exceedance of a criterion indicate potential impairment and should be identified in the NRTMP, though only those reflecting current open-water conditions warrant categorization as IA or IB:

- When a chemical is shown to exceed a criterion in only local data, the data will be referred to the appropriate RAP for follow up and reporting back to the Secretariat.

- When a chemical is shown to exceed a criterion in only non-Four Party data, it will be referred to the River Monitoring Committee for an evaluation of quality assurance/quality control and present day representativeness; data suitable for the purposes of the NRTMP will be used to recategorize chemicals as IA or IB.

- The River Monitoring Committee will be requested to prepare a prioritized and costed plan for adding such chemicals to the Four Party river monitoring program.

Further discussion of this issue is presented in the Secretariats' action memorandum in response to the Niagara River Categorization Report issued by the Categorization Committee.

Question #3: <u>How do you feel about broadening non-point source activities under the NRTMP beyond hazardous waste sites? What do you consider to be the most significant non-point sources, and how should the NRTMP address them</u>?

<u>What the Public Says</u>

The public consensus appears to be that we need to determine the significance of the various categories of non-point sources in contributing toxics to the Niagara River, but that if resources or other constraints are an issue, we should not lose our focus on waste sites.

Other opinions expressed were:

- We should define non-point sources. Is, for example, an out-of-basin source a non-point source?

- o We need to ensure that the 80% reduction in point source loadings since '81/82 does not include transfers to non-point sources.

- o We should deal with non-point sources by:

  - Conducting a literature search and investigating data from a comparable river basin;

  - Quantifying air deposition loadings to the Great Lakes (Others question how this can be done); and

  - Publicizing our findings so other agencies deal with problems under their jurisdiction.

Response

Certainly the amount of Four Party funds available to investigate non-point sources is limited. However, waste site study and cleanup in the U.S. is conducted by programs that are funded independent of the NRTMP. Therefore, the Four Parties feel that further non-point source characterization and remedy will not interfere with waste site cleanup. DEC and EPA remain committed to meeting the waste site cleanup schedules issued in their November 1989 report. The objective of the Plan with respect to non-point sources is to ensure that the sources contributing the greatest loadings -- whether waste sites or not -- receive the highest priority for investigation and cleanup or control.

Point sources to the Niagara River are defined as discharges through a pipe to the river. They include direct industrial and/or municipal discharges to the river, combined sewer overflows and storm water discharged through a pipe. Non-point sources are defined as all other sources of contaminants to the river and include tributaries to the river, seepage through the ground to the river, atmospheric deposition, and runoff from all sorts of land uses. Since contaminants coming from out of the Great Lakes basin presumably enter the basin from the air, these sources of air deposition would be considered non-point sources, even though some may originate from point sources such as smokestacks. Contaminants coming from Lake Erie to the Niagara River are considered the upstream load. In developing source loadings for a mass balance of the river, it is important to make these distinctions to ensure that all source categories are included and none is double-counted.

Discharge monitoring data show an 80% reduction of toxics from U.S. and Canadian point sources to the Niagara River since 1981/82. DEC and EPA's interim report, issued June 1989, states that the reduction on the U.S. side was due to several factors: completion of wastewater treatment plants, stringent permit

limits based on very stringent water quality standards, stabilization of start-up operations following new wastewater treatment plant construction, collection system remediation, plant closings and process shutdowns. It is possible that some reductions due to the first four factors may have transferred toxics to other media. DEC and MOE will determine to what extent this may be true.

The Four Parties are currently developing, with the assistance of academia, a methodology for estimating non-point source loadings by category, specific to the Niagara River and Lake Ontario basins. This work will include literature searches to identify similar work in comparable basins, or of a generic nature. Depending on the conclusions of this work and the actual development of loadings estimates, the Four Parties will evaluate alternative control measures, including publicizing results, negotiating with other government agencies, etc.

