

UNFULFILLED PROMISES



A Citizens' Review of the International Great Lakes Water Quality Agreement

by
GREAT LAKES UNITED'S
WATER QUALITY TASK FORCE



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February 1987

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Great Lakes United

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PREFACE

In Ottawa, on November 22, 1978, representatives of the Canadian and U.S. governments signed the Great Lakes Water Quality Agreement (GLWQA). In this precedent-setting international Agreement, the two federal governments committed themselves to work cooperatively, using an ecosystem approach, to rid the Lakes of persistent toxic substances.

Since that time, numerous programs have been developed and billions of dollars have been spent by the federal, provincial, state and municipal governments in the Great Lakes Basin in an effort to achieve this goal. Despite progress, the present state of the Lakes shows that the promises of the GLWQA are largely unfulfilled.

We were shocked to see many blatant violations of those promises on our tour of the Lakes between July and October 1986. Plumes of black contaminants still reach out into the Lakes. Large cities still dump sewage that has only received primary treatment. Industrial smoke stacks still belch contaminants into the air. Old dump sites continue to leak dioxins, PCBs and numerous other insidiously destructive chemicals into rivers and lakes. Agricultural runoff continues to release massive quantities of pesticides and phosphorus-laden fertilizers into the Basin's waters. Dredging operations still pour toxic sediments into open waters. Every day hundreds of trucks still dump contaminated fill into the Lakes.

Fish have returned to waters that were once too oxygen-deficient to support them because of excess algae growth. But now many fish are afflicted with tumors and are unsafe to eat. The public fears the immediate and long-term effects of toxic chemicals on their health and their environment.

Nevertheless, we returned from our tour of the Lakes full of hope. This hope is based on our faith in citizens' actions. We were inspired by the determination and commitment of citizens throughout the Basin to find and implement solutions to the problems created by toxic contaminants. Their actions are having dramatic impacts.

Citizens throughout the Basin are calling on the governments to be much more aggressive in protecting the Lakes. Central to their demands is stopping the discharge of contaminants into an already over-burdened system. It is clear to the Great Lakes citizenry that zero discharge of persistent toxic substances is the only hope for our future.

Great Lakes residents also insist on being much more directly involved in decision-making that affects the quality of the Lakes and the quality of their lives.

We are honored to convey in this Report the concerns, solutions and hopes of those citizens from throughout the Great Lakes Basin who spoke with us during the Citizens' Hearings on Great Lakes Water Pollution.

February 1987

John Jackson and Tim Eder
on behalf of
Great Lakes United's
Water Quality Task Force

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ACKNOWLEDGEMENTS

This record was made possible by the dedication of people throughout the Great Lakes Basin who gave countless hours of their time to this effort. Great Lakes United would like to express its gratitude to the 382 people who testified at 19 hearings around the Basin. Their careful presentations have made this a thorough record of the problems facing the Great Lakes Ecosystem. Their collective vision makes this a record of passionate stewardship and of their resolve to restore the health of their Lakes.

At each hearing local volunteers assisted GLU staff in organizing facilities, publicity, speakers, news conferences and tours. We are indebted to these dedicated individuals and groups for the success of the hearings and this report. Local experts willingly volunteered to join GLU Task Force members on the hearing panel and on the tours. Hearing facilities and boats for the tours were generously provided. Local press enhanced our efforts to publicize Great Lakes water quality concerns by covering our hearings.

GLU's Water Quality Task Force is especially indebted to John Jackson and Tim Eder for their commitment to the project. Their dedication and hard work were responsible for the effective and timely completion of this project and report.

Several people deserve special thanks for sharing their computer and printing expertise, including Robert Bachman, Robin McClellan and David Gianturco.

We are all most grateful for the inspiration provided by the beauty and wonder of the Great Lakes.

GLU gratefully acknowledges the funding for this project that was provided by the Public Welfare Foundation, Inc. of Washington, DC, and the William H. Donner Foundation, Inc. of New York City.

THE 1978 GREAT LAKES WATER QUALITY AGREEMENT

Residents throughout the Great Lakes Basin are alarmed by the impacts of toxic chemicals on their health and on the environment they live in. Warning signs about the potentially devastating impacts of toxics in the Great Lakes have been around for a long time.

Public concern and pressure led governments on both sides of the U.S.-Canadian border to work together to find solutions to the problems. In 1972, the U.S. and Canadian federal governments signed the first Great Lakes Water Quality Agreement (GLWQA). This Agreement committed the two governments to work cooperatively to clean up and protect Great Lakes water quality.

The 1972 Agreement focussed on reducing the amount of phosphorus released into the Lakes. Phosphorus was contributing to massive growths of algae in many parts of the Great Lakes Basin. Lake Erie had been declared "dead" because excessive algae growth was making the Lake incapable of supporting all but the most pollution-tolerant species of fish. Dead fish and slimy, smelly masses of algae were washing up on beaches, making them unusable. Substantial progress was made under the 1972 Agreement in cutting back on nutrients discharged from municipal sewage treatment plants; consequently algae growth was reduced.

In the mid-1970's, people throughout the Basin began focussing their attention on a less visible but more threatening enemy that was permeating the Lakes - toxic chemicals. The governments responded by replacing the 1972 Agreement with the 1978 Great Lakes Water Quality Agreement. This Agreement calls for continued phosphorus controls, but focusses more attention upon controlling toxic chemicals.

The 1978 Agreement contains two dramatic new initiatives: the use of the ecosystem approach for protecting the environment and the goal of zero dis-

charge of persistent toxic substances.

The Agreement recognizes that all areas of the water, land and air of the Great Lakes Basin are so intimately intertwined that events in one part can have significant consequences in another part. Lake Superior, for example, is being contaminated by PCBs that evaporate from the surface of Lake Ontario. The PCBs are blown to the northwest through the air where they fall with snow and rain into the Lake Superior Basin. Scientists suspect that the high levels of dioxins found in snapping turtles in the St. Lawrence River come from industrial dumps leaking into the Niagara River, over 200 miles away. The 1978 Agreement, therefore, enshrined the ecosystem approach as the basis for making decisions affecting Great Lakes water quality, taking into account the intricate web of interrelationships of land, air and water.

Scientists suspect that the high levels of dioxins found in snapping turtles in the St. Lawrence River come from industrial dumps leaking into the Niagara River, over 200 miles away.

The Agreement also lays down the principle of virtual elimination or zero discharge of persistent toxic substances. It recognizes that the only way to protect the Great Lakes and their residents from toxics is to stop putting these substances into the air, water and land. Therefore, the U.S. and Canadian federal governments committed themselves to prevent the discharge of persistent toxic substances.

The parties to the Great Lakes Water Quality Agreement - the U.S. and Canadian federal governments - charged the International Joint Commission (IJC) with the responsibility for monitoring progress under the Agreement. The IJC is responsible for assessing the state of the Lakes and commenting on the actions of the responsible governments. It is

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also charged with encouraging cooperation among the parties.

The IJC, created by treaty in 1909, is made up of six commissioners, three appointed by the U.S. government and three by the Canadian government. A Water Quality Board, a Science Advisory Board and a regional office in Windsor, Ontario, were set up to assist the IJC in carrying out its responsibilities under the 1972 and 1978 Agreements.

The 1978 Agreement requires the U.S. and Canadian governments to review the Agreement after the IJC releases its third biennial report. The IJC's report is now completed.

The IJC provided only one limited opportunity, at its Kingston biennial meeting in 1985, for the public to make input into its review of the Agreement. Neither federal government has announced plans to provide such opportunities. As a result, the people whose lives are most

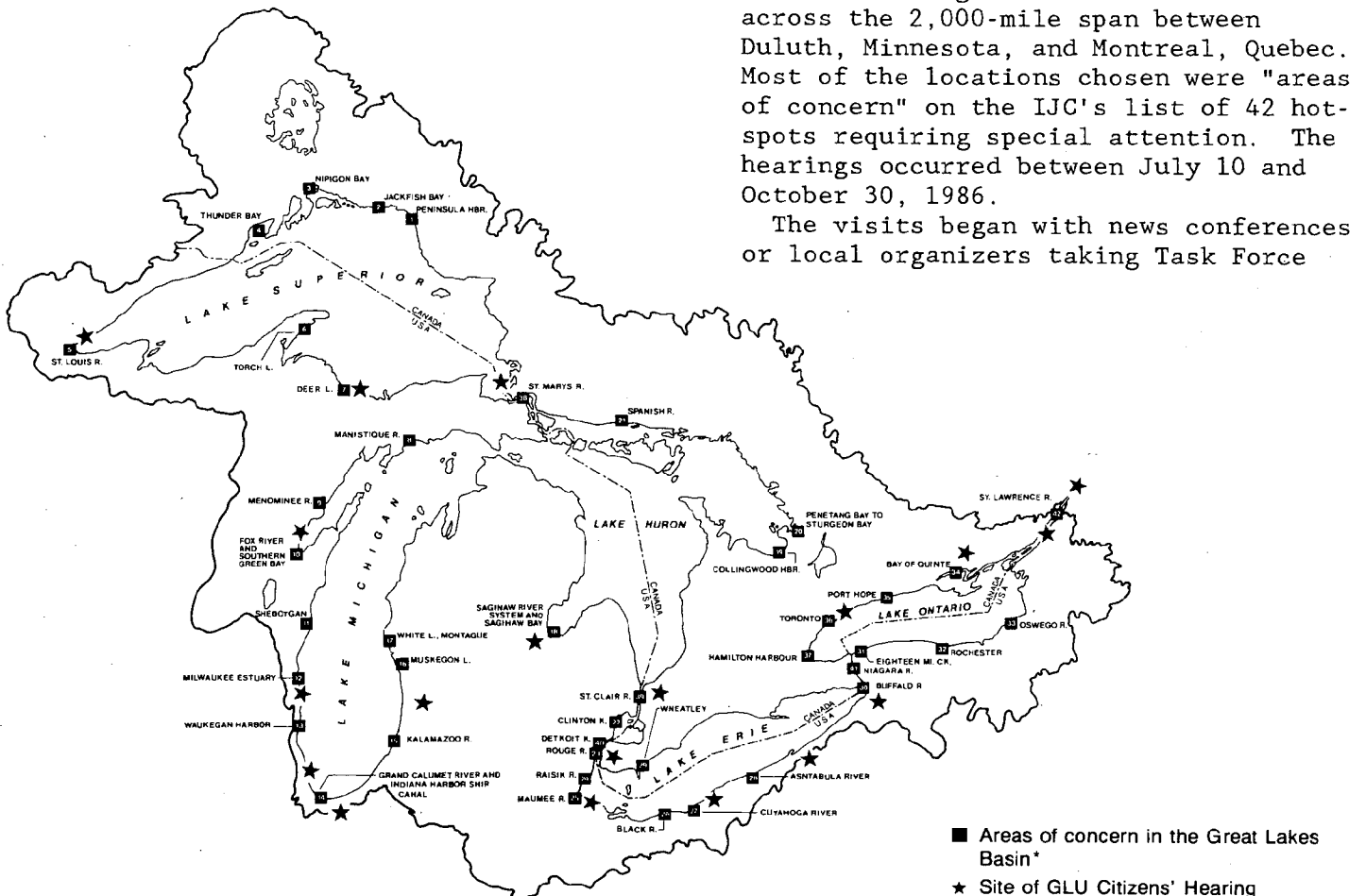
directly affected by the Lakes and the problems created by toxic contaminants are excluded from the official review of this important Agreement.

GLU'S CITIZENS' HEARINGS ON GREAT LAKES WATER POLLUTION

Because of the IJC's and the two federal governments' failure to provide adequate opportunities for public input, Great Lakes United (GLU) set up 19 Citizens' Hearings on Great Lakes Water Pollution. These hearings were designed to give the public an opportunity to express their concerns and to present proposals for improving the GLWQA. GLU committed itself to convey these concerns to the government bodies responsible for reviewing progress in implementing the GLWQA.

GLU's Water Quality Task Force organized 19 hearings in locations scattered across the 2,000-mile span between Duluth, Minnesota, and Montreal, Quebec. Most of the locations chosen were "areas of concern" on the IJC's list of 42 hot-spots requiring special attention. The hearings occurred between July 10 and October 30, 1986.

The visits began with news conferences or local organizers taking Task Force



members and the media on a tour of some of the problem sites in their community. From boats and strategic locations on bridges or on land, the GLU Task Force and media were able to see some of the sources of toxic contaminants to the Great Lakes. The tour of local toxic hot-spots was followed by a public hearing.

Over 1,200 people attended the hearings. Three hundred and eighty-two made presentations or presented statements by mail.

Over 1,200 people attended the hearings. Three hundred and eighty-two made presentations or presented statements by mail. The presenters came from a wide-range of organizations and backgrounds, including citizens' groups, Indian Bands, environmental groups, long-time residents, fishing and hunting associations, school children, wildlife groups, labor, industry, chambers of commerce, clergy, academics, political parties, employees of the IJC and federal, provincial, state and municipal elected officials and civil servants.

THE CITIZENS' VIEWS

The citizens of the Great Lakes Basin are dismayed at conditions in the largest, most valuable body of surface fresh water in the world. Fifty to seventy pounds of PCBs are discharged into Green Bay each year; the murky Grand Calumet River is a sewer for toxic industrial and municipal discharges; dioxins leak from industrial dumps into the Niagara River. But the degradation of the environment spreads far beyond widely known, infamous sources of pollution such as these. Abandoned dump sites leak into Duluth Harbor; the bottom of the now-drained Deer Lake near Marquette, Michigan, is contaminated with

mercury; a river of human feces flows into Lake Erie from Erie, Pennsylvania. The Task Force was greeted virtually everywhere by sights and stories such as these.

In the relatively pristine Lake Superior area, many speakers were concerned that because the threat from toxics are less obvious and less immediate the public and government is being complacent and, therefore, will fail to deal with the warning signs of potential problems before it is too late. A speaker in Duluth stated that the special features of Lake Superior also makes it "more vulnerable".

A Milwaukee speaker reflected the fear of most residents of the Basin when he described contamination of the environment as a "chemical time bomb ticking away inside of us" that may explode creating devastating and irreparable health problems. "What we pump down the sewers this week will end up in our cornflakes next year and eventually in my blood and fatty tissues," said a Toronto resident. A Kingston health official spoke of the inadequacy of health data and of the numerous unanswered questions about the impacts of toxic chemicals on human health.

"What we pump down the sewers this week will end up in our cornflakes next year and eventually in my blood and fatty tissues," said a Toronto resident.

Eloquent pleas to clean up the Great Lakes came from the seven Indian Bands who spoke at GLU's hearings. In Cornwall, Sarnia, Duluth, Sault Ste. Marie and Montreal, the Task Force was told of the threats that contamination of the Great Lakes Ecosystem poses to the way of life of the estimated half-million Indian people who live in the Great Lakes Basin.

An Indian leader in Cornwall said that Indian families used to eat 20 to 30 pounds of fish every week. Because of

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high contamination levels they have now advised children and women of child-bearing age not to eat fish. This is only one of the ways in which the Indians traditional way of life, linked to the St. Lawrence River and the Great Lakes, is being destroyed by toxic chemicals.

... the Indians traditional way of life, linked to the St. Lawrence River and the Great Lakes, is being destroyed by toxic chemicals.

Contamination is also having serious effects on fish and wildlife. At Green Bay, a dead cormorant with a twisted bill sat on the hearing table; a fish spotted with lesions was brought to the Windsor hearing. In Cornwall, the Task Force was told of the high levels of dioxins and PCBs in fish, turtles and wildlife in the area. Dead beluga whales found at the mouth of the St. Lawrence River contain high levels of PCBs, mirex and heavy metals, according to testimony presented at the Montreal hearing. In Marquette, the decline of eagles, osprey and peregrine falcons along the south shore of Lake Superior in the 1960's and 70's was described; this decline and the birds' slow return in the 1980's was partially explained by toxics in their food supplies.

Convinced that the risks posed by the toxic contaminants already in the Great Lakes Ecosystem are substantial, speaker after speaker came forward at every hearing to unequivocally state, "No more toxics should be discharged into the Great Lakes." "We want zero discharge period, and no more excuses," said a speaker at the Sarnia hearing.

Many speakers emphasized the importance of using the ecosystem approach. They gave examples of contaminants from distant sources showing up in fish and wildlife in their communities. The mirex found in the Beluga whales discussed at Montreal could only have come from Lake Ontario. Evidence suggests that dioxin in turtles in the St. Lawrence are coming

from dumps along the Niagara River.

Montreal speakers said that a massive load of toxic chemicals from throughout the Great Lakes Basin pours down the St. Lawrence River. Despite this intimate connection with the Great Lakes Basin, they are not part of the GLWQA and, therefore, not part of decision-making processes that directly affect their environment and health. This was decried as a failure to use the ecosystem approach.

Inattention to contaminants in the air and groundwater was pointed out by many speakers as another failure of governments to come to grips with the relationships between land, air and water in implementing the GLWQA. Duluth and Marquette speakers emphasized the major role that substances like toxaphene travelling through the air from sources as distant as the southern U.S. play in the contamination of Lake Superior. Speakers in Windsor feared the consequences of air contamination from a municipal incinerator under construction in Detroit. Contaminated groundwater was a major concern of speakers in Grand Rapids. In several locations, concern was raised about the hundreds of contaminated groundwater sites leaking into the Great Lakes.

... contaminated sediments in the bottoms of harbors and other water sources are "a reservoir of toxins to the Lakes".