In light of the limited extent of the Niagara River basin, air deposition directly to the river basin is not considered to be significant. However, air deposition to the extensive upstream Great Lakes basin is considered to be a significant source of certain toxics to the headwaters of the Niagara River. The U.S. and Canada have program commitments to quantify air deposition loadings. If proposed legislation in the U.S. Congress is enacted, EPA will be charged with developing estimates of air deposition loadings to the Great Lakes basin and control programs within two years.

Question #4: <u>Do you have recommendations for how the NRTMP can better support the goal of pollution prevention</u>?

<u>What the Public Says</u>

The public represented at the workshop clearly endorses pollution prevention, and some endorsed it over treatment of pollution. They felt that we should develop a Four Party pollution prevention statement and an educational program for the public and industry, with cost reduction as a key element.

The public also recommends the following individual agency actions to encourage or require pollution prevention:

- Funding of EPA's pollution prevention initiative;
- Review and phase out of certain chemicals;
- Legislation to require pollution prevention, including economic incentives;
- Environmental audits by industry;

- o Refinement of Best Available Treatment with a pollution prevention objective; and
- o Requirement for pollution prevention in the review of wastewater discharge permits.

Response

The Four Parties agree that the prevention of toxic pollution is preferable to its treatment and is an essential element in making progress towards the goal of virtual elimination of persistent toxic substances. Pollution prevention is a strategy being embraced by numerous jurisdictions; under the Plan we think we can move pollution prevention forward in this region by initiating a cooperative venture with industry. DEC and EPA have developed pollution a prevention initiative, have secured a modest amount of funds to implement it, and have included it in the 1990 Update of the Plan. EC and MOE have a pollution prevention proposal that is awaiting development of an overall bi-national policy.

Pollution prevention is also achieved through some existing programs. For instance, EPA reviews and considers the phase out of pesticides under the Federal Insecticide, Fungicide and Rodenticide Act. Best Available Treatment standards are based on an assessment of the technology available specific to each industry and process, and include consideration of pollution prevention. Zero discharge, for instance, is required for certain processes in the U.S. paint industry.

The other recommendations for individual agency action and further action on the above activities would require new national or state/provincial laws or regulations. These options will be discussed during the workshop to be held with industry, as part of the U.S. pollution prevention initiative.

Question #5: How can biomonitoring be more useful in achieving the goals of the NRTMP? What elements need to be coordinated among the four agencies?

What the Public Says

There was public consensus that biomonitoring is the only way the Four Parties will be able to detect chemicals found in the water column at very low concentrations, but subject to bioaccumulation. There also was consensus that the biomonitoring should include several trophic levels, not just sportfish.

Some expressed a need for better quality assurance in biomonitoring, and for common criteria and integrated biomonitoring between the U.S. and Canada. Some recommended that all permits include biomonitoring.

Response

The Four Parties agree that biomonitoring is essential to detect the levels of certain chemicals in the ecosystem, and that contaminant levels found in any species should be evaluated for follow-up action. The categorization of Niagara River data, for instance, included not only sportfish but also spottail shiner data.

In response to a Secretariat request in 1989, the River Monitoring Committee established an ad hoc work group to encourage and coordinate development of standard protocols for biomonitoring sampling and analysis by DEC and MOE. The committee concluded that standardized biomonitoring protocols, while desirable, should await issuance of biomonitoring procedures by the International Joint Commission. The Secretariat will then consider standardized biomonitoring under the NRTMP.

Question #6: How well are we doing in carrying out the public involvement plan? How would you suggest we improve?

What the Public Says

The public was generally pleased with the format of the meeting and complimented the Secretariat on raising the key issues for discussion.

The Four Parties' public participation plan could be improved by:

- Mailing briefing materials well before the meetings;
- Inviting more of the public that should be interested to the meetings, such as industry, union and student representatives;
- Communicating loadings and environmental status in layman's terms;
- Improving communications among technical committees and between technical committees and their correspondents;
- Improving use of the media;

- Defining areas of coordination with the Remedial Action Plans (RAPs); and
- Ensuring public participation is meaningful.