A Chicago speaker described contaminated sediments in the bottoms of harbors and other water courses as "a reservoir of toxins to the Lakes". Fears that these pollutants are being stirred up and recycled through the ecosystem were voiced in all parts of the Basin. The magnitude of this problem combined with uncertainty about how to correct it makes in-place contaminants a source of immense concern and frustration for many people throughout the Basin.

Many residents are alarmed at the ways

in which dredge spoils are handled. Concern about contaminated sediments leaking from contained disposal units along the water's edge were raised in places such as Green Bay, Duluth, Chicago, Toledo, Saginaw and Toronto. Citizens are distressed at the open-lake disposal of contaminated sediments from the Maumee River at Toledo into Lake Erie. In Saginaw, citizens condemned the practice of overflow dredging which allows sediment-laden water to wash over the sides of the boat that is supposedly removing sediments and contaminants. Toronto speakers opposed the practice of dumping dredge spoils and contaminated excavation materials from construction sites into Lake Ontario.

Hazardous wastes are leaking into the Great Lakes Ecosystem from many sources. Leaking toxic waste dumps line many of the water courses in the Great Lakes Basin. Speakers at the Sarnia, Cleveland and Erie hearings presented evidence showing that hazardous wastes injected into deep wells may be contaminating their environment. Proposals for injecting more hazardous wastes into deep wells were strongly opposed by citizens in Gary and Cleveland. Speakers in Marquette, Kingston, Toledo, Cleveland and Saginaw explained their concerns about radioactive wastes leaking into the Great Lakes.

Agriculture is the largest land use in the Great Lakes Basin. Agricultural fertilizers and pesticides were described by many speakers as major sources of hazardous organic chemicals and phosphorus to the Lakes. These concerns were especially strongly emphasized by speakers in Erie, Toledo and Saginaw.

The hopes of many residents around the Great Lakes for cleaning up heavily contaminated areas lie with remedial action plans (RAPs). But many residents fear that the present focus on conducting studies for these RAPs is delaying the strong actions needed to immediately clean up these hot-spots and stop the discharge of more contaminants. As a speaker at the Gary hearing said, "There

has been too much study; we want action now."

"The key to the success of RAPs is public involvement," said a Green Bay speaker. Successful efforts to involve the public in Green Bay and the development of a remedial action plan by citizens in Toronto were held up as models to be followed in other regions. In areas such as Cleveland, the public felt that they were not being adequately involved.

"There has been too much study; we want action now."

The apparent contradiction between jobs and the environment was referred to by speakers in many locations. After hearing about the impacts of industrial discharges in the Cornwall-Massena area on the health and livelihood of Indians, a worker from Massena, New York, said sorrowfully, "My hope ... is that my job and the environment are not incompatible." But labor leaders from Milwaukee, Grand Rapids, Windsor, Cleveland, Toronto and Buffalo stressed that this seeming contradiction is based on a short-term, narrow perspective. These speakers pointed out that economic and environmental well-being go hand in hand.

Repeatedly citizens throughout the Basin told the Task Force that the federal, provincial and state governments have failed to implement the GLWQA. "The Agreement must be implemented and enforced." "The governments must meet the problem head on by putting their money where their mouths are." "Emission standards must be toughened." "We must go beyond problem definition to cleanup." "Commitment is the key." Statements such as these were made at every hearing.

Many citizens looked to the IJC as a possible savior of the Lakes, but others were disillusioned by the IJC's lack of forceful action. A Sarnia speaker described the IJC as a "toothless tiger;" in Windsor, the IJC was called "wimpy;" a

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speaker in Buffalo warned, "Don't put the IJC on a pedestal."

The public is demanding more complete information from government and industry on the condition of the Lakes and the use and discharge of toxic substances.

Citizens insist on being more completely included in decision-making on matters affecting Great Lakes water quality. A speaker at the Chicago hearing said that citizens' pressure created the GLWQA and citizens' pressure will ensure that it is implemented. A speaker at the Sarnia hearing explained the reason behind public involvement: "Why do people like me get involved? Because I live here."

"Why do people like me get involved?
Because I live here."

FINDINGS AND RECOMMENDATIONS

The GLU Task Force has carefully considered the evidence presented to it by the 382 delegations who appeared at its hearings in 19 locations throughout the Great Lakes Basin. On the basis of this evidence, the Task Force has arrived at some basic conclusions on the nature of the problem and recommendations for actions to protect and clean up the Great Lakes Basin Ecosystem.

The Task Force concludes that if the governments had incorporated the principles of the GLWQA into their own laws and programs, much more progress could have been made in improving Great Lakes water quality. But, tragically, the responsible bodies - the federal, provincial and state governments - have failed to adhere to the principles of the Agreement and, in some instances, have not even enforced their own laws and regulations.

The root of the problem is a lack of political will. Intense, on-going public pressure is the mechanism that will produce that political will. Lack of

information and lack of mechanisms for holding the governments accountable to the public have militated against the generation of this public pressure.

Lack of information and lack of mechanisms for holding the governments accountable to the public have militated against the generation of public pressure.

The Task Force's recommendations are based on the premise that the Agreement is basically sound. The challenge is to make those who are responsible for implementing it more responsive to the public's demands. This report contains two kinds of recommendations. Some propose ways to clean up the Great Lakes and avoid further contamination. Others are aimed at providing better access to information so the public can assess government and industry actions that affect Great Lakes water quality; these are also aimed at expanding the opportunities for the public to convey their concerns and proposals to government.

1. RENEGOTIATION

Most of those who spoke at the hearings emphasized the need for immediate actions to correct water quality problems. Renegotiation of the Great Lakes Water Quality Agreement at this time would mean the diversion of resources and a resultant delay in addressing these problems. In addition, many speakers expressed little faith in the Reagan and Mulroney administrations' commitment to protecting the environment. They feared that if opened up for renegotiation at this time, the Agreement would be weakened.

These two concerns combined with statements from all parties at the hearings that the Agreement is a document that encourages positive actions and does not interfere with or discourage such action leads the GLU Task Force to conclude that the Agreement should not be renegotiated now.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the two federal governments not renegotiate the Great Lakes Water Quality Agreement at this time.

The United States and Canada should, however, sign an amendment to the Agreement changing the definition of the Great Lakes Basin Ecosystem to include the drainage basin of the St. Lawrence River at or upstream of Trois Rivieres.

There is little evidence that current government programs are driven by the principle of zero discharge.

2. ZERO DISCHARGE

Almost all those who testified, including some industry representatives, agreed that the discharge of persistent toxic substances into the Great Lakes Basin Ecosystem should be virtually eliminated. There is little evidence, however, that current government programs are driven by this principle.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments incorporate the virtual elimination of persistent toxic substances as the guiding principle of their water quality management programs.

The IJC, federal, provincial and state governments should annually assess and report to the public on progress in achieving zero discharge.

The IJC should recommend programs and timelines for achieving zero discharge of persistent toxic substances.

3. PUBLIC INFORMATION AND INVOLVEMENT

Public access to information and opportunities to be involved in decision-making are basic rights. Because the Agreement does not have the force of law,

it is essential that the public be informed and involved to generate the political will and funding to achieve the Agreement's goals. But public information and involvement programs are woefully inadequate and grossly underfunded in all government jurisdictions in the Great Lakes.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that all governments and the IJC provide full and timely disclosure of information on Great Lakes water quality issues. These bodies must incorporate the public much more fully into their processes for making decisions affecting Great Lakes water quality.

Presently, the biennial reports of the IJC's Water Quality Board are the most complete assessments on water quality conditions in the Great Lakes and of progress at implementing the Agreement. Since this Board is made up exclusively of senior administrators of the governments responsible for implementing the Agreement, there is a built-in bias and an incentive not to be openly critical of the shortcomings of the agencies they are employed by. Non-government members on IJC boards would bring much more objectivity to evaluations and responsiveness to public concerns.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that representatives of non-government interests, including environmental and public interest groups, be appointed to the Water Quality Board.

The IJC should also set up a citizens' advisory board, made up entirely of non-government, citizen representatives, to hold public hearings, issue reports and make recommendations to the IJC.

4. HUMAN HEALTH

The public in the Great Lakes Basin fears the long-term impacts of chemical contamination on their health and the health of future generations. The Royal

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Society of Canada and National Academy of Sciences' statement that residents of the Great Lakes region carry a higher body burden of toxic substances than similar large population groups in North America was repeatedly raised with alarm.

The public fears the long-term impact of chemical contamination on their health and the health of future generations.

Information on the cumulative health effects of mixtures of chemicals found in the Great Lakes Basin Ecosystem and food supplies is scarce. Ironically, at the same time as public concern and demands for information on health impacts have been increasing, both the Canadian and U.S. federal governments have cut back their budgets for environmental toxicology and epidemiological programs.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC, federal, provincial and state governments greatly increase their research and public information programs on human health impacts of toxic chemicals. These research and information needs include:

- * information on total body exposures to chemicals, and the effects of these exposures on human health,
- * information on the effects of chemicals and mixtures of chemicals throughout the food chain and
- * detailed information on contaminant levels in foods, air and drinking water.

5. THE ECOSYSTEM APPROACH TO CONTROLLING TOXIC SUBSTANCES

Despite the inclusion of the term "ecosystem" in the 1978 Great Lakes Water Quality Agreement, the ecosystem approach has not been followed by the governments in their water quality programs. The contributions from several significant sources of toxics to the Great Lakes Basin have not received sufficient attention. These neglected sources

include the atmosphere, groundwater and non-point runoff.

One of the most frustrating examples of failure to use the ecosystem approach occurs in the clean-up process when contamination problems are created by moving hazardous wastes from one spot to another. The handling and disposal of contaminated dredge spoils and of materials in hazardous waste sites are two examples where this inattention to broader ecosystem impacts is having devastating consequences for the environment.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that new chemicals be rigorously tested to insure environmental and human health safety before being produced or marketed.

The governments should create an inventory of atmospheric and groundwater sources of toxics to the Great Lakes Basin Ecosystem.

The governments should also develop and implement programs to control and cut off these and other sources of toxics that are now receiving little attention. These programs should include eliminating combined sewer overflows, controlling agricultural runoff, destroying the contents of leaking hazardous waste sites, placing strict controls on toxic discharges from incinerators and banning deep well injection and landfilling of wastes where the waste is likely to migrate to the lakes, channels and tributaries.

Industry must change production processes to minimize the use of hazardous materials. Consumers must demand products that result in less environmental degradation.

Minimizing contamination of the ecosystem requires cutting off contaminants at their source. This requires industry to change production processes to minimize the use of hazardous mater-

ials. Consumers must demand products that result in less environmental degradation.

6. IN-PLACE CONTAMINANTS AND DREDGING

One of the most pervasive and difficult problems in the Great Lakes is the contaminated sediments in rivers, harbors and bays. These contaminants form a reservoir of toxic substances that are highly susceptible to being recirculated through the ecosystem. Dredging for navigation purposes aggravates the problem. Strict controls must be implemented to avoid creating further problems.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that governments develop management strategies for controlling sedimentation and in-place pollution. The principles of this strategy should be:

- * elimination of sources of in-place contaminants and
- * substantial reduction of sedimentation.

Overflow dredging and open-lake disposal of contaminated dredge spoils should be banned.

Much more research should be conducted both on methods to destroy, treat, and neutralize toxics without removing sediments and for destroying, treating, reclaiming, and disposing of contaminated sediments that are removed by dredging.

7. THE INTERNATIONAL JOINT COMMISSION

The IJC has failed to provide the strong leadership that is required to clean up and protect the Great Lakes Basin Ecosystem. The IJC must become much more aggressive at promoting the goals of the Great Lakes Water Quality Agreement and more responsive and accountable to the public.

In their pleas at the hearings for a basin-wide institution to assume responsibility for enforcing the Agreement, many

speakers suggested giving the IJC much greater authority. This is not necessary since the Agreement already grants the IJC sufficient authority. If the IJC fully exercised its existing authority, it could be much more valuable and effective.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC use its authority under Article VII of the Agreement to publicly issue opinions on proposed government programs and projects potentially affecting Great Lakes water quality.

The IJC should more directly involve the public in its activities by opening all its board meetings to the public, promptly issuing reports, placing public representatives on its boards and setting up a citizens' advisory board.

If the IJC fully exercised its existing authority, it could be much more valuable and effective.

The IJC should also put much greater resources into its public information and consultation programs.

8. THE FEDERAL, STATE AND PROVINCIAL GOVERNMENTS

None of the governments responsible for protecting Great Lakes water quality has demonstrated a serious commitment to the goals of the 1978 Agreement. The governments regard the Agreement merely as an advisory document. Too often they don't even bother to formally respond to the IJC's concerns and recommendations on Great Lakes water quality.

The federal, state and provincial governments must dedicate themselves much more seriously to achieving the goals of the Great Lakes Water Quality Agreement.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, state and provincial governments make sure that all their

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legislation, regulations and programs affecting Great Lakes water quality are consistent with the Agreement. They should submit such initiatives to the IJC for comment prior to adoption.

Each year the federal, state and provincial governments should submit a report to their respective legislatures on their progress in implementing the Agreement. Congress and Parliament should hold annual hearings on the Agreement. The IJC Commissioners and federal administrators should be required to testify at these hearings. The public should also be encouraged to testify.

Too often governments don't even bother to respond to the IJC's concerns and recommendations.

More directly involving the legislative branches in assessing progress under the Agreement will make the responsible parties more accessible and accountable to the public.

THE REPORT

Part I of this report contains descriptions of each of GLU's 19 stops during the Citizens' Hearings on Great Lakes Water Pollution.

Part II discusses the roles the public, industry and government have in addressing Great Lakes water quality issues.

Part III contains detailed recommendations by subject area. Prior to each recommendation is a description of the problem and of the proposals made by delegations to the Task Force for solving the problems.

The GLU Task Force is confident that the full commitment of the governments, industry and citizenry throughout the Great Lakes Basin can produce dramatic results. The determination, vigilance and creativeness of the residents of the Basin will be the primary driving force behind cleanup. The overwhelming response of the public to GLU's tour of the Great Lakes demonstrates the vitality of that force throughout the Basin.

PART I: A TOUR OF THE LAKES

This report is based on the experience of the people who live in the Great Lakes Basin. At each of 19 locations in the eight Great Lakes states and Ontario and Quebec, the Task Force was told of the environmental problems residents encounter, their hopes for the future and their ideas for cleaning up and protecting the Great Lakes. This part of the report provides a snapshot of the Task Force's experiences at each of the 19 Citizens' Hearings on Great Lakes Water Pollution.

MILWAUKEE

On the morning of July 10th, Susan Mudd of Citizens For A Better Environment guided the Task Force, media and representatives of the Lake Michigan Federation on a tour of Milwaukee Harbor. From a boat supplied by the Harbor Commission, we saw the piles of salt, coal and scrap-iron lining the harbor banks. It was easy to see how runoff from these unprotected piles adds lead, chromium, mercury, arsenic and phenols to the already-polluted sediments in the bottom of the harbor. According to a 1983 U.S. Geologic Survey report, these piles are the source of up to 80% of the contaminants such as mercury that enter the harbor.

As the boat circled the Jones Island sewage treatment plant, Mudd described the problems with the plant, Milwaukee's main facility for treating domestic and industrial discharges. Through court

action, the Milwaukee Metropolitan Sewage Department, in conjunction with local industries, blocked the State's attempts to limit toxic discharges from the plant.

At the hearing that evening, we heard the first of many references throughout the tour to a primary concern of basin residents: the profound, but poorly understood, effects of toxics on human health. Reference was made to the Royal Society of Canada and the National Academy of Science's report on the Agreement; this report stated that residents of the Great Lakes region carry a higher body burden of toxic chemicals than people in other parts of North America. State Representative Jeff Neubauer spoke of the "chemical time bomb" in Lake Michigan. He called for blood tests on area residents for PCBs and other chemicals. Roger Boesch from the Wisconsin Environmental Decade described an EPA study that showed infants of mothers who regularly consumed Lake Michigan fish had "poor muscle responses and slowed emotional responses."

Several speakers talked about the importance of a clean, healthy environment to the rebuilding of the state's economy. State Senator John Norquist said, "There are various industries that depend on clean water--commercial and sport fishing, Universal Foods, the breweries--but I don't know of one industry that depends on dirty water."

Ken Germanson, who spoke on behalf of the OSHA Environmental Network, blasted the myth that it is necessary to sacri-

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face jobs in exchange for effective environmental protection. He said his members believe strong environmental laws create jobs. Even in the face of a 30% job loss in the last 10 years, they still realize the need to clean up the environment.

"There are various industries that depend on clean water — commercial and sport fishing, Universal Foods, the breweries — but I don't know of one industry that depends on dirty water."

Several speakers talked about pollution problems that have escaped regulation, control and cleanup. Susan Mudd said non-point runoff from farmland and cities is a major source of toxins in Milwaukee Harbor. John Stauss of the Sheboygan County Water Quality Task Force was frustrated with the 15 years spent haranguing for a cleanup of PCBs in the Sheboygan Harbor. "Not a cubic yard has been removed," he said.

Miriam Dahl from the Milwaukee Chapter of the Izaak Walton League summed up decades of frustration with dischargers' recalcitrance and government inaction:

STOP the influx of wastes into our rivers and lakes.

STOP the stuffing of our lands with lethal products and by-products.

STOP storing wastes in caves.

STOP allowing non-point runoff to pollute our waters because it is "no one's responsibility."

STOP governmental units and industry from "passing the buck" of responsibility. Each must do its share. ALL must cooperate.

STOP allowing production of chemical substances until they are proved safe.