Response

The Four Parties have:

- Set an objective of mailing briefing materials 3 weeks before meetings;
- Begun expanding the mailing lists to include other interest groups;
- Made a commitment to prepare articles on the NRTMP, in layman's terms, for RAP newsletter use;
- Prepared a guidance memo to technical committee chairs, members and correspondents on their roles and responsibilities, including communications;
- Made a commitment to facilitate use of the media;
- Defined categorization with localized data as an area for coordination with the RAPs; and
- Developed a Public Involvement workplan to improve interaction with the public, for instance, by scheduling workshops before the Secretariat prepares its recommendations to the Coordination Committee.

The following question was identified by the public as worthy of discussion, in addition to the six proposed by the Secretariat:

Question #7: Do you feel that the goal of the NRTMP should be expanded or revised? If so, how?

What the Public Says

The public feels that the 1996 goal of 50% reduction should be an interim target for the Plan, and that the ultimate goal should be zero discharge. Some asked what goal would apply after 1996.

Response

Consistent with the Great Lakes Water Quality Agreement, the Four Parties agree that zero discharge of persistent toxic substances is the ultimate goal for the Great Lakes and connecting channels like the Niagara River.

To move us in that direction, the Four Parties agreed to the 1996 target of 50% reduction of point and non-point sources of these toxics. In addition, DEC and EPA are initiating implementation of an Antidegradation Policy to, in essence, freeze the point source discharge of persistent toxic substances at no more than current levels.

It is logical that when the 50% interim target is met, if not before, the Four Parties would set the following additional goals:

- Attainment and maintenance of appropriate water column and fish tissue standards and criteria in the Niagara River and Lake Ontario; and
- Zero discharge.

Other Questions/Comments from the Workshop

(1) There was a statement regarding a lack of action and accomplishments of goals under the Plan.

Response

Since the release of the Niagara River Toxics Committee Report in the fall of 1984, the Four Parties, acting individually and together, have undertaken a variety of initiatives. Some of the major accomplishments of the Four Parties since that time are:

- We have reduced the loadings of EPA priority pollutants to the Niagara River from Canadian and U.S. point sources by more than 80 percent, as compared with the levels in 1981-'82.
- We have agreed on sampling and analytical protocols, for monitoring the ambient Niagara River water column; the ambient water quality data developed using these protocols serve as the primary basis for other analytical efforts under the NRTMP.
- We determined that fifteen toxic chemicals are problems in the Niagara River/Lake Ontario ecosystem. We are continuing to assess additional chemical data for possible expansion of this list.
- We determined that a subset of the fifteen problem chemicals has significant Niagara River sources; they are the chemicals subject to the 50 percent reduction requirement of the Declaration of Intent. Ten chemicals are already

listed, and we are continuing to assess additional chemical data for possible expansion of this list.

- o We quantified the base-year loadings of the ten chemicals to the river from point sources and estimated, by inference, the loadings from non-point sources. These are the basis for specific numerical load reduction targets for point and non-point sources of these ten chemicals by 1996. Consistent with the Declaration of Intent, these targets are 50 percent of the 1986-'87 base year loads. Targets will be refined as the data base is improved.

- o We have agreed on a framework for tracking progress in meeting the 50 percent load reduction commitments. The first annual progress report will be issued in December 1990.

- o We identified the twenty hazardous waste site clusters in the U.S. estimated to contribute 99 percent of the toxic chemical loading from all hazardous waste sites in the U.S. to the Niagara River. We also presented ambitious schedules intended to drive cleanup of these twenty site clusters. The best estimate of the potential toxic chemical loading from these sites to the river (694 pounds per day or 315 kilograms per day) is expected to be reduced to 8 pounds per day (4 kilograms per day) by 1996.

- o We identified certain toxic chemicals entering the Niagara River from Lake Erie at elevated levels. We brought this issue to the attention of the International Joint Commission, and we intend to make specific recommendations to ensure that the responsible jurisdictions address this inter-lake transport issue.

(2) Loadings and reductions should be defined in an ecosystem perspective, including upstream and upwind, with non-point sources as the key factor.