GREEN BAY

The morning of July 14th was spent on a closed lane on the Tower Drive Bridge over the Fox River. Becky Leighton, a local organizer with the Lake Michigan Federation, pointed in all directions, showing our Task Force and members of the media sources of toxics to Green Bay and Lake Michigan. To the south, we saw the smokestacks of half a dozen paper mills. To the west, on the water's edge, were unprotected piles of coal and other raw materials. To the north and east were Kidney Island (a local confined disposal facility for contaminated dredge spoils), a dark brown plume of effluent coming from the city's waste water treatment plant and more papermills.

Papermill discharges of PCBs, furans and dioxins were the major problems the public discussed at the Green Bay hearing. Virtually every speaker demanded that the discharge of 50-70 pounds of PCBs per year from Fort Howard and other paper companies be banned.

Because of high contamination levels, the Wisconsin Department of Natural Resources (DNR) advises against consuming chinook salmon, brown or lake trout, small or largemouth bass, walleye, northern pike and several other species of fish from the Bay or River. According to wildlife researchers, at least five species of fish-consuming birds--including the endangered Forsters Tern--have deformities and low reproductive success. One such bird, a stuffed cormorant with a twisted beak, sat on the hearing table as 22 speakers came to the microphone.

Speakers complained that, despite such clear evidence of problems, governments are not spending enough time or money studying the biological effects of toxics. Thomas Erdman of the Richter Museum of Natural History pointed out that, ironically, the Canadian Wildlife Service spends more on research in Green Bay and Lake Michigan than either the U.S. Fish and Wildlife Service or the Wisconsin DNR.

Several speakers spoke of the importance of a clean resource to the economy. Door County is one of the most famous tourism areas in the Great Lakes. Karen Ebbeson of the Door County League of Women Voters said tourism, swimming and the construction and sale of vacation homes are being hurt by negative publicity about pollution. She said visitors want to know what toxics they're ingesting when they enjoy Door County's famous fish boils.

Bruce Baker, representing the Wisconsin DNR, warned the public against the apathy which might result from a Bay that "appears cleaner." He said the DNR needs help from the public to pass new legislation and establish legal precedents to control toxics. The difficulties are particularly evident after the State's recent loss of a court case with Scott Paper Company. Baker also argued for a much greater role for the states in the GLWQA because the states are on the front lines of implementing the Agreement.

The problem of disposing of dredge spoils is coming to a head in Green Bay because the Corps of Engineers proposes to triple the size of Kidney Island. PCB concentrations in sediments in the Bay are as high as 43 parts per million and contribute 60-85% of the PCB loading to the Bay. These sediments must be permanently isolated to prevent the PCBs from re-entering the environment.

John Egan of the Stop Toxics Organizing Project was critical of the dredging and dredge disposal schemes. He said that Kidney Island is an inadequate confined disposal facility. Tests show that other containment islands in Wisconsin that supposedly act as filters leak up to 90% of their contents. Basic tracer dye tests have not been carried out to assess the extent to which Kidney Island leaks.

Kidney Island does not meet even the most minimal standards for a landfill. "It does not make sense," Egan concluded, "to place a toxic landfill in the middle of the Bay where it can contaminate one of the largest bodies of

"It does not make sense to place a toxic landfill in the middle of the Bay where it can contaminate one of the largest bodies of fresh water in the world."

fresh water in the world: a source of drinking water, food and recreation. It makes even less sense to expand it."

Area residents and the DNR alike spoke about the hopes they place in a Remedial Action Plan (RAP) that is being developed for Green Bay and the Lower Fox River. The RAP process in Green Bay involves the public in all aspects of the plan's development to a much greater extent than do RAPs in other jurisdictions. Citizens serve on technical advisory committees and on an overall citizens' advisory committee.

One of the important questions that RAPs must address is how to finance the cleanup. Thomas Erdman graphically described the options:

When it can be demonstrated that a corporation such as Fort Howard has left a huge toxic fingerprint in the sediments of the Fox River, one must ask who is liable for the cleanup? ...the company which has made profits through pollution or the public faced with a health risk? This will be the bottom line for any remedial plan.

DULUTH

"Awesome," "a treasure," "an untarnished gem," "pristine"--words such as these were repeatedly used by people along the western end of Lake Superior to convey to us the meaning of the Lake to them.

"Alarm," "under assault," "shock"--words such as these were used to express their fears that this cherished body of water is threatened by an onslaught of toxic chemicals.

An advisory warning of high mercury levels in fish on the shores of western



PHOTO COURTESY, SUZIE STEWART

Ann Schimpf, Duluth Audubon Society

Lake Superior, Wisconsin's first such advisory for Lake Superior fish, was issued just two weeks before our visit. It was the most recent of numerous warning signs. Testing of sediments, water and soils along the shoreline of Lake Superior and its tributaries, especially the St. Louis River, has found unacceptably high levels of heavy metals, dioxins, PCBs and other toxic organics. Speakers at the hearing and our hosts on a tour of the Duluth Harbor used information such as this to convey the message that Lake Superior is endangered and that its image of being pristine could become a myth.

During our tour of the Duluth Harbor in the Harbor Commission's Chris Craft, we were shown many of the sources of the contamination. We saw numerous sites right along the edge of the water where hazardous wastes had been dumped. We saw an oily slick on a bayside marsh where

Duluth Tar and Chemical Company is suspected to have dumped coal tar wastes. An area holding contaminated sediments, from dredging to allow 1,000-foot-long lake freighters to turn in the harbor, lies immediately adjacent to the waters. The turning of these huge ships stirs up sediments, resuspending hazardous contaminants in the harbor, allowing them to move into Lake Superior.

Other major sources of contaminants to western Lake Superior from direct discharges to the water were described during the hearing. For more than 20 years before 1980, over 60,000 tons of taconite tailings were dumped each day from Reserve Mining Corporation's facility into Silver Bay, 60 miles north of Duluth. The mining refuse contained asbestos-like fibers, a known carcinogen, which threatened the drinking water supplies of 150,000 people. Milton Pelletier of the United Northern Sportsmen's Club described the long fight that the public conducted to stop the company from using Lake Superior as a dump.

The recent discovery that the production or use of bleached kraft pulp at paper mills produces wastes contaminated by the most hazardous form of dioxin was raised with alarm by several people. Sludges from the Potlatch Mill in Clouet, Minnesota, contain dioxins; a paper mill under construction in Duluth will use 119 tons of bleached kraft pulp each day.

Two other possible sources of release of hazardous substances to the Lake were pointed out: spills from ships carrying hazardous substances, and the leakage of radioactive materials from a radioactive waste repository, if one is built in the area.

The major threat to the pristine nature of Lake Superior is toxics falling from the air into the Lake's basin. Approximately 80% of the toxic and hazardous contaminants in Lake Superior are estimated to come from airborne sources. Ten tons of PCBs are deposited into Lake Superior each year. Most of these air-

borne toxic substances come from distant sources. Toxaphene, for example, is suspected of coming to Lake Superior from pesticide use in the Southern U.S.

Acid rain and snow also contribute to toxics in the Lake by leaching heavy metals from soils and washing them into the Lake. An eighth-grade student at Holy Rosary School in Duluth, Edward Manteuffel, gave us a paper describing his research project on the effect of snow melt. He concluded that "acid shock from spring melt can cause deformities in fish embryo, kill infant fish, frogs, salamanders and insects just as they emerge and eventually destroy the stream's entire ecosystem."

The dominant theme at our Duluth visit was that Lake Superior must be protected before it is more severely contaminated. This protective stance led some speakers to point out that the solution is to prevent contaminants from ever entering the environment. Alan Ruger, speaking on behalf of the Great Lakes Indian Fish and Wildlife Commission in Odanah, Wisconsin, summed up this belief when he said, "If there is an error to be made, it should be to not allow a substance to enter the environment until substantial proof is available that the substance is innocuous."

"Many of Lake Superior's superlatives make it 'special' among the Great Lakes, but also make it more vulnerable."

Fear was expressed that because Lake Superior is so clean relative to the other Great Lakes it will be ignored. Mark Peterson from the Sigurd Olson Environmental Institute in Ashland, Wisconsin, pointed out, "Many of Lake Superior's superlatives--its vastness, its great depths, its relatively low sediment load--make it 'special' among the Great Lakes, but also make it more vulnerable."

MARQUETTE

Our visit to Marquette confirmed an unhappy fact. The same Lake Superior that boasts sparkling clear waters, the Pictured Rocks and the Grand Sable Dunes is plagued by many of the pollution problems found in the rest of the Lakes.

As the Task Force and members of the media gathered around a corrugated metal pipe, Gayle Coyer from the Upper Peninsula Environmental Coalition told us about the phenols, toluene, ethyl benzene and other coal tar wastes found in a hazardous waste site draining into the pipe. The reason for her concern was obvious: kids on bikes pedaled down a path that was separated from the old coal tar pit by only a dilapidated snow fence. Across the road, less than 100 feet from where we stood, the drainage pipe emptied into Lake Superior, within 100 yards of Marquette's most popular bathing beach.

Earlier that afternoon we visited Deer Lake; this site has made Marquette one of the IJC's "areas of concern." The Deer Lake that we saw was a waterless depression--not a lake. A tattered sign reading "Health Hazard" was nailed to a tree on the banks of what used to be Deer Lake. The Lake had been drained, in an effort to bury the mercury-contaminated sediments in its bed with materials blown into the basin.

Upstream from the Lake, Cleveland-Cliffs Iron Company in Ishpeming used mercury in its metallurgic laboratory for several decades. The company's mercury discharges, though small in quantity, had combined with other sources of mercury to build up to dangerous levels in fish in Deer Lake. The other sources of mercury to the Lake appear to have been mine tailings, atmospheric deposition and overflows from municipal sewage treatment systems.

The Lake was drawn down as an experiment in remedial actions. If wind-blown sediments bury and "lock up" the mercury, Cleveland-Cliffs will restock the Lake with walleye, northern pike and perch. At the Marquette hearing, Jan Hacker from

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Michigan's Office of the Great Lakes said, "We may see similar innovative techniques at other 'areas of concern'."

Several speakers at the Marquette hearing described the profound effects of acid and toxic rain in Michigan's Upper Peninsula. Robert Brown from the Upper Peninsula Environmental Coalition testified that several buildings in Houghton, Michigan, are corroding from acidic rain, and that conifer growth is being slowed down by emissions from a copper smelter upwind. Brown also suggested that acid rain may explain the mysterious cancerous tumors found in walleye and sauger in Torch Lake, another "area of concern" in the Upper Peninsula. He believes that acid rain is leaching metals into the Lake; these metals may be responsible for the tumors on walleyes and sauger. Brown and other speakers in Marquette expressed concern about the tremendous load of toxics that falls into Lake Superior from the sky.

Cathy Doman described area residents' opposition to proposals to site a radioactive waste disposal facility in the area. She also told us that they are concerned about the transportation of radioactive wastes over the Mackinaw Bridge between the Upper and Lower Peninsulas. The transportation and disposal of radioactive wastes are issues of concern for residents throughout the Lake Superior drainage basin, including Wisconsin, Minnesota and Ontario.

Because it is the least developed area in the Great Lakes Basin, the Lake Superior region is home to more species of threatened or endangered plants and animals than any other part of the Basin. But toxics have taken their toll. Scot Stewart testified that several species of plants and birds of prey have been affected by toxic chemicals. Eagles, osprey and peregrine falcons are making a comeback, but their recovery will be limited by the high levels of PCBs and other chemicals in the birds and fish they eat.

SAULT STE. MARIE

On a hot August evening during the peak tourist season, 70 people from Ontario and Michigan crammed into a stuffy court room in Sault Ste. Marie on the Michigan side of the St. Mary's River. Fourteen speakers described for the GLU Task Force their concerns about the deterioration of the water quality and environment in the area. One of the first passed around an album filled with pictures taken on the Serpent River Reserve; these pictures showed leafless trees, ponds filled with yellow water, and red and yellow ground with no sign of life. One of the last speakers held up a bottle filled with black, oily water collected earlier that day from the river bottom near Sugar Island.

Several speakers at the hearing criticized the governments on both sides of the border for failing to enforce their own pollution control guidelines.

The afternoon prior to the hearing, we had travelled through the Sault Locks on a crowded tourist boat that took us beside the massive Algoma Steel Plant on the Canadian side of the St. Mary's River. Noise, odor and noxious fumes filled the air around the blast furnaces and foundry. Contaminated dust blew from the unprotected piles of coal, slag and salt that lined the shores of the River. Each day seven pipes discharge over 500,000 cubic meters of industrial effluent, contaminated with cyanide, phenolics, zinc, iron, sulfates and chlorides, into the St. Mary's River from this steel producing complex. Immediately downstream, we saw the St. Mary's Paper plant. This plant discharges over 28,000 cubic meters of contaminated effluent into the River each day.

Several speakers at the hearing criticized the governments on both sides of the border for failing to enforce their own pollution control guidelines.

A report that had been released by the Ontario government a month and a half prior to our visit showed that both Algoma Steel and St. Mary's Paper were in violation of Ontario industrial discharge quality requirements in 1984.

The sewage treatment plant that receives 75% of the municipal wastes from Sault Ste. Marie, Ontario, discharges far in excess of the levels of phosphorus agreed to as a guideline in the GLWQA. In 1984, the phosphorus discharge level at this plant was 4.60 milligrams per liter; this is over four times higher than the discharge levels specified in the Agreement. Members of the three Indian bands who spoke at the Sault hearing stressed the importance of demanding that our leaders require polluters to stop their hazardous discharges immediately. They detailed the destruction of our environment caused by human negligence: bioaccumulation of toxics in fish, uranium tailings from mining operations going into Lake Huron and a quarter of the Serpent River Reserve contaminated by sulphur dust from an abandoned sulphuric acid plant. They pointed out that the only solution to these problems is to cut off contaminants at their source.

KINGSTON

The Kingston hearing was different from the previous hearings because we weren't told about local industrial polluters, contaminated sediments or hazardous waste dumps. Yet, the 29 speakers at this hearing raised almost all of the same water quality issues we heard in other parts of the Great Lakes. Though located at the extreme eastern end of Lake Ontario, the people of Kingston have a deep sense of the impact of the entire Great Lakes system on their community, their economy and their health. As John Cooke from the Kingston District Chamber of Commerce put it, "We in Kingston...are said to be at the bottom of the drain for the Great Lakes and all that flows into

those lakes and falls onto those lakes."

Cooke and several other speakers stressed the importance of Lake Ontario to the local economy. In 1985, boating generated \$24.5 million for the local economy and provided 325 jobs. According to sport fishing enthusiasts, the comeback of fishing has been a boon to local economies on both sides of the border near Kingston. Vince Maloney, a retired union official, said that unions do not believe that environmental protection will hurt the local economy. He said that unions want a clean environment and safety on and off the job.

... questioned the morality and wisdom of spending thousands of dollars to stock fish in polluted waters, knowing that the fish would not be safe to eat.

Local fishermen and women were alarmed by advisories warning people to limit fish consumption because of contamination. They were concerned about the adequacy of fish advisories and testing programs and pointed out the inconsistencies between advisories issued on opposite sides of the U.S.-Canadian border. They questioned the morality and wisdom of spending thousands of dollars to stock fish in polluted waters, knowing that the fish would not be safe to eat.

Quoting from a 20-page brief she presented on behalf of a group who had recently taken a course called "Decisions for the Great Lakes," Marguerite Shand criticized the lack of biomonitoring for persistent toxics and the recent cutbacks in research funding for the Canadian Wildlife Service.

Shand was among several speakers who felt that the most pressing water quality threat to the Kingston region was several hundred miles away--toxic waste dumps on the Niagara River.

A group from the Bay of Quinte told the Task Force about another long-range problem. Residents of the area received messages in bottles proving that uranium,

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radium, arsenic and lead dumped from Eldorado Resources' uranium-processing plant ends up in the Bay of Quinte. Activists had released these bottles near the company's Port Granby, Port Hope and Welcome radioactive waste sites, 60 miles east on Lake Ontario.

The role of the IJC and the lack of enforcement of the Agreement were thoroughly analyzed by the Kingston delegations. David Bigley, speaking for Save the River, issued a challenge to the IJC to "accept the responsibility that is squarely on them to take concrete measures to deal with this problem" or risk being accused of having "stood idly by and witnessed the death of a magnificent ecosystem, and failed to protect the lives and health of millions of innocent people."

Other speakers suggested that a world court or an international water quality police force be formed to enforce the Agreement.

The IJC was severely criticized for not including the public in its review of the GLWQA:

...We lament the fact that it had to be a private body with private funding, Great Lakes United, not the IJC, which allowed for public input into this process (Helen Henrikson, Little Cataraqui Environment Association).

...The present [hearing] takes place through private funding and the work of a host of volunteers. We thank Great Lakes United for their initiative; we should be thanking the IJC (Marguerite Shand, Decisions for the Great Lakes).

...The IJC is doing itself a real disservice by not involving the public (Jan Samis, former Councillor, City of Cornwall).

Marguerite Shand talked about the failing of the IJC and governments to live up to the Agreement. She said that the bias inherent in the structure of the Water Quality Board is one of the primary reasons the IJC has failed to carry out its mandate to use moral suasion to embarrass the parties into compliance. The Water Quality Board is the primary advisor to the IJC, but "it is apparent that [its members] are often in a conflict of interest," she said. The Board's members are senior officials of the government agencies responsible for implementing the GLWQA. "It would be naive to assume that these representatives would willingly provide explicit information that would reflect badly on their organizations," she concluded.

Several of the speakers eloquently described the importance of public information in generating political will for funding research and cleanup. Helen Henrikson said that "public pressure in the '60s provided the impetus for phosphate controls which greatly improved the lakes, and, in the '70s...the impetus for reducing the discharge of toxic organic pollutants which resulted in the quite prompt disappearance of obvious abnormalities and improvement in reproductive rates."

Lack of information about the effects of toxic chemicals is not only a problem for the public but for the medical community as well, according to Dr. David Mowat, Medical Officer of Health for the four county region surrounding Kingston. He said that far too little monitoring is being done on the health effects of pollutants on residents and yet Statistics Canada and the Department of National Health and Welfare are making cuts in their programs. Mowat defined the problems as not enough data, data banks that are useless and incompatible and a lack of information on the health effects of minute quantities of chemicals. "We must explain the health implications of parts per million or trillion," he said. He called on the federal government to "assume a lead-

ership role in providing better health information in Canada."

CORNWALL

For centuries, the St. Lawrence River has been the foundation of existence for the Indians who live at Akwesasne, the Mohawk name for the land at the borders of New York, Ontario and Quebec. The river was the Indians' primary source of protein. Henry Lickers, an Indian environmental leader, told us that families in the area used to eat 20-30 pounds of fish from the river each week. But now, Lickers and other environmentalists are advising children and women of child-bearing age not to eat the fish because they're contaminated with PCBs, furans and dioxins.

Lickers, Jim Ransom and three other Native Americans took the Task Force and members of the media on a barge up the river on a rainy afternoon before the hearing. Lickers told us the history of the environmental problems in the area as we approached the industrial complex of General Motors, and the ALCOA and Reynolds aluminum companies on the New York side of the river. He told us about the fluoride that used to pour out of Reynolds' smoke stacks at the rate of 300 pounds per hour. Before Reynolds installed filters and control devices, the Indians complained that the fluoride was weakening the bones of cattle and killing vegetation and cattle.

As we neared the factories, Jim Ransom rattled off facts and figures on the contaminants that have been found in fish, birds and wildlife in the area. The fat of one snapping turtle contained 835 parts per million of PCBs, 600 parts per trillion of dioxins and 4,900 parts per trillion of furans. He told us that the contaminants were likely coming from at least five separate inactive hazardous waste dumps at ALCOA's plant and two others on Reynolds' property. They suspect other contaminants are coming from the dump sites that line the Niagara River.

The Indians' primary concern is the dumping that has occurred at General Motors central foundry. As our barge approached the plant site, Ward Stone, a wildlife pathologist from the New York State Department of Environmental Conservation who has been helping the Indians, explained that the sweet odor we smelled was PCBs.

At the hearing, Stone and Ransom told us a story that drove home the impact of toxics on the Indians. Some Indian fishermen netted a 200-pound Lake Sturgeon from the river. Samples of the fish were sent for testing to Canada's Department of National Health and Welfare. A report came back that the fish contained 3.41 parts per million of PCBs in its meat, 7.95 parts per million of PCBs in its eggs and 10.2 parts per million of PCBs in its liver. The fish contained 167 parts per trillion of 2,3,7,8-TCDF, the highest levels of dibenzofurans the Department had ever seen. "Unfortunately," Ransom said, "the families of the fishermen had eaten the sturgeon by the time the results of the analysis were received."

Not all the problem sites around Akwesasne are on the New York side of the St. Lawrence River. Cornwall is a major industrial center in eastern Ontario. Courtauld's, a rayon manufacturer, discharged nearly 10 tonnes of sulfuric acid into the river each day during 1984; according to an Ontario Ministry of the Environment Report. Courtauld's discharge was so lethal that it killed fish within five minutes. According to the same report, another Cornwall company, BCL, discharged nearly 6 tonnes of sulfuric acid into the St. Lawrence each day.

Other speakers at the hearing echoed the Indians' concerns. New York Department of Environmental Conservation representative Russ Mt. Pleasant confirmed that high levels of PCBs have been found in water column and sediment samples in the St. Lawrence River offshore from General Motors. "A contaminant plume of considerable propor-

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tions is migrating from the industrial landfill and discharging to the St. Lawrence River," he said.

Both Robin McClellan and Klaus Proemm testified that polluting industries must be forced to reduce, reuse and eliminate hazardous wastes before the wastes leave the plants. They said that industries should meet these restrictions before being licensed to operate. Proemm suggested financial incentives to encourage the use of new technologies to handle wastes. He said our present system has failed because the technology exists to clean up Reynolds but we've been unable to force them to install it.

Perhaps the most poignant statement came from Robert Mulvaugh, representing the United Auto Workers local at General Motors central foundry. After listening to the Indians at the hearing, Mulvaugh stood up and said, "My hope...is that my job and the environment are not incompatible."

"My hope . . . is that my job and the environment are not incompatible."

James Ransom reflected the concerns and hopes of the people of Akwesasne when he said, "It will be several generations before there is any chance of the St. Lawrence River being returned to original condition. This is our goal...".

MONTREAL

Television cameras focussed on a water intake plant for Montreal as we slowly circled in a bay on the edge of the St. Lawrence River. Daniel Green of the Societe pour Vaincre la Pollution (SVP), sitting in the bow of the jet raft, pointed upstream and described the St. Lawrence as the sewer for toxics being gathered from the entire Great Lakes system. "SVP believes that Montreal's water supply could one day be exposed to contaminants coming from upstream," he said.

As we whirled back through the boiling Lachine Rapids, covered in spray, the significance of the St. Lawrence was evident. To the south an artificial channel provided the vital shipping link between the Atlantic Ocean and the center of the continent; just past that was the home of the Mohawks of Kahnawake. To the north sat Montreal, a metropolis of two million people. And the river rushed by, the spawning grounds of fish, home of birds and marine mammals, its shores habitat for animals, 80% of Quebec's residents dependent on it for their drinking water.

The St. Lawrence River at Montreal is a varied, prolific environment, but, as we were told at the hearing that evening, it is an environment that is being ruined by chemical contaminants. The warning signs are clear. Fisheries and Oceans Canada reported that fifteen species of fish that they had found in the area in 1969 had disappeared by 1986. Beluga whales at the mouth of the St. Lawrence have been dying at rates so high that biologists fear that their survival is threatened. High levels of organic chemicals and heavy metals are being found in their bodies.

Evidence directly linking contamination problems in the St. Lawrence to upstream sources in the Great Lakes was presented to us by government scientists. For example, Mirex found in the Belugas could only have come from Lake Ontario since Mirex was never produced or used further downstream. We were told that contaminants from the Great Lakes are not only being carried in the water flow but also by contaminated fish that spend part of their life cycles feeding in Lake Ontario and then swim down the St. Lawrence where they are consumed by people and wildlife.

Speaker after speaker pointed out to the Task Force a glaring contradiction in the GLWQA. Despite evidence that contamination from throughout the Great Lakes Basin is affecting water quality in the lower St. Lawrence River, most of the river is omitted from the definition of

the Great Lakes Basin Ecosystem in the Agreement. Yves Blais, the provincial environment critic for the Parti Quebecois, echoed the position of most people at the hearing when he said, "It's imperative that Quebec have something to say on the water quality of the Great Lakes."

"It's imperative that Quebec have something to say on the water quality of the Great Lakes."

Several speakers stressed that Quebec should not just blame the people of the Great Lakes for their environmental problems because it has considerable work to do to put its own house in order. Much of the contamination of the St. Lawrence comes from municipal and industrial sources within the province.

Montreal dumps its raw sewage directly into the St. Lawrence River. Bruce Walker of the environmental group STOP described the long fight that they had to get the Province and City to responsibly deal with this problem. A sewage treatment facility is now under construction.

Each year more than 100,000 tonnes of hazardous contaminants are dumped by industry into the Quebec part of the St. Lawrence River. SVP presented us with a map identifying the locations where 57 companies discharge toxic wastes directly into the river.

The representatives of environmental groups, the federal and provincial governments, and the political parties who attended our Montreal hearing all agreed with the need to remove both local and distant sources of contaminants to protect the St. Lawrence River.

Dwaine White of the Mohawk Council of Kahnawake precisely stated the concern when he said, "We want to stress that the dilution of water quality initiatives is non-negotiable. This resource must be preserved and its quality enhanced."

"We want to stress that the dilution of water quality initiatives is non-negotiable."

CHICAGO

Bobby Rush, the former civil rights activist who is now an Alderman from Chicago's 2nd Ward, began the Chicago hearing by talking about the need for a "war on toxics." He said Chicagoans are "troubled as we daily confront fish consumption warnings, reports of dredging plans that could disturb highly contaminated sediments" and as questions arise about the safety of the city's drinking water as higher readings of toxic organic pollutants are found in Lake Michigan. He advocated a plan that would "integrate regulation, enforcement and technical assistance to industry" so that "ultimately we can control toxic chemicals before they become a problem in our lake."

Rush was one of several speakers who said the GLWQA is "a farsighted and significant document" that unfortunately has been poorly enforced or even ignored. Rush urged the establishment of "meaningful timetables" for better implementation and more coordinated action.

"Zero discharge of persistent toxic substances isn't idealistic pie-in-the-sky. It is a fundamental biological imperative."

Jeff Barret-Howard from Greenpeace called for timetables to force polluters to reduce their releases of persistent toxic substances to zero. While admitting that the timetables must be realistic, he said that the first priority must be protection of the environment. "Zero discharge of persistent toxic substances isn't idealistic pie-in-the-sky," he said. "It is a fundamental biological imperative."

Robert Ginsburg of Citizens for a

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Better Environment said that the federal government should charge the IJC with developing guidelines for reducing toxics in the Lakes by definite amounts within a specified time frame. He also suggested expanding the IJC's powers to give them the authority to approve or deny projects such as dredging in the Great Lakes.

Peter Wise, head of the U.S. EPA's Great Lakes National Program Office, detailed the challenges his office saw in protecting the Lakes in the future. He said that contaminated sediments in 28 of the U. S.'s 30 "areas of concern" form a "reservoir of toxins" to the Lakes. He also pointed out that simply upgrading municipal treatment plants would not be enough to meet the phosphorus target set for Lake Erie in order to control eutrophication. He said that non-point runoff from agriculture will also have to be controlled.

"Jesus walking on water was not that much of a miracle."

Wise described some of the natural phenomena that make the Great Lakes so vulnerable to pollution from toxics. The Lakes' tremendous volume, combined with the fact that only one percent of that volume leaves the Lakes through the St. Lawrence River each year, slows the dilution and flushing process, making the Lakes a "sink" for toxics. The Great Lakes contain relatively little suspended matter; as a result, contaminants that might otherwise bind to sediments and settle out or be buried remain in suspension where they are more likely to enter the food chain.

Several speakers emphasized the lead role that the public plays in forcing government to take action to protect the Lakes. Lee Botts from the Lake Michigan Federation said her biggest fear was that if basin residents didn't remain vigilant in hounding governments to implement the Agreement, it would die of neglect.

GARY

A little girl fell into the Grand Calumet River and died. The autopsy showed that her lungs, heart and kidneys were destroyed by the chemicals in the water. The anguish and frustration in Blythe Cozza's voice as she described this tragedy to the Task Force turned to anger and determination as she vowed to fight against pollution. "Never again is that going to happen," she vowed.

Repeatedly, people in Gary approached the panel with personal stories of the effects of pollution. A swimmer described the oil on his glasses and the ear infections he suffered after swimming in Lake Michigan, just off Gary. A fisherman described how imperial shiners, a fish species particularly susceptible to pollution, have disappeared during his lifetime. A woman said that groundwater under a closed petrochemical plant had been found to be contaminated with phenols at a level of 750,000 ppm; "that means a glass of water would be three-quarters phenols," she said. An elderly man who grew up on the banks of the Grand Cal, after describing the amount of pollutants in the river, observed, "Jesus walking on water was not that much of a miracle."

Earlier in the day we had driven along part of the Grand Calumet, a narrow ribbon of water that winds through the dominating industrial section of Gary. We were told that ninety percent of the river's flow comes from the discharges of steel mills, oil refineries, sewage plants and combined sewer overflows that line its banks. Its impenetrable, murky waters contain a gigantic burden of contaminants but little life other than sludge worms. John Laue, our local guide for the day, described the return of carp to the river as a sign of progress.

At our hearing, frustration and anger were directed towards industry and government for their failure to correct the devastating problems that are so evident. Lin Kaatz Chary of the Grand

Calumet River Task Force, a group dedicated to restoring the Grand Cal, was impatient with government for spending too much time studying the problems. "We want action now!" she said.

Several people at the hearing were angry about current proposals for waste disposal that could perpetuate old problems and create new ones. Plans had just been announced to build 22 deep wells into which hazardous wastes would be injected. Members of People Against Hazardous Landfill Sites, the Lake Michigan Federation and the Grand Calumet River Task Force voiced their opposition to these plans, stating that deep wells are much too risky. They said that industry and government must put their emphasis upon waste reduction strategies instead of searching for yet another place to shuffle the wastes to.

In a community so susceptible to the employment strategies of major polluting industries and in the throes of serious unemployment problems, it was not surprising that the relationship between the environment and the economy was raised several times at the hearing. The message that came through each time this issue was brought up was that the perceived schism between industry and the environment must be replaced by the recognition that economic development and environmental quality go hand in hand.

In the afternoon we had been inspired by two significant signs of the determination of the people of Gary to restore and protect their community. We had walked on a foot path along the banks of the Grand Cal. For two months during the summer of 1986, 24 teenagers spent their mornings cleaning up that one-and-a-half mile strip of the bank. They cleared debris, cut weeds, made a wood-chip covered hiking path and created several picnic niches.

We had also walked on the sands of the Indiana Dunes. Giant steel mills and power plants stand immediately adjacent to a national park, a reminder of the successful fight of the people of the

area who blocked the encroachment of these plants.

GRAND RAPIDS

By the time we had concluded the Grand Rapids hearing, our third in Michigan, it was clear that the people of Michigan realize that the well being of the state, including the health of its people, is directly influenced by the Lakes and changes in the Lakes.

Being surrounded by four of the Lakes, several speakers pointed out their dependence on the Great Lakes and the responsibility that the people of Michigan have: "We sit in the center of the Great Lakes. If we can't be a lead state [in reducing pollution], then we can't complain about anybody else," said Shari Schafflein, a water quality specialist with the West Michigan Environmental Action Council. "Essentially, it's our moral responsibility to take the lead role."

Another local group, the Center for Environmental Studies, organized a press conference on the banks of the Grand River the afternoon of the hearing to urge state legislators to approve proposed water quality standards. Mark Van Putten from the National Wildlife Federation explained that the rules would improve Michigan's ability to regulate toxics in the Great Lakes, protect fish and aquatic life by raising the dissolved oxygen standard and endorse the goals of the GLWQA.

Despite these efforts, two days later Michigan's Joint Committee on Administrative Rules attempted to postpone action on the new water quality standards until after the November elections. This move was ultimately overcome, and the rules were passed, thanks largely to public outcry.

At the Grand Rapids hearing, Tom Martin, Director of Michigan's Office of the Great Lakes, explained that Michigan's Governor Blanchard believes that we need to rededicate ourselves to the 1978 Agreement, not renegotiate. One reason

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he opposed renegotiation is that the present federal administration has refused to support funding for research in the Great Lakes and has not shown a commitment to the environment in general.

Muskegon Lake and White Lake, a few miles north of Grand Rapids, and the Kalamazoo River to the south are on the IJC's list of "areas of concern." Inside a huge vault near White Lake, Hooker Chemical has deposited 2.7 million cubic yards of contaminated soil in an effort to clean up massive quantities of hazardous wastes it had previously dumped in the area. At one point, leachate was entering White Lake from the site at a rate of one million gallons each day. Despite a monumental cleanup effort forced by the State of Michigan, pesticides continue to leak into White Lake which is adjacent to Lake Michigan. Purge wells are capturing only 60% of the contaminated groundwater plume under the site. The storage vault is full, but 80-100,000 cubic yards of contaminated soil still have not been removed.

Speakers in Grand Rapids were worried about the groundwater contamination problems created by improper hazardous waste disposal. Congressman Paul Henry said that groundwater is "the" environmental issue in Michigan; he promised that federal legislation to provide much needed research was on the horizon. Shari Schaftlein told us that there are 1,000 contaminated groundwater sites in Michigan. Bill Stough of the Waste Systems Institute in Grand Rapids told us that the 60,000 small businesses in Michigan that generate hazardous wastes are an important and often overlooked source of problems. He said that these businesses need technical assistance to reduce, recycle and properly treat their wastes. Beth Bandstra, a Kent County official, said an essential component of groundwater protection is the enforcement of stringent basin-wide standards for groundwater quality, landfill construction and waste disposal.

The relevance of public information to implementing the GLWQA was underscored by

several speakers in Grand Rapids. They said the IJC's reports must be more aggressive and made more available, in a timely fashion, to the public and decision-makers at all levels. Michael Karolle from the West Michigan Environmental Action Coalition said, "We need to know whether or not we are meeting the Agreement's goals so we can use this information to convince government that money should be spent." Barbara Howard from the League of Women Voters summed it up best:

The Agreement is essentially a political commitment between the United States and Canada without the force of a Treaty. Therefore, politics determines the extent to which the Agreement is supported and implemented. It is essential then that the public understand the Agreement and the issues involved with water quality if the political will necessary to implement the goals of the Agreement is to be maintained.

Richard Santer of Ferris State College in Big Rapids, Michigan, suggested the creation of an International Water Grant College, similar to the Agriculture Extension Program to improve public information programs.

... government officials attempt to placate the public with what he dubbed the "good news syndrome."

Dayle Harrison of the Kalamazoo River Protection Association pointed out there is a difference between objective information on water quality issues and the tendency of government officials to attempt to placate the public with what he dubbed the "good news syndrome." Harrison has been trying for years to force a cleanup of the Kalamazoo River. He reported that the bottom of the

Kalamazoo is laden with PCBs and the river is still a source of 52 to 241 kilograms of PCBs to Lake Michigan each year.