Response

The basic principle of the modelling of the Niagara River is the mass balance, that is, that the upstream loading of each chemical plus point and non-point source loadings, plus/minus gains and losses must equal the downstream loading of each chemical. This is an ecosystem approach to the river and lake. It is being applied now on a chemical-by-chemical approach, that is, identifying toxics of concern and seeking reductions in their levels in the river and lake so as to meet the 50% reduction commitment and to attain and maintain standards and criteria. With the proposal of ecosystem objectives for Lake Ontario in

June 1990, and the development of ecosystem indicators in the near future, we will have the beginning of an ecosystem check on the adequacy of our chemical standards and criteria.

With point sources relatively well characterized, the Four Parties agree that the focus of most of our attention needs to be paid to non-point sources.

(3) Regarding one category of non-point sources, hazardous waste sites, the following requests were made by one or more citizens:

- Describe the degree of confidence in the estimated loadings to the Niagara River from waste sites.
- Project the discharge from capped landfills.
- Describe the status of monitoring at waste sites.
- Describe the cleanup methods used at waste sites; clean up waste sites permanently.

Response

The degree of confidence in the estimated loadings to the river from waste sites in the U.S. varies greatly from site to site, depending on how much was known about the quality and quantity of the ground water leaving each site. The loadings report, prepared by Gradient/Geotrans under an EPA contract, characterized the degree of confidence for each site qualitatively as high, medium and low (Table I summarizes these estimates of confidence). EPA and DEC have committed to refine these loading estimates, first to make them chemical-specific, and second, to incorporate improved groundwater flow estimates from the United States Geological Survey. Then we intend to conduct site-specific modelling to substantially improve our confidence in the loading estimates.

The loadings estimates were developed for all sites considered to contribute significant loadings of toxics to the river, whether the sites were capped or not. Table I specifies the loadings estimated for the sites that are capped landfills.

Monitoring at each site varies greatly depending on the need to characterize further the conditions on and off site, and in all environmental media. Table I identifies the year of the most recent groundwater monitoring at each site. Under an agreement with EPA, the United States Geological Survey has also established 9 regional monitoring wells to better characterize ground water flow in the Niagara Falls area.

Regarding the last request, there is a great range of cleanup methods used at waste sites, depending on the circumstances at each site. Table I identifies some of the actions taken on the sites to initiate cleanup.

With improved techniques, the cleanup methods are becoming more tailored to site details and more permanent. For example, under the Superfund Amendments and Reauthorization Act (SARA) of 1986 there has been an increased emphasis on site clean-up to treat hazardous waste, rather than just containing it, that is, more innovative and alternative solutions in preference to conventional remedies.

Before SARA, innovative and alternative remedies (such as off-site incineration, removal, air stripping, and pump-and-treat remedies) were used on only six out of the ten Superfund sites undergoing clean-up action in New York State (data through fiscal year 1989). The other four sites used conventional methods, such as containment, capping, and slurry walls. Since SARA, the innovative remedies have been used more than three times as often.

Of the 26 sites undergoing clean-up after SARA and through 1989, 19 of the sites employed innovative and alternative solutions, whereas the conventional method was used on only 9 sites (Attachment III provides summary information for sites in New York State).

The solutions that EPA implements in cleaning up sites are those that, under law and regulation, provide for the optimal combination of protection of human health and environmental protection. The alternatives selection process takes into account nine criteria established under CERCLA, Section 121. The first two criteria are known as the threshold criteria, which must be met by each alternative:

- Overall protection of human health and the environment; and
- Compliance with applicable, or relevant and appropriate requirements (ARAR).

The next five criteria, known as the primary balancing criteria, are evaluated together for each site:

- Long-term effectiveness and permanence;
- Reduction of toxicity, mobility, and volume through treatment;
- Short-term effectiveness;

- o Implementability; and
- o Cost.

The last two criteria, known as the modifying criteria, are evaluated following the Remedial Investigation and Feasibility Studies (RI/FS) and the proposed plan. They are state and community acceptance.

These nine criteria and the program procedures ensure that the selected remedy will be protective of human health and the environment and will not be compromised by other factors, such as cost.

In some instances the chosen remedial action may not remove all the waste from the site. This may be the case if removal of the waste will cause a threat to human health (e.g., through release of harmful chemicals). Instead, by using on-site pumping and treatment, the waste may be contained and treated and provide a best solution satisfying the criteria. In this instance the site would be continually monitored. If site cleanup leaves hazardous substances on site, a review of the chosen remedy is conducted under the CERCLA program every five years to ensure that human health and the environment are being protected.

In summary, using these criteria, EPA/DEC select the most appropriate and effective action to clean up hazardous waste sites. They seek to implement the site cleanup method that provides a permanent solution. However, implementing the solution wherein no further site action is needed is not always the best of the available solutions.

(4) One statement was made regarding the lack of ecosystem consideration in setting standards.

Response

Standards and criteria are established based on receptors (humans, or aquatic or other wildlife) that need to be protected from contamination through various pathways of exposure (drinking water, fish consumption, etc.). We believe this is an ecosystem approach.

(5) How does one determine the most sensitive organisms?

Response

The simple answer to this question is to test the organisms. However, we know of no simple answer that also defines the criteria for determining which organism is the most sensitive.

Annex 10 of the Great Lakes Water Quality Agreement identifies criteria to be applied to hazardous contaminants, such as acute toxicological effects, as determined by whether the substance is lethal to:

i) one half of a test population of aquatic animals in 96 hours or less at a concentration of 500 mg/l per kg of body weight; or

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v) aquatic flora measured by a maximum specific growth rate or total yield of biomass which is 50% lower than a control culture over 14 days in a medium at concentrations equal to or less than 100 mg/l.

Perhaps a more practical answer is to consider an organism sensitive if it exhibits acute effects from a toxic at less than the median concentration for Lake Ontario organisms; and to consider an organism the most sensitive if it shows acute effects at the lowest concentration found. Another approach would be to limit this screening process to the important organisms in the lake, based on ecosystem, economic and/or recreational importance.

(6) Is sediment testing being done?

The Niagara River upstream/downstream ambient monitoring system regularly samples the river water column for over sixty toxic chemicals. This includes both the water and the sediment suspended in it.

On the Canadian side of the river, sampling of suspended sediment was conducted in 1983. The Sir Adam Beck Reservoir was sampled for sediment in 1985, and the Welland River was sampled at Atlas Specialty Steels (1987-90) and in the lower Welland River (1990).

On the U.S. side, sediments are being analyzed for metals and organic contaminants in the lower Buffalo River as part of a DEC/EPA project to determine the relative contribution of contaminants to the total load leaving the Buffalo River. Industries in New York have also recently conducted sediment coring surveys in Gill Creek and Pettit Flume.

DEC has also conducted extensive sediment analyses in the lower reaches of most of the major tributaries to the Niagara River in New York. Samples were collected and analyzed for metals and organic contaminants in about 1985 to 1987 from the Buffalo Ship Canal, Scajaquada Creek, the Black Rock Canal, Ellicott Creek, Tonawanda Creek, Pettit Flume, Cayuga Creek, Cayuga Island Little River, Gill Creek, Smokes Creek and the Union Ship Canal.

(7) How many sewers discharge directly to the Niagara River?

On the Canadian side, the sewers are:

- Queenston WPCP;
- Fort Erie (Anger Ave.) WPCP;
- Fort Erie (Stevensville/Douglastown) continuous discharge lagoon; and
- Combined sewer overflows at:
  - Niagara Falls, Ont. (4),
  - Fort Erie (5), and
  - Niagara-on-the-Lake (2).

On the U.S. side, there are a number of sewers. More significantly, perhaps, there are 26 U.S. and 8 Canadian significant discharges to the river. These include both municipal and industrial discharges with at least one toxic pollutant in their effluent. The MOE and DEC point source reports provide further details on the loadings from these wastewater discharges.

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