SAGINAW BAY

Overflow dredging is used to deepen the shipping channel in the Saginaw River and Bay. Accompanied by local Michigan Department of Natural Resources' (DNR) officials and leaders of the Saginaw Bay Advisory Council, we took local members of the media out on the Bay the afternoon of the hearing to see this practice first hand. A 200-foot-long boat with a hydraulic dredge unit prowls the shipping channel sucking up sediment and water. As the vessel's hopper fills up, brown, muddy water washes over the sides of the boat, back into Saginaw Bay. The dredging operator lets the boat overflow in order to fill the boat's hopper with as high a proportion of sediment and as little water as possible.

The water slopping over the sides of the boat is far from clean. The larger

particles have settled out into the hopper, but the overflowing water is still heavily laden with fine particles of silt. According to Bernie Uhlmann, who lives along the Bay and watches the dredge daily, a typical dredging cycle lasts 45 minutes. During the last 15 minutes, the hopper is allowed to overflow.

Representatives of the Saginaw Bay Advisory Council and the DNR explained the problems with overflow dredging. The sediment in Saginaw Bay must be disposed of in a confined disposal facility because it is contaminated. Many toxic contaminants have an affinity for silt and clay particles. The finer particles, because they have more surface area, are more highly contaminated. The material overflowing the boat's hopper has a high concentration of these finer, highly contaminated particles because the smaller particles settle out more slowly.

When we visited the Saginaw Bay region, people were still cleaning up from a flood that left hundreds of people homeless and caused thousands of dollars of property damage. Millions of tons of sediment, containing phosphorus and other



Photo Credit: Bernard Uhlmann

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pollutants, were dumped into area waterways during the flood. Because the Saginaw River and Bay are already shallow, this will increase the need for dredging. Residents like Uhlman recognize the need to dredge, but insist that the practice of overflow dredging be banned.

As the vessel's hopper fills up, brown, muddy water washes over the sides of the boat.

The flood also affected water quality. Several wastewater treatment plants, including the Dow Chemical Company facility in Midland, had been completely inundated and had overflowed. According to Diane Hebert of Greenpeace, Michigan's DNR was on the scene promptly after the flood washed out Dow's treatment facilities to take samples of local waterways. According to Hebert, they announced to the public that there was no health concern before the laboratory results were in. The tests later showed that the water contained small quantities of 20 chemicals, including dioxin and hexachlorobenzene. Hebert pointed out that, even though these chemicals were diluted by the huge volume of floodwater, the dioxin will be in the ecosystem for hundreds of years where it will biomagnify up the food chain.

Controls on phosphorus pollution have slowed eutrophication in Saginaw Bay over the past two decades. But the Bay is still eutrophic. Jo-Ellen Darcy testified on behalf of the State of Michigan at our hearing in Auburn. She told us that non-point runoff is responsible for 50% of the Bay's total phosphorus loading; she said that further gains in cleaning up the Bay must include controls on the primary source of the non-point runoff--agriculture.

Instituting controls on agricultural runoff will be much easier for farmers to swallow in the Saginaw Bay region because of a multi-year research project coor-

inated by the co-sponsor of our Auburn hearing, the East Central Planning and Development Region. The agency recently released the results of a study documenting that many agricultural best management practices, like conservation tillage, will reduce the problem and are economically feasible.

In January of this year, the Michigan Department of Public Health revised the fish consumption advisory for waters in the Saginaw Bay region saying that walleye, smallmouth bass and northern pike from the Tittabawassee River are safe to eat. Hebert and many other people question the wisdom of this advisory. They doubt the scientific validity of this advisory because it is based primarily on the risks of exposure to 2,3,7,8-TCDD (dioxin), but does not consider the effects, either singularly or in combination, of exposure to closely related compounds such as furans and other isomers of dioxin.

WINDSOR

The morning of October 7th, 1986, was cool and clear, a beautiful day for a trip on the Detroit River aboard the U.S. EPA's research vessel "Blue Water." Frank Horvath of the Michigan DNR and John Hartig from the IJC's Windsor office served as tour guides.

Horvath described progress in recent years in cleaning up the river: a 70% reduction in phosphorus loading and a 70% reduction in mercury contamination. The reduction in phosphorus is largely due to improvements at Detroit's huge sewage treatment plant on the Rouge River. But we would soon learn that the river only appears cleaner; in fact, it is still a major threat to the health of area residents and the Great Lakes downstream.

As the boat took us near the Ambassador Bridge, bulldozers were working at a Detroit city park on the waterfront, in an effort to clean up an old hazardous waste dump beneath the park. We were astounded to learn that rather than digging up and removing the hazardous



GLU Photo

Frank Horvath before a Detroit River boat trip.

wastes, the City's cleanup simply involved removing the top few inches of soil, putting down a layer of plastic, replacing the topsoil and reopening the park for use.

The next hot-spot we saw was just upstream from the bridge. Horvath explained that the DNR has detected PCBs in bottom sediments where a storm sewer draining the Carter Industrial scrap yard empties into the river. PCB levels on the bottom of the river at this spot are already 40 parts per million and are likely to get worse because the drain contains as much as 5% PCBs. As we toured past the abandoned warehouses and industrial sites on the Detroit side of the river, we wondered how many other large and small industrial facilities in Detroit and other cities around the Great Lakes must have reservoirs of PCB-contaminated waste oil.

Before heading back downstream to the Rouge River, Hartig pointed out another storm sewer in downtown Detroit. Hartig said this was one of 200 storm drains that dump untreated sewage directly into the river during heavy rains.

We were surprised to learn that, apparently because the river looks cleaner, Detroit is now taking approximately 60% of its drinking water from an intake near Wyandotte, downstream from most of the worst hot spots and discharges. Ironically, the City stopped pumping water from Lake Huron and began taking water from the Detroit River, downstream from the St. Clair River, at about the same time that the St. Clair River "blob" was making headlines. Windsor residents, who also get drinking water from the Detroit River, have recently become alarmed that dioxin has been detected in the City's drinking water intakes.

Nearly 30 people spoke at the Windsor hearing. Many focussed their comments on the IJC's and the governments' lack of commitment to enforcement of the Agreement. Speaking on behalf of the Michigan United Conservation Clubs, Tom Washington said that, without a greater commitment from the IJC and governments at all levels, "this Water Quality Agreement is a useless document and its alleged implementation is an exercise in futility." Washington charged that the IJC "is a cloistered little group of isolated professionals who have alienated themselves from the public." He said that the IJC and the Water Quality Board had a golden opportunity to voice support for a set of water quality standards that would have helped the State of Michigan implement the Agreement, but they were silent.

Joe Cummins, who spoke on behalf of Greenpeace, charged that the governments withhold information from the public. He described studies by Ontario's Ministry of the Environment and Environment Canada from 1979 and 1980 that reported massive quantities of carcinogens and other organic pollutants being discharged into the St. Clair River. These reports were not publicly released, however, until 1985. IJC reports in 1982, 1983 and 1985 did not allude to these studies and did not fully state the severity of contamination problems in the St. Clair. Cummins said that the public should

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demand "timely, full and truthful reporting on the results of scientific studies."

"... this Water Quality Agreement is a useless document and its alleged implementation is an exercise in futility."

Numerous speakers in Windsor, including Washington, Pat Hayes (a member of the Ontario Parliament), Gary Parent (representing the Windsor and District Labour Council) and Judith White (from the Lake St. Clair Advisory Committee), called on all governments to pursue the goal of zero discharge in a much more aggressive manner. Herb Gray, a Windsor member of the Canadian Parliament, said, "Zero discharge must be an objective because of growing evidence of the danger to human life, as well as fish and animal life, of even small amounts of toxic chemicals interacting with one another and accumulating--building up--over time."

The City of Detroit has recently broken ground to construct the largest garbage incinerator in the Great Lakes Basin. At our Windsor hearing, many Canadians expressed their anger that this incinerator is being built without state-of-the-art control technology. Opponents like Wendi Maroon, representing the Council of Canadians, said she feared the incinerator will dump sulfuric and hydrochloric acids, dioxins, furans and other pollutants on the people living downwind. Canadian politicians like Michael Ray, Herb Gray and Steven Langdon attacked the incinerator because the 10,000 pounds of toxic substances and metals predicted to come from its stacks will fall on Canada. Gray called this a violation of the Agreement and the Boundary Waters Treaty of 1909; he urged the Canadian government to take action with the IJC and in U.S. courts to prevent the incinerator from being built without better emission controls.

THE ST. CLAIR

It was considered a beautiful place
Of blue water, clean rain and white snow.
It had a great magic about it --
But that was long, long ago.

It has since become a place of pollution,
Where man has dumped an endless supply
Of chemicals in amounts, unaccountable, for
"There's too much water for it to run dry."

But one day, they'll see, a change has
occurred,
For the "St. Clair" will no longer be blue
In its place, a river of chemicals will
run,
And nothing will they be able to do.

But before all these changes do happen,
God, let them stop where they are
In their tracks,
Let them realize that what we have is
A blessing,
And that the "St. Clair" needs help,
-- Not turned backs.

Lisa Langell
9th Grade Student
Marine City Junior High
Marine City, Michigan

SARNIA

In August 1985, Dow Chemical spilt 40,000 liters of the dry cleaning solvent perchloroethylene (PCE), a known animal carcinogen and suspected human carcinogen. An estimated 11,000 liters reached the St. Clair River. The PCE dissolved other contaminants in the river bed, forming black blobs containing a mix of many polychlorinated compounds. The now infamous "blob" loomed over our Sarnia visit.

Between August and December of 1985, Dow spent approximately one million

dollars vacuuming up the "blob." Blobs still form in the area, requiring regular cleanup.

The afternoon of our visit to Sarnia, Dow took the Task Force on a tour of their 186-hectare site, which contains 13 chemical manufacturing plants. They outlined their efforts to avoid contaminating the River, emphasizing the amount of money they had spent on pollution abatement--\$50 million in the past decade. Dow's safety measures are state-of-the-art and probably ahead of other chemical plants in Sarnia. Unfortunately, it was not the Ontario government or the GLWQA which compelled Dow to install the equipment. It was the bad publicity they received from the "blob."

The presentations that evening showed that not enough progress had been made by industry in protecting and cleaning up the St. Clair. They pointed out that the Dow spill was not an isolated incident. Twenty-eight spills were reported by industry in the six-mile stretch known as Canada's Chemical Valley in the year after the Dow spill. One-and-a-half billion liters of contaminated industrial effluent is discharged from the Canadian side into the St. Clair River everyday. Scientific studies have repeatedly shown that the St. Clair is severely contaminated and affects places far downstream.

People from as far away as Windsor, 100 kilometers downstream, came to the Sarnia hearing to talk about the threat that contamination of the St. Clair River poses to their health and environment. A representative of the Walpole Island Indian Band described the frightening extent to which the food sources of the 1,800 native people living at the mouth of the St. Clair River are being contaminated. A local naturalist described the effects of the contaminants on wildlife in the area. Residents from communities in both Michigan and Ontario described their fears about the effects of contaminated drinking water on their health. St. Clair County has the highest cancer rate in Michigan.

"The apparent absence of acute effects should not lull us into ignoring the accumulation of these contaminants in the organisms in this area and probably in our own bodies," said David Innes, a biologist from the Great Lakes Institute in Windsor. Three other speakers at the hearing stressed this concern about bioaccumulation of contaminants in wildlife and humans. One stated, "We are risking collapse of the biological system." These four speakers said that more research emphasis should be put on biological monitoring instead of just measuring the levels of contaminants in water samples.

"We want zero discharge period, and no more excuses," said Janice Gunning, representing the St. Clair River International Citizens' Network. One speaker after speaker came forward at this hearing to call for immediate achievement of the GLWQA's goal of zero discharge of persistent toxic substances. They stressed that the extent of contamination was already so great that additional loadings could not be tolerated. Judith White the representative of the Lake St. Clair Advisory Committee in Mt. Clemens, Michigan, described the discharge of contaminants into the St. Clair River as "the worst sort of filth...a personal violation and a personal threat." "Don't let them spit in your soup," she said.

Thirteen of the speakers at the hearing were members of groups that are part of the St. Clair River International Citizens' Network. Through the Network, people from both Michigan and Ontario work in a united way for a cleanup of the St. Clair River. Speaking on behalf of the Network, Janice Gunning of Mt. Clemens said: "We want aggressive prosecution of polluters; we want polluting to become very unprofitable. Pollution must stop now."

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Laurie Montour from the Walpole Island Indian Reserve, a 91-square mile area consisting of five islands at the mouth of the St. Clair River, home of 1,800 native people, described their home and the threats that contamination of the St. Clair is posing to their existence. She concluded:

There must be an increased awareness that native people have a right to decisions about Great Lakes water quality. We are, after all, the first people to use it and we still partake of it in ways that are not easily tenable to non-natives, but then, what's going on right now isn't all that logical to this Indian.

We are realizing that both non-native and native people have something to share and learn from each other.

You are in a position to offer scientific and technical expertise to measure the changes to our Mother Earth that we cannot see.

We are offering to you a spiritual understanding of the wholeness, the oneness of our living earth. She takes good care of us, we want to take good care of her.

TOLEDO

Forty percent of the sediments entering Lake Erie come from the Maumee River, which enters the Lake below Toledo. Sixty percent of those sediments come from agricultural runoff and are contaminated with phosphates, nitrogen and organic pesticides. These two facts indicate the dramatic impact that the largest agricultural watershed in the

Great Lakes Basin, the Maumee watershed, is having on Lake Erie.

The information presented to us on agricultural runoff during our Toledo visit was startling. David Baker from the Water Quality Lab at Heidelberg College estimated that the yearly damage from agricultural erosion into the Maumee amounts to \$30 million. Agricultural runoff contributes 60% of the phosphorus entering Lake Erie each year and, thus, is a major reason that the target load of phosphorus in Lake Erie--11,000 tonnes per year--has not been met.

The Executive Director of the Toledo Metropolitan Area Council of Governments, Cal Lakin, said that 750,000 pounds of phosphorus from fertilizers used on agricultural lands washes into the Maumee each year. This agricultural runoff is also heavily contaminated with hazardous organic chemicals from the pesticides used in farming. Baker said that the Maumee and its tributaries have unusually high concentrations of pesticides, especially after spring rains.

Representatives of the Henry Soil and Water Conservation District, Thomas Eggers, and the Sandusky County Soil and Water Conservation District, Howard Sachs, told us that increased use of no-till and other conservation tillage practices combined with reduced applications of phosphorus to farm lands are beginning to reduce the hazardous runoff. Several speakers stated that more research should be done on new agricultural practices and that more money should be put into helping farmers apply conservation techniques.

Combined sewer overflows from Perrysburg and Toledo, landfills leaking hazardous materials into the waters and industrial discharges are also major contributors to the contaminated sediments in the Maumee.

While we were in Toledo, one of the major news stories was the leaking of 60,000 gallons of wastes each day from an abandoned City of Toledo landfill into the Ottawa River. This leachate contains PCBs at levels far in excess of the

standards set by the U.S. EPA as acceptable. Phil Wiseley of the Western Lake Erie Sierra Club told us of his visit to the site on the Saturday before our hearing. "I witnessed oily leachate flowing directly from the dump downhill toward the river," he said. "It was a grim experience." He explained that what was even more grim and disappointing about the situation was the fact that the City and the Ohio EPA had known about the problem for over a decade, but had not stopped it and had not informed the public. He told of speaking with an official of the Ohio EPA who said he didn't understand the "big deal" being made about the leachate because leakage had been going on for years and the damage had already been done. "We resent such insensitive and callous talk by an official of the Ohio Environmental Protection Agency--an agency charged with the protection of our environment," said Phil Wiseley.

The heavy sedimentation of the Maumee, largely caused by agricultural runoff, combined with the toxic loadings in this sediment because of agricultural pesticides and fertilizers, industrial and municipal discharges and landfill leachate creates a problem for shipping in the Toledo Harbor at the mouth of the Maumee. Each year one-and-a-quarter million tons of sediments are removed from the Maumee. The question raised by so many people during our visit was: "What do we do with these sediments?"

During our boat tour of the mouth of the Maumee, we saw the massive berms that stretch along the shores that act as

confined dredge disposal sites. Their ability to keep the contaminants from leaking back into the waters was challenged. In addition, they destroy shoreline habitat that is becoming increasingly rare and upon which wildlife is so dependent.

We saw a barge pulling sediments up from the bottom of the harbor and were surprised to learn that when filled the barge would head out into Lake Erie where the contaminated sediments were to be dropped into the open waters of the Lake.

Open-lake disposal of sediments from the Maumee into Lake Erie was resumed in 1985. In 1986, 936,000 tons of contaminated sediments were dumped into the Lake. It is estimated that this sediment contained 775 tons of phosphorus. When dumped into the shallow western end of Lake Erie, this material is quickly resuspended into the water and spreads throughout western Lake Erie.

Speakers were upset over open-lake dumping and stressed the need to find new ways to dispose of the materials without simply redistributing the contamination. Some speakers suggested that upland disposal methods should be used. Others said that the material is "a resource out of place" that should be used constructively elsewhere. But the overriding message from our visit to Toledo was that the only satisfactory way to deal with this problem is to substantially reduce the amount of sediments getting into the Maumee in the first place.

We must quietly look and listen to the Lakes to hear what they are telling us about the quality of their existence, and what they are telling us about the quality of ours, for the two are inseparable.

Phil Wiseley,
Western Lake Erie Sierra Club

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CLEVELAND

In 1969, when hot slag spilled onto the Cuyahoga River's oil-soaked surface, the River caught fire. This highly publicized event helped focus attention on the severity of pollution in the Great Lakes.

Our hearing in Cleveland corresponded with the release of the Cuyahoga River study by the National Wildlife Federation. The report described substantial progress in the control of solids, nutrients and other conventional pollutants since the fire. "However," the report states, "the biota of the Cuyahoga River and some of its tributaries reflect continuing disturbances [which are] likely due to the impacts of the many toxic substances discharged to the River." The study found that over 700,000 pounds of toxic metals and 90,000 pounds of toxic organic compounds are discharged into the Cuyahoga and its tributaries annually from industry and municipalities. The Clean Water Act discharge permits for many of these point sources expired many years ago. The limits in those permits for toxic materials were virtually nonexistent. Where limits on toxics were in place, they were frequently violated.

Several speakers stated that the key issue is enforcement of the Agreement and of water quality protection standards in Ohio. Dennis Muchnicki, who spoke on behalf of Ohio's Attorney General, said that the Ohio EPA needs to get tougher with polluters, stop negotiating with them, issue strict deadlines and prosecute violators immediately. Robert Nece, from the United Auto Workers, said that enforcement of the Agreement is made difficult because of the "incestuous" situation created by heads of government water quality agencies serving on the IJC's Water Quality Board, the body responsible for helping the IJC enforce the Agreement. Mimi Becker, from Hiram College, spoke in favor of the zero discharge goal in the Agreement. She said that those who argue that zero

discharge is "impossible should be ignored."

Ohio has begun work on Remedial Action Plans (RAPs) for the Maumee, Black, Cuyahoga and Ashtabula rivers. Although a draft RAP has been completed for the Cuyahoga River, most people only learned of the plan and the RAP process at the Cleveland hearing.

Jeff Foran testified on behalf of the National Wildlife Federation in Cleveland. He had reviewed the draft RAP and pointed out several shortcomings in it. The RAP states that there are no fish consumption advisories for Lake Erie's vibrant fishery. "The reason," Foran said, "is not because the fish are clean, but rather because no one has bothered to collect and analyze information on contaminants in fish from the 'area of concern'." There is a similar lack of information about the safety of swimming in the "area of concern." The RAP acknowledges that there is visible evidence of raw sewage from combined sewer overflows from the City of Cleveland, but monitoring for fecal coliform at popular beaches is inadequate. The RAP claims there have been no violations of water quality standards in the City's drinking water intakes. Foran stated, however, that monitoring has been infrequent and not enough parameters are sampled for.

Ohio's Davis Besse nuclear plant on Lake Erie was criticized by several speakers at the Cleveland hearing. The plant was constructed in the Lake Erie flood plain and in the Navarre Marsh, a valuable wildlife sanctuary. Toledo Edison has proposed shallow land disposal of low level radioactive waste on site at Davis Besse. The area has been flooded by several storms in recent years and high water levels in the Great Lakes suggest that another flood is inevitable. Noreen Gebauer told us that the group she represents, the League of Women Voters of Rocky River, believes that "the highest priority [must be placed on] protection of the integrity of ground and surface

"If tough people never quit, tough problems will!"

waters" when managing low level radioactive wastes.

Residents of northern Ohio are concerned about deep well injection of hazardous wastes. Bill Warner testified for a group calling themselves Northern Ohioans Protecting the Environment (NOPE). NOPE is pressuring the State to close a deep well disposal site near Vickery, two miles from Sandusky Bay. According to Warner, a testing firm has determined that 45 million gallons of wastes have leaked from the wells into unknown rock strata. He cited another study which suggested that wastes injected into a deep well may have caused an earthquake near a nuclear power plant on Lake Erie. Warner is convinced that the solution to hazardous waste problems is reduction, reuse and recycling.

Warner left us with inspiring words: "If tough people never quit, tough problems will!"

ERIE

Presque Isle Bay, surrounded by Erie, Pennsylvania, was one of the few GLU hearing locations that is not considered an "area of concern" by the IJC. Any doubts that it should be added to the list were eliminated after listening to the testimony.

Presque Isle Bay is one of the most unique and ecologically valuable resources in the Basin. The Bay is formed by a narrow, seven-mile-long spit of land extending into Lake Erie. With over six million visitors in 1985, the spit is the most visited state park in Pennsylvania and the second most visited in the U.S. Erie's economy relies heavily on tourism which is anchored by the park.

The Bay, park and Lake Erie have been repaid with abuse. Hazardous wastes injected into a deep well on the mainland

have been surfacing on the spit. The City's aging wastewater treatment system is the longest continuous violator of water quality standards on the Great Lakes. Combined sewer overflows run through the Millcreek Tube into the Bay. Dick Kubiak, a member of the Erie County Environmental Coalition, describes the Tube as a "river of human feces."

Ralph Corvaglia presented testimony at the hearing on behalf of the SONS of Lake Erie. He described the discharge from a combined sewer going into Four Mile Creek: "While fishing, I have pulled lures through this area and brought up hair, condoms, paper, sanitary napkins, etc."

In spite of the abuse, the Bay supports a diverse ecology. Robert Sundy testified that the Bay is a major resting place for spring waterfowl migrations. He said that in an average spring about one million ducks, approximately five percent of the entire eastern flyway population, pass through the Bay to take advantage of open water and a rich food source on their way north. The City and the Pennsylvania Department of Transportation are threatening to destroy much of this habitat by constructing a four-lane highway, housing and marinas.

Erie residents complained that management of the Bay and Lake Erie is controlled at the State Capital in Harrisburg and the EPA regional headquarters in Philadelphia, both at the opposite end of Pennsylvania. The Pennsylvania Department of Environmental Resources was the only state or provincial water quality management agency on our tour that refused to testify.

Joan Lintelman from the League of Women Voters of Erie County said that management of Lake Erie is splintered and uncoordinated. She said that as a result "projects get implemented without the proper agency review, sometimes without permits and the end result is environmental damage, pollution and excessive costs." She advocated a locally-based Lake Erie Management Commission to

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coordinate decision making.

Bill Welch from the Sierra Club criticized area resource managers for withholding information that area residents are clamoring for on contaminants and tumors in fish in the Bay. Welch had just obtained a study that found high levels of polycyclic aromatic hydrocarbons (PAHs) in waterways in Erie. PAHs are suspected of causing tumors in bottom-feeding fish in Presque Isle Bay.

The Pennsylvania Fish Commission was represented at the hearing by Roger Kenyon. He said that, "although the concentrations of many toxic residues [in fish and wildlife] had been declining because of earlier action by Canada and the United States, this downward regression has not continued."

Both Kenyon and Sister Pat Lupo, chairperson of the Erie County Environmental Coalition, said one of the main sources of toxics to area waterways is hazardous waste dumps. Sr. Lupo advocated "the mapping of groundwater conditions around and under the Great Lakes Basin" as recommended by the IJC's Science Advisory Board. "In Erie County we have numerous toxic waste sites including Superfund sites. How many of these toxins are seeping into our groundwater and flowing into our lake?" she asked.

TORONTO

On a gray October day we stood on a windswept, rubble-strewn piece of land reaching out five kilometers from downtown Toronto into Lake Ontario. Trucks rumbled around us, dumping loads varying from boulders to oily dirt at the edge of the Lake. As the dump trucks withdrew, bulldozers moved in to push the mounds into Lake Ontario.

Each day approximately 900 trucks dump their loads onto the Leslie Street Spit. In 1984, they dumped 83,000 cubic meters of dredge spoils and 780,000 cubic meters of excavation materials from construction sites onto the Spit and into Lake Ontario.

Sarah Miller of the citizens' group Stop Contaminating Our Waterfront stood on the Spit, barely audible among the constant parade of dump trucks. She held an Environment Canada report showing that over 50% of the material dumped here in 1983 exceeded government guidelines for acceptable contamination levels. The report described 35% of the material as being "moderately to heavily contaminated." Although the federal, provincial and municipal governments had the report for three years, it was not released to the public until a month after our hearing.

"... the heritage of future generations may well be a source of heartache, misery and even death."

Away from the trucks and bulldozers, this finger of land forms a unique urban wilderness. Birds and plant life have done a remarkable job of bringing life to this once totally barren landscape. Ann Faraway of Friends of the Spit, a group dedicated to protecting the natural environment of the Spit, later described the potential of the Spit as "a place of beauty and a source of pride," but "the heritage of future generations may well be a source of heartache, misery and even death."

Other signs of Toronto's impact on the environment were pointed out to us at the hearing. They include the loss of wetlands and other natural areas, the loss over the past century of half the 50 species of fish native to Toronto waters, the proliferation of pollution-tolerant worms to the point where they are now the dominant species in Toronto Harbour, Toronto beaches closed because of high fecal coliform counts and 83 contaminants in treated Toronto tap water.

A major source of this degradation is toxic discharges. Colin Isaacs of Pollution Probe stated that 291,000 kilograms of synthetic organic and heavy

metal pollutants are discharged from Toronto's main sewage treatment plant into Lake Ontario each year. One hundred and fifty thousand kilograms of metals go into the Don and Humber Rivers yearly from illegal industrial and domestic sewer discharges.

Residents of Burlington and Hamilton described similar problems in their area. Recently an experiment to measure uptake of chemicals in animals in Burlington Bay (Hamilton Harbour) came to an unexpectedly rapid conclusion when most of the ducks they released as part of the

with heavy metals, PCBs and an estimated 85,000 cubic meters of radium-contaminated sediments discharged or spilt into the harbor by Eldorado.

"The environment has become much too important to leave to governments." With this blunt statement, Annie Booth, a North York resident, expressed her frustration with government. The Toronto hearing was filled with statements pointing out the contradictions between government statements of intent and the reality of their actions.

Several speakers described government



Photo Credit: Gerry Swerthoff

Another load into Lake Ontario.

experiment died after four weeks. Their intestines were full of a "black, oozy, oil-like material." Burlington Bay has been closed to swimming since 1930.

To the east of Toronto, Eldorado Resources Ltd. in Port Hope has been a source of radioactive and other contamination over the past fifty years. Several ravines are closed to the public because they were used as dumping sites for radioactive wastes. Leachate is eroding from old dump sites built on cliffs on the north shore of Lake Ontario. Harbor sediments are contaminated

funding of programs to clean up the Great Lakes as sporadic and inadequate. Frank Ciorno of the Canadian Environmental Law Association described government funding as a "pot-luck approach." "By that I refer to the government attitude that it will bring whatever scrap it can spare to the table in order to solve pollution in the Great Lakes," he said.

Governments were also criticized for withholding vital information from the public. "Storm Warning", an Environment Canada booklet describing the impacts of toxic air contaminants on the food chain,

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was ignominiously withdrawn by Environment Canada two weeks after its release. It was re-released a year later, basically unchanged, after a considerable public outcry. Other examples of failure to release information in a timely fashion were detailed.

This lack of confidence in government led many speakers to focus on the need for full public involvement in government decision-making to create the necessary pressure. As former Canadian Minister of the Environment Charles Caccia said, "It is mainly a question of mobilizing public opinion."

Another reason for needing full public involvement was given by Doris Migus, a representative of Citizens for Modern Waste Management. "Citizens and citizens' groups who live and die in particular locations of pollution," she said, "have a lot more understanding, knowledge and wisdom on their problem than any government agency."

Several government speakers at the hearing supported public participation. Jim Bishop of Ontario's Ministry of the Environment, for example, said, "Public involvement is crucial to sensible, effective decision-making." But several speakers were baffled at the contradiction between the governments' stated intentions and their frustrating experiences when they try to participate.

The feelings of urgency and of determination of many people at the Toronto hearing were summarized by Joyce McLean of Greenpeace: "Complacency has no place when time is truly running out."

BUFFALO

"Love Canal was only a warning." This message was the theme of a campaign to educate the electorate for the vote, which took place five days after our hearing, on the New York State Environmental Quality Bond Act, a measure to generate funding to clean up inactive hazardous waste sites.

The message sums up the situation in

Buffalo, Niagara Falls and the rest of western New York. Even though many of the 31 speakers at the Buffalo hearing were buoyed by hopes that passage of the Bond Act would generate much needed funds, they were cynical about the prospects for a cleanup. Years of witnessing international governmental wrangling that has brought little relief to the ravaged Niagara River has left many people jaded. Many become desensitized to the problem because it seems too enormous to get a handle on.

"Love Canal was only a warning."

Several speakers described how widespread the hazardous waste problem is in western New York. State Assemblyman John Sheffer said that, on a map showing the distribution of hazardous waste sites, western New York appears as one solid black dot. Anthony Luppino from Citizen Action of New York said that two-thirds of the sites in New York are classed as 2A, meaning not enough is known to begin cleanup. Ken Sherman of the New York Public Interest Research Group said there are 215 sites in the two counties around Buffalo and Niagara Falls. State Senator John Daly said the problem is so out of hand that two-thirds of the sites haven't been looked at since 1980.

Other speakers described how ineffective governments' efforts to clean up the problems have been. John Bunz from the New York State Conservation Council said, "Remedial actions are taking too long!" Senator Daly said that excavating dump sites is only moving the problems from one area to another. Reverend Al Laese said, "Progress has been incredibly slow, as legal maneuvers have taken years of irreplaceable time, while waste sites are still leaking." "But," he warned, "to abandon landfills in favor of incineration may simply change the pollution from one form to another."

Senator Daly said the Bond Act would

help deal with the present problem, but was not a cure-all. He warned that the problem will remain until we find a way to control the wastes we still generate and a way to safely dispose of the wastes we dig up.

The Bond Act passed in New York State and by a margin of three-to-one in western New York. Unfortunately, the same fate did not befall another piece of legislation discussed at the hearing.

Congressman Henry Nowak warned at the hearing that, despite unanimous passage in Congress, President Reagan was threatening to veto the revised U.S. Clean Water Act. "This package is essential to the future of the Great Lakes," Nowak said. It provided explicit recognition of the validity of the 1978 Agreement and charged the U.S. EPA with overseeing the Agreement's implementation. The bill provides nearly double the amount of funding for Great Lakes programs, including a program to demonstrate alternatives to deal with in-place pollutants. President Reagan vetoed the Clean Water Act shortly after the hearing; he vetoed it a second time after it was reintroduced early in 1987.

Diane Heminway from Middleport described how she became involved with environmental issues after 500 school children, including two of her own, were exposed to methyl isocyanate, the chemical that killed thousands of people in Bhopal, India. Since the incident in Middleport, she has discovered that arsenic is at concentrations of 18,000 parts per million in a ditch just off the school yard and that there is 660 parts

per million of lead in soil samples from the school yard. She said that her experiences have led her to the following conclusions:

We need a responsive government that will pay more than lip service in recognizing the value of citizen participation in decision making. No one cares more than those personally affected.

We need free access to information. The public has a right to the truth.

We need to set cleanup standards acceptable to those upon whom the exposure is being imposed.

The Buffalo River was described at the hearing as one of the sites ravaged by callous industrial dumpers. Earlier that day, Jim Spõtila of Buffalo State College's Great Lakes Laboratory took us on a boat trip up the Buffalo River. Crumbling grain elevators and rusting factories--visible monuments to a bygone industrial era--lined the river. The invisible portion of this legacy was under the water. As the boat passed over one of the "hot-spots" of contaminated sediments, Spõtila described the fish his crews had taken from the River, their bodies covered with lesions and tumors caused by the polycyclic aromatic hydrocarbons and other toxins that had been dumped by steel, dye and chemical manufacturers .

PART II: INDUSTRY, GOVERNMENT AND THE REGION'S RESIDENTS: ROLES AND RESPONSIBILITIES

The GLWQA provides an inspiring vision of the future of the Great Lakes:

* "the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem" will be restored and maintained;

* "the discharge of toxic substances in toxic amounts [will be] prohibited;"

* "the discharge of any or all persistent toxic substances [will be] virtually eliminated," and

* the waters will be free from substances produced by humans that would "produce conditions that are toxic or harmful to human, animal, or aquatic life."

... all sectors are failing to adequately carry out their responsibilities in achieving the goals of the Agreement.

The Agreement is a statement of intent for the Canadian and U.S. governments, a statement of hope for the residents of the Great Lakes Basin and a guideline by which industry, government and the public should judge their actions.

GLU's tour of the Great Lakes shows that this vision is far from being realized. The Agreement depends upon people to fulfill its promises. Voluminous evidence was brought forward showing that all sectors are failing to adequately carry out their responsibilities

in achieving the goals of the Agreement. Industry still discharges massive quantities of persistent toxic substances. Government does not have strong enough laws and regulations to achieve the goals of the Agreement and many governments discharge significant quantities of pollutants through sewage systems. The public are often oblivious to the environmental consequences of their lifestyles and contribute to the pollution of the Great Lakes.

This part of the report assesses the degree of success that industry, government and the public have achieved in carrying out their duties to protect and restore the Great Lakes Basin Ecosystem.

INDUSTRY

"Industry was a leader in developing Wisconsin; it was the leader in polluting Wisconsin; now it must be the leader in cleaning up Wisconsin." With these words, Gerald Lemerond of the North-eastern Wisconsin Audobon Society summed up the public's expectations of industry.

The widespread public conclusion is that industry continues to fail to protect the environment. Many corporations are perceived as being irresponsible and untrustworthy. Helen Elden of the Toledo Coalition for Safe Energy stated this perception in extreme terms: "Corporations lie and then do what they want."

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Because of this lack of trust, the public does not rely on self-regulation by industry, but must count on government to fulfill this function. Even industry told GLU's Task Force that self-regulation could not be counted on. Steve Bolt, environmental officer for Dow Chemical in Sarnia, said that industry tends to move much more quickly when they are in the public eye. Despite the fact that Dow Chemical had been working for a decade on improving the environmental performance of its 13 chemical manufacturing plants in Sarnia, the company's efforts escalated substantially after the public outrage which followed the discovery of a "blob" of toxic chemicals on the bottom of the St. Clair River just offshore from the plant.

The profit motive was singled out by numerous speakers at the hearings as the basic reason behind not being able to trust industry to protect the environment. In Toronto, Joyce McLean of Greenpeace said, "For polluters to significantly alter their modus operandi and eliminate toxic waste, it would mean spending portions of their profit margin, a move most industries won't do voluntarily."

Several speakers argued that the profit motive is based on a narrow perspective that ignores the long-term economic impacts of pollution. As Wisconsin State Senator John Norquist said in Milwaukee, "There are various industries that depend on clean waters--commercial and sport fishing, Universal Foods, the breweries--but I don't know of one industry that depends on dirty water." Louisa Albers of the Port Huron Chapter of the League of Women Voters said in Sarnia that "pollution abatement is cheaper than incurring the costs of an expensive cleanup years later." Joyce McLean described "the public relations coup industry could score as responsible forward-thinking corporations" as another reason it makes sense for industry to spend money on pollution abatement.

But most speakers did not have faith that these arguments would change the way

industry operates. They believe it is necessary to hit industry directly in the pocket book. "We must make it unprofitable to pollute," said Judith White of the Lake St. Clair Advisory Committee in Mt. Clemens, Michigan. Others said that flagrant pollution of the environment must be viewed as a criminal act, and that owners and managers of polluting companies should be jailed.

"We must make it unprofitable to pollute."

In communities such as Gary, Sault Ste. Marie, Cornwall and Sarnia, frustration was expressed with the threats sometimes made by industry implying that communities must make a choice between having jobs and a clean environment. Most speakers rejected the validity of such threats, stating that a false dichotomy was being posed. Labor leaders in Milwaukee, Grand Rapids, Windsor, Cleveland and Buffalo spoke out in support of strong environmental protection and rejected the "choice" notion. John Egan of Green Bay's Stop Toxics Organizing Project said, "We've got to have both a healthy environment and economy or eventually we'll have neither."

THE PUBLIC'S CHARGE TO INDUSTRY

The public who appeared at GLU's hearings were unanimous in demanding that industry live up to its responsibility to protect the environment. Industry should not see emitting pollutants into the environment as a right; this should be seen as a privilege that industry has on a temporary basis, which carries with it the responsibility to minimize the environmental impact of their operations. Many speakers stressed that fundamental to this responsibility is minimizing industries' negative impacts by searching for new production processes that minimize the need to use hazardous chemicals.

Industry must recognize that their

temporary privilege to use the environment carries another obligation. Industry must allow the public full and timely access to information gathered by industry and government on amounts of pollutants emitted and studies conducted on the environmental and health impacts of pollutants. Industrial operations can have serious implications for the environment and area residents expect to be apprised of the risks posed by their industrial neighbors.

The public insists that industry accept the public's right to have input into corporate decisions affecting pollution.

The public also insists that industry accept the public's right to have input into corporate decisions affecting pollution. For example, they are demanding that industry allow them to see plans for waste management and make sure that they are revised to protect the environment. At the Toronto hearing, Doris Migus of Citizens for Modern Waste Management said, "Citizens' groups [should] have representation in the pre-production stage of decision-making."

GOVERNMENT

The public places much of the blame for the contamination of the Great Lakes Basin Ecosystem on the governments responsible for regulating and monitoring polluters. Indeed, the public is generally more hostile towards government than towards industry when they express their concerns about water quality. They feel let down because the government's job is to protect the public.

Throughout the tour, the Task Force was told of the failure of government to have strong enough legislation and programs to implement the GLWQA. Another common complaint from the public is that governments announce grand programs but do not provide the funding to make the programs achieve their potential. In Milwaukee,

Louise Petering of the League of Women Voters said, "Strengthening means not only toughening the provisions of the Agreement, but funding of programs which carry out the objectives of its provisions."

Even in those cases where the public feels that legislation is adequate, they are upset with the failure of governments to enforce their own programs. At the Erie hearing, Ed Kissell of Save Our Native Species complained that Pennsylvania's Department of Environmental Regulation know the polluters but do not enforce the regulations and stop the contamination. Complaints such as this were made at almost every hearing.

The public feels that government downplays the problems. Dayle Harrison of the Kalamazoo River Protection Association described governments' "good news syndrome." For example, when Dow's waste water treatment plant overflowed during a flood in the Saginaw Bay region, Michigan's Department of Natural Resources downplayed the contamination that occurred even before their own test results were in. It was later shown that the flooding resulted in the discharge of at least 20 chemicals, including dioxins and hexachlorobenzene.

The public feels that government downplays the problems.

Instances of governments hiding or delaying the release of significant information about the environment were described to the Task Force. Canada's federal government quickly withdrew a publication describing contamination of the food chain by contaminants in the air. Ontario's governments have been notoriously slow at releasing reports listing industries and municipalities that discharge wastes into the Great Lakes at levels higher than the accepted standard.

A strong feeling exists around the Basin that government is too close to the

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polluters and is, therefore, more sympathetic to polluters' concerns than the public's. At the Sarnia hearing, Laura Barnowski of Citizens Organized Against Chemical Hazards in Algonac, Michigan, said that governments just give industries licenses to pollute. It was pointed out in Sault Ste. Marie that 45 of the 105 Ontario industries discharging wastes into the Great Lakes Basin were out of compliance with their government-developed effluent guidelines in 1984.

Dennis Muchinicki from the Office of Ohio's Attorney General said in Cleveland that "Ohio's EPA should adopt tougher attitudes towards polluters and stop negotiating with them." In Sarnia, Paul Carter described the frustrating delays he encountered when he tried to get Ontario's Ministry of the Environment to investigate an overflow of pollution into the St. Clair River.

"For every environmental lobbyist, there are about 15 lobbyists for private industry."

Lin Kaatz Chary of the Grand Calumet Task Force in Gary said, "EPA says the burden of proof is on the citizens to show us the pollution problems." At the Saginaw Bay hearing, a Michigan State Representative, Tom Hickner, explained one reason behind government's sympathy to industry: "For every environmental lobbyist, there are about 15 lobbyists for private industry."

The frustration created by the suspicion that government is too close to the polluters is compounded by the public's feeling that government is not really interested in public participation. One of the most frequently repeated statements at the hearings was that government must pay more attention to the public. Many speakers said that governments frequently are not sincere in their claims that they want public input. Rick Coronado of the Windsor and District Clean Water Alliance said, "The condescending government attitudes must end."

As an example of government failure to provide for public input, speakers at several hearings said they were delighted that GLU organized these hearings, but that it should not have been necessary. They said that hearings such as these were something that government should organize on a regular basis.

Lack of coordination among government jurisdictions was an often-sited complaint about government during the hearings. Joan Lintelman of the League of Women Voters of Erie County described the "splintering of authority and responsibilities" among the state, federal, local and international agencies with a role in protecting Lake Erie. "In this state of confusion," she said, "projects get implemented without the proper agency review, sometimes without permits and the end result is environmental damage, pollution and excessive costs."

Buck passing among jurisdictions is another source of frustration. In Toronto, several speakers were particularly angered by the way in which the city, provincial and federal governments do not take responsibility for the dumping of contaminated fill into Lake Ontario. The Toronto Harbour Commission supervises most of these lake-filling activities. Despite being a government agency, there is no direct avenue for the public to make input to the Harbour Commission or try to change its activities.

THE PUBLIC'S CHARGE TO GOVERNMENT

"The U.S. is launching a program against cocaine and 'crack'," said Reverend Thomas Schoenherr from Marysville, Michigan, in his presentation at the Sarnia hearing. He advocated a similar attack on "those chemical hazards which have severely impaired our prospect for healthy living" in the Great Lakes.

This demand that government intensify its efforts to clean up the Lakes was repeated at all hearings. Citizens made it clear that they are willing to pay the

tax dollars necessary for such programs. For example, Mark Venzke, a resident of Hammond, Indiana, said that he would forego government spending on roads if the money were put towards better enforcement.

The other major message from the public to the government was to recognize the value of public input. At the Kingston hearing, Hunter Grimes from Ducks Unlimited said that their love of the St. Lawrence River makes them experts. The public demands that they be given much greater opportunities to participate in decisions that affect Great Lakes water quality. They stressed that such programs must have adequate funding to support them and that government should give money to environmental and citizens' groups.

THE REGION'S RESIDENTS

"Complacency, thy name is disaster." Charles Davidson of the Lake County Fish and Game Protective Association gave this warning at the Gary hearing. Concerns about public apathy were raised at each of the hearings.

"Political will is a function of groups fussing."

Many government speakers stressed that public pressure is a key ingredient in full implementation of the GLWQA. In Toronto, for example, Charles Caccia, Canada's former Minister of the Environment, said that it is public pressure that will create the political will to implement the Agreement. In Windsor, another Canadian Member of Parliament, Steven Langdon, said, "Political will is a function of groups fussing." Peter Wise, Co-chair of the IJC's Water Quality Board and Director of the Great Lakes National Program Office of the U.S. EPA in Chicago, said "Continuing public support for our efforts is the only assurance that enough will be done over

a long enough period of time to achieve the ultimate goal of the Agreement."

Public complacency was seen as being mainly a product of lack of awareness of the severity of the problems. Richard Grover of Potsdam, New York, said in Cornwall: "We have missed the boat since Earth Day. The problems remain, but the awareness of them is decreasing."

Many speakers said that the public usually fails to recognize how they contribute to contamination of the Lakes. Speaking at the Cleveland hearing, Nancy Martt of the Cuyahoga County League of Women Voters said:

Stewardship and education for all of us should be stressed in the media, schools, business and government. The small dry cleaner putting used fluid in the sewer, the home mechanic changing oil and putting it in a hole, the service station with a leaking gasoline tank, the waste hauler with an open spigot on his truck, the homeowner throwing unused household and garden chemicals in the weekly trash ... all may contribute as much to lake and groundwater pollution as careless industrial practices.

In a few hearings, citizens' groups were accused of blocking solutions to contamination problems. In Buffalo, New York State Senator John Daly, for example, said, "We are prevented from constructing facilities that will destroy waste, because the public refuses to accept them in their communities." Talking about the "Not In My Back Yard Syndrome" (NIMBY), Frank Shaw of the Sierra Club in Milwaukee said that the public should be "concerned but not paranoid" about such proposals.

Lack of awareness by the public of the contribution their lifestyles make to contamination problems was stressed by

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many speakers. The need to assess buying habits and to insist upon fewer and more environmentally-sound products was repeated at many hearings. At Sarnia, Reverend Thomas Schoenherr said: "We as the consuming public need to stop using these chemicals in and around our homes. As long as we demand them, they will be produced and we are reaping the whirlwind of our greed."

THE CHARGE TO THE RESIDENTS

The public must become educated about the problems of the Great Lakes. Resources must be put into conducting this education in the homes, schools and at work. Many speakers stressed the importance of environmental education in the schools. At the Sault Ste. Marie hearing, Ruth Fletcher said: "We must instill love and respect for the environment in our children. We must pressure our school boards to make environmental education part of the curriculum."

"We must instill love and respect for the environment in our children."

Speaker after speaker stressed that the public must insure that governments clean up and protect the Great Lakes. Dan Pine of the Grand River Indian Band said in Sault Ste. Marie, "We must choose leaders who have the commitment to protect our environment." They must make sure that their elected officials are aware of their concern about the Great Lakes. Members of the public should fully participate in public input programs provided by government. Public support of environmental legislation and stronger programs must be coupled with support for the necessary tax dollars.

Finally, those speaking at the GLU hearings emphasized that the public must assess their lifestyles and make the adjustments necessary to protect the

environment. In Toronto, Annie Booth said:

We must come to understand our personal and immediate responsibility for the state of our world and provide solutions. Our chosen lifestyle, our consumer practices all impact our environment and directly lead to polluted water, air and land. We must consciously accept our responsibility for such situations and consciously change our lives to protect our environment.

"We must come to understand our personal and immediate responsibility for the state of our world and provide solutions."

SUMMARY

The overwhelming message from the public at the Citizens' Hearings on Great Lakes Water Pollution is that industry, government and the residents of the Great Lakes Basin must all take Great Lakes pollution much more seriously. First must come the recognition, as pointed out by Edward Mullion of Grand Rapids, that "there is no away;" carelessly disposed hazardous wastes will come back to haunt this and future generations.

Combined with this must be a recognition that technological fixes will not necessarily come along in the future to repair the damage created today. Judith White of the Lake St. Clair Advisory Committee said in Sarnia that "our faith that we can create and trash any chemical resembles a technological and scientific hubris," an arrogance that may one day come back to destroy the environment and human existence.

Consistently from all parts of the

Great Lakes Basin comes a call for breaking down the traditional barriers that interfere with finding and implementing solutions to the environmental problems of the Great Lakes. The Agreement has made a start in overcoming the international boundaries. But more effort must be put into breaking down that barrier as well as the jurisdictional lines between federal, provincial, state and municipal government agencies and the barriers between industry, government and the public so energy can be focussed upon protecting and restoring the Great Lakes Ecosystem.

"Our faith that we can create and trash any chemical resembles a technological and scientific hubris."

Public pressure led to the creation of the first water quality agreement. Public pressure must also be the force behind the dissolution of these barriers and the fuel that drives the protection and restoration of the Great Lakes Ecosystem.

PART III: FULFILLING THE PROMISES FINDINGS AND RECOMMENDATIONS

The 382 people who spoke at GLU's 19 hearings vividly described how much more must be done to clean up and protect the Great Lakes Ecosystem. The following recommendations are based on the public's perceptions of where efforts should be focussed and their suggestions for how the promises can be fulfilled.

REVIEW AND REVISION OF THE AGREEMENT

THE PUBLIC'S ROLE

The 1978 GLWQA requires the U.S. and Canadian governments to "conduct a comprehensive review of the operation and effectiveness of this Agreement following the third biennial report of the Commission."

... repetition of this secretive process for reviewing and changing the Agreement is not acceptable.

When the 1972 Agreement was reviewed and a new Agreement negotiated, the governments allowed no opportunity for the public to participate. Those who spoke at GLU's hearings made it clear that repetition of this secretive process for reviewing and changing the Agreement is not acceptable to the 37 million

residents of the Great Lakes Basin whose lives are so dependent upon Great Lakes water quality.

While lauding GLU for putting on the citizens' hearings, many speakers stressed that these hearings should not be viewed by the federal governments as relieving them of their responsibility for providing additional opportunities. Mechanisms suggested for soliciting public opinion were hearings, inclusion of non-government members on review committees and circulation of draft documents for review.

Two groups who spoke at many of the hearings who were highly appreciative of the opportunity provided by GLU were native people and representatives of the states and provinces.

Representatives of seven Indian Bands testified at GLU's hearings. They described how severely the culture, food sources and way of life of the almost half-million native people who control seven-million acres of land in the Great Lakes Basin have been affected by toxic chemicals and other abuses of the Great Lakes. Laurie Montour of the Walpole Island Indian Band said in Sarnia, "Native people have a right to decisions about Great Lakes water quality. We are, after all, the first people to use it and we still partake of it in ways that are not easily tenable to non-natives."

State and provincial representatives complained that the federal governments

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negotiated the 1978 Agreement without input from them. Yet this is the level of government with much of the responsibility for protecting Great Lakes water quality. Jan Hacker of Michigan's Office of the Great Lakes said in Sarnia, "The states and provinces should be made full partners in all discussions concerning changes to the Agreement."

"Native people have a right to decisions about Great Lakes water quality. We are, after all, the first people to use it and we still partake of it in ways that are not easily tenable to non-natives."

These are only two examples of groups within the Great Lakes Basin who must be given the opportunity to participate in the review of the GLWQA. All residents of the region have a significant stake in Great Lakes water quality.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the two federal governments provide opportunities for citizens from throughout the Great Lakes Basin to make input into the governments' reviews of the existing Agreement.

If the two federal governments decide to renegotiate the Agreement, they should involve the public, the states and provinces in the renegotiation process. This involvement should at least include providing opportunities for public comment on a draft Agreement.

Because progress under the Agreement has been insufficient, it is essential to conduct another formal assessment of the GLWQA in a few years. This would provide an opportunity to assess whether the exhortations of the present review are being heeded.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the Agreement again be formally reviewed by the IJC and the two federal

governments in 1990 and substantial opportunities be provided for public input into this review.

THE NEED TO RENEGOTIATE

Some speakers at GLU's hearings looked at the severity of toxic contamination in the Great Lakes and concluded that the Agreement is a failure. These people said that the GLWQA should be scrapped and a new, tougher one negotiated.

Most speakers believe, however, that the problem is not the words in the Agreement, but the lack of will on the part of elected officials and government agencies to implement the GLWQA. They believe that the solution to the problem of toxic chemicals in the Great Lakes is a concerted effort by government to achieve the goals of the existing Agreement.

... the problem is not the words in the Agreement, but the lack of will on the part of elected officials and government agencies to implement the GLWQA.

Some of these people think that renegotiation would divert government resources from the real problems. Also, during the renegotiation, the governments and IJC would be in a state of uncertainty, potentially resulting in some activities being suspended.

Many residents of the Great Lakes region are afraid to have the Agreement opened up for renegotiation at this time because of the poor environmental record of the Reagan and Mulroney governments. They don't want to risk a new agreement being negotiated that is weaker than the existing one.

The GLU Task Force believes that all efforts should be focussed on cleaning up the Great Lakes and that the delays and risks involved in renegotiation should be avoided.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the two federal governments not renegotiate at this time.

The GLWQA applies only as far easterly as the point where the St. Lawrence River ceases to be the international border, near Cornwall and Massena. But the people who live further downstream receive the toxics discharged from upstream sources.

"As long as the St. Lawrence River is neglected in negotiation processes on Great Lakes water pollution, Quebec will be the victim of contamination over which it has no control."

Most speakers at the Montreal hearing said that it is essential to include Quebec in the Agreement. Daniel Green of the Societe pour Vaincre la Pollution said, "As long as the St. Lawrence River is neglected in negotiation processes on Great Lakes water pollution, Quebec will be the victim of contamination over which it has no control." Jean-Paul Harney, a member of Quebec's provincial parliament, cited another reason for including Quebec in the Agreement: inclusion might nudge the Province into cleaning up its own pollution sources.

The GLWQA says that the "Agreement, the Annexes and the Terms of Reference can be amended by agreement of the Parties" (Article XIII).

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the Great Lakes Basin Ecosystem be redefined as the drainage basin of the St. Lawrence River at or upstream of Trois Rivières.

The Agreement contains provisions for designating limited use zones. These are zones near industrial or municipal waste discharge pipes that are not expected to achieve the generally desirable water quality guidelines and, as a result,

will be of limited human use.

Limited use zones have not been designated because the concept is contrary to the U.S. Clean Water Act. Many speakers said that limited use zones would condone or even encourage degraded water quality.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the provisions for limited use zones (Article IV, Section 1(f) and Annex 2) be removed from the Agreement.

Article II(a) and Annex 12 2(a) present as goals virtually eliminating or reducing to zero the discharge of persistent toxic substances. Annex 1, however, lists water quality objectives for some persistent toxic substances. Several speakers suggested that these objectives contradict the goal of zero discharge, because they seem to accept a certain degree of contamination. Helen Henrikson of the Little Cataraqui Environment Association in Kingston objected to the inclusion of persistent toxic substances in Annex 1 because "there are no safe thresholds at which these chemicals can be considered harmless."

THEREFORE, THE GLU TASK FORCE RECOMMENDS that Annex 1, Specific Objectives, state that the Agreement's goal is to achieve zero discharge of persistent toxic substances. The objectives in Annex 1 should regularly be reviewed and updated.

ZERO DISCHARGE

The public believes the contamination of the Great Lakes is so severe and that so little is known about the long term health effects of toxics in the ecosystem, that zero discharge of persistent toxic substances is the only reasonable course of action to pursue. Tom Washington from the Michigan United Conservation Clubs told the Task Force in Windsor that, "We're far from reaching the zero discharge goal of the U.S. Clean Water Act and we haven't controlled toxics as



Steve Bolt telling GLU Dow supports zero discharge.

Photo Credit: Pollution Probe

mandated in the [GLWQA]." Until we do, he said, "We will continue to witness an accumulation and build-up of toxics in the waters, in the sediments, in our fish, and of course, in our own bodies."

A seemingly endless parade of testifiers stressed the need to achieve zero discharge including representatives of labor, environmental groups, the federal governments, municipalities, almost every state and provincial water quality agency and even industry. Testifying in Sarnia on behalf of Dow Chemical, for example, Steve Bolt described zero discharge as a moving target that his company is striving for. Only one speaker, John Cooke, representing the Kingston Chamber of Commerce, said zero discharge is unrealistic.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the goal of zero discharge of persistent toxic substances be used as a primary criterion for assessing progress under the GLWQA.

... zero discharge of persistent toxic substances is the only reasonable course of action to pursue.

In Toronto, John McLachlan of the Sierra Club said, "The governments concerned now piously assure us that they are working towards the objectives [of the Agreement] when in fact many of them are sitting on their hands. This is unacceptable." Governments must be made more accountable for achieving the goal of zero discharge.

Both federal governments and representatives of water quality management agencies in all the states and provinces except Pennsylvania presented testimony to the Task Force at GLU's hearings. Many voiced support for retention of the concept in the Agreement, but virtually none of them said what their agency was doing to achieve zero discharge in their

water quality protection efforts. Zero discharge should be the basic yardstick against which government progress at implementing the GLWQA is measured.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments incorporate the virtual elimination of persistent toxic substances as the guiding principle of their water quality programs.

The IJC, federal, provincial and state governments should annually assess and report to the public on progress in achieving zero discharge.

Zero discharge should be the basic yardstick against which government progress at implementing the GLWQA is measured.

Those responsible for implementing the GLWQA have failed to define methods and timelines for achieving the overriding goal of zero discharge. One of the areas in which implementation gets bogged down is in efforts to define zero discharge. The public is frustrated with discussion of what this concept means. David Bigley of Save the River said in Kingston, "Zero discharge is as clear a concept as can be; it simply means no more direct discharge of dangerous toxic chemicals into the Great Lakes Ecosystem."

"Nowhere is there an established time table for eliminating toxics in the Basin."

Evidence of the failure of the governments to implement zero discharge was presented by Tom Washington at the Windsor hearing. "Nowhere is there an established time table for eliminating toxics in the Basin," he concluded.

Because zero discharge is central to protecting Great Lakes water quality under the Agreement, the IJC must become

a leading force pushing for attainment of this goal. Several speakers, including Robert Ginsburg of Citizens for a Better Environment speaking at the Chicago hearing, suggested that the IJC should be given a charge to recommend how the governments can reduce toxics by a specified amount within a given time frame.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC prepare an inventory of all known sources of persistent toxic substances to the Great Lakes Basin.

The IJC should recommend programs and timelines for achieving zero discharge of persistent toxic substances.

THE IJC

ITS ROLE:

The International Joint Commission and the Great Lakes Water Quality Board must open their eyes to the crisis facing us in the Great Lakes... A unique opportunity is available to them right now. The choice is to accept the responsibility that is squarely on them to take concrete measures to deal with this problem, or to go down in history as a small group of indifferent bureaucrats who, through their lack of leadership and commitment, stood idly by and witnessed the death of a magnificent ecosystem, and failed to protect the lives and health of millions of innocent people.

This challenge thrown out to the IJC by David Bigley of Save the River echoes what many people in the Great Lakes Basin expect of the IJC.

Many speakers at GLU's hearings feel

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that the IJC is not living up to the challenge. Their disappointment came through in their descriptions of the IJC: "a toothless tiger," "wimpy," "a cloistered little group of isolated professionals," "hamstrung by politics."

At the Buffalo hearing, Margherita Howe of Operation Clean in Niagara-on-the-Lake said that the IJC had not contributed to finding solutions to the toxic onslaught of the Niagara River. "If the IJC were dissolved tomorrow, we wouldn't miss them," she observed.

The public expects the IJC to be more aggressive and militant in carrying out the Agreement.

The overwhelming opinion of the speakers at the 19 hearings was in favor of the IJC taking a much stronger role in protecting the Great Lakes. The public expects the IJC to be more aggressive and militant in carrying out the Agreement.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC provide greater leadership in implementing the GLWQA. It must more actively promote the goals of the Agreement by proposing programs and timelines for attaining these goals.

Many speakers proposed that the IJC be given new powers by the two federal governments so that the Commission could act as a prosecutor of polluters and governments that don't adhere to the Agreement and could make final judgements on whether specific projects affecting the Great Lakes would be allowed to proceed. Others believed that the main power of the IJC is, and should remain, as Marguerite Shand of Kingston said, its ability "to embarrass the parties into compliance by exposing their failures."

The GLU Task Force concludes that regulation and enforcement should remain the responsibilities of the federal, provincial and state governments. The

IJC should function as a watchdog to insure that the governments are fulfilling their obligations under the GLWQA.

"... embarrass the parties into compliance by exposing their failures."

To play this role, the IJC does not need additional powers. If the IJC were to more fully use the powers given it in the Agreement, it would provide an extremely valuable service to the residents of the Great Lakes Basin.

The public wants the IJC to comment directly on government and private sector proposals while these are still under consideration. In 1986, residents in Windsor called upon the IJC to review and comment on what impacts emissions crossing the international border from a municipal incinerator under construction in Detroit could have on their health. Michigan residents wanted the IJC to comment on water quality standards proposed by the State of Michigan. But the IJC consistently refuses to comment on such matters. In Article VII, 1(c) and (d), the IJC is given the responsibility to review such items.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC publicly issue opinions on proposed laws, programs and projects that could affect Great Lakes water quality.

Both the 1978 GLWQA and the Boundary Waters Treaty of 1909 (Articles IX and X) provide that the parties may refer water quality issues and disputes to the Commission either for final decision or "examination and report." Extremely controversial matters, such as the contamination of the Niagara River, should be referred to the Commission for decision. In the Niagara case, action by the Commission could have substantially decreased the length of time it took the U.S. and Canadian federal governments, New York State and Ontario to come to a cleanup agreement.

The parties should refer some water quality issues to the Commission for "examination and report." This provision was used to set up the Pollution From Land Use Activities Reference Group (PLUARG); some people at the GLU hearings suggested that the Commission be given a similar reference on toxic substances.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the two federal governments more frequently use the IJC's ability to resolve disputes and review Great Lakes water quality issues. The IJC should encourage public input into such proceedings.

PUBLIC INVOLVEMENT:

The IJC's power relies primarily upon "moral suasion." Such power functions best through its ability to publicly embarrass those who are not living up to their commitments. This means that the IJC should operate in the public limelight.

In addition, the public is looking for a relatively impartial body of experts to give it information on Great Lakes water quality and on the impacts of pollution on the environment and their health. The IJC could potentially fulfill this function. Unfortunately, the IJC has allocated only limited resources to its public information and education functions.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC develop and fund more effective, broad-based public information and education programs.

Because of its binational nature, the IJC has always conducted itself as a diplomatic agency, often acting in a secretive and aloof manner. Only within the past year has the Water Quality Board begun allowing the public to attend its meetings; Science Advisory Board meetings are still closed to the public. This attitude is unacceptable to the public on

matters as critical to their survival as water quality in the Great Lakes.

The IJC should encourage the public to attend and speak at all Water Quality and Science Advisory Board meetings. It should also include the public as full participants in all its workshops and forums.

... the IJC has allocated only limited resources to its public information and education functions.

The Water Quality Board is made up solely of federal, state and provincial water quality administrators. This Board is the body primarily responsible for advising the IJC on the progress made by these government bodies in implementing the GLWQA. In addition, since the Commission does not have adequate budget to collect and analyze its own water quality data, it must rely on these same jurisdictions for the information it needs to assess Great Lakes water quality conditions. This creates a very unsatisfactory situation for arriving at independent evaluations. In previous biennial reviews of the GLWQA the IJC has criticized the governments for not supplying the Commission with complete and timely information.

In Kingston, Marguerite Shand described the awkward condition this creates:

WQB members are required to relay information gathered by their respective organizations to the IJC...it would be naive to assume that these representatives would willingly provide explicit information that would reflect badly on their organizations.

The different roles assigned to the WQB place members in a conflict of interest...in effect, the WQB is being asked to criticize its own efforts.

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... it would be naive to assume that these representatives would willingly provide explicit information that would reflect badly on their organizations.

Many people who appeared at the GLU hearings believed that the only way to overcome this unacceptable situation is to place environmental and citizen group members on the Water Quality Board. This is essential if the Water Quality Board and thus the IJC are to gain the trust of the public.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that representatives of the public be placed on the Water Quality Board.

The public should continue to be placed on the Science Advisory Board.

The public is demanding that the IJC become much more responsive to their concerns and much more aggressive in criticizing those responsible for not implementing the GLWQA. If this is to be achieved, the IJC needs more direct, regular access to advice from the public than it now has available to it.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC establish a Citizens' Advisory Board. This board, made up entirely of non-government members, should hold public hearings, issue reports and make recommendations to the IJC in response to public concerns. The Citizens' Advisory Board should be provided with staff and support services through the Great Lakes regional office.

Adequate mechanisms do not exist to hold the IJC accountable to the residents of the Great Lakes Basin. The reports of the Water Quality Board only come out every two years. The IJC's biennial reviews of the GLWQA have consistently been released late. The biennial report to be released as of this writing should have come out in 1985.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that each year, the IJC Commissioners prepare a report on progress at implementing the GLWQA. This report should include a list of significant polluters. The IJC Commissioners should appear before Congress and Parliament each year to report on progress at implementing the GLWQA.

... place environmental and citizen group members on the Water Quality Board.

THE GOVERNMENTS

The Canadian and U.S. federal governments signed the GLWQA and, therefore, they must bear the ultimate responsibility for its successes and failures.

Most people who spoke at GLU's hearings seriously doubt whether the U.S. and Canadian federal governments are committed to cleaning up the Great Lakes. Several indicators of the federal governments' lack of commitment to the Agreement were repeated at hearing after hearing: weak environmental legislation and regulations, failure to prosecute polluters, cuts in funding for Great Lakes programs and failure to respond to IJC recommendations for improving Great Lakes water quality. If the Great Lakes are to be cleaned up, the two federal governments must make a substantially larger commitment to addressing these problems.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the two federal governments place much more emphasis on passing legislation and regulations and allocating resources to achieve the goals of the Agreement.

Although they are not signatories to the GLWQA, the state and provincial governments have a major responsibility for correcting Great Lakes water quality problems. They issue the permits that control or allow the discharge of toxic

substances into the water, air and land. They have lead responsibility for developing and implementing remedial action plans. Presentations at the hearings in all parts of the Basin clearly show that the public holds the states and provinces responsible for many of the environmental problems they are encountering.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the states and provinces recognize that they are frequently the institutions most directly involved in protecting Great Lakes water quality through their daily activities and must, therefore, assume much of the responsibility for implementing the GLWQA.

At the Duluth hearing, Alan Ruger of the Great Lakes Indian Fish and Wildlife Commission in Odanah, Wisconsin, said that there was nothing in the Agreement to interfere with its implementation. "What seems to be missing," he said, "is public and political awareness and support." The governments' failure to provide information and greater opportunities for public participation is the major reason for the lack of public awareness and support.

"What seems to be missing is public and political awareness and support."

Several Canadian speakers were angry with Environment Canada and the Mulroney government for interfering with their ability to get vital information on Great Lakes contamination. At several hearings, the Task Force was told about Environment Canada's quick withdrawal of its publication "Storm Warning" from circulation after it stirred up controversy. This booklet discussed sources of atmospheric pollution and their impact on the food chain. In Windsor, Steven Langdon, a member of the Canadian Parliament, described "the silencing" of Environment Canada scientists who used to be an invaluable, respected source of

information to all residents of the Great Lakes.

Rick Coronado of the Windsor and District Clean Water Alliance said that, if the governments are truly interested in public participation, they must provide funding to citizens' groups. But sadly, the Reagan administration is providing less funding for public participation programs than did previous administrations.

Full incorporation of the public's wealth of knowledge, experience and common sense will result in much better water quality programs throughout the Great Lakes Basin.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments develop much more complete and open programs to inform and involve the public in Great Lakes water quality management activities and provide more funding to support these programs.

The Great Lakes Amendment in the new U.S. Clean Water Act instructs the Great Lakes National Program Office to "carry out the responsibilities of the United States under the Great Lakes Water Quality Agreement of 1978." This Amendment is the first explicit recognition of the Agreement in U.S. federal law.

Ontario's "Municipal Industrial Strategy for Abatement", while not specifically referring to the Agreement, states one of the basic goals of the Agreement in its introduction: "the virtual elimination of toxic contaminants in municipal and industrial discharges into waterways."

Statements such as these in legislation and regulations are essential to elevate the recognition of the Agreement and to provide a basis upon which the public can hold the governments accountable for implementing the Agreement.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that federal, provincial and state legislation, regulations and programs affecting Great Lakes water quality be

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consistent with the goals and objectives of the GLWQA. These initiatives should state that they are intended to fulfill the goals of the GLWQA.

Article VII of the Agreement says that the IJC should provide advice and recommendations to the Parties. The governments could gain substantial assistance in assessing the basin-wide impacts of their proposed programs by asking the IJC for comments. If the governments choose to reject the IJC's advice, they should publicly state their reasons for doing so.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments seek the advice of the IJC on all legislative and regulatory initiatives potentially affecting Great Lakes water quality prior to adoption.

... there was little evidence that the governments assess the progress of their water quality programs relative to the requirements of the Agreement."

In Toronto, Charles Caccia, Canada's former Environment Minister, said that the basic challenge is to devise mechanisms to make the governments and the IJC more accountable to the public. In testimony presented by government representatives to the Task Force, there was little evidence that the governments assess the progress of their water quality programs relative to the requirements of the Agreement.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that each federal, provincial and state government issue an annual report describing its progress in achieving the goals of the GLWQA, with particular emphasis on movement towards zero discharge of persistent toxic substances.

Annually, Congress and Parliament should hold hearings on progress at implementing the Agreement. They should call upon the IJC Commissioners and representatives of federal government agencies to testify. They should also encourage the public to testify.

A piece of evidence presented by several speakers as indicative of the governments' lack of commitment to the Agreement is their failure to respond formally to the IJC's reports. For example, for several years the IJC has been recommending that Pennsylvania and Ohio limit the phosphate content of detergents to bring it into line with controls in other Great Lakes jurisdictions. These two states have never formally responded to the IJC, stating why they have chosen to ignore this recommendation.

Hallet Harris of Green Bay said, "We need regular and timely response" from the governments on the IJC's recommendations. Not only does the failure to respond indicate a lack of serious commitment; it also makes it more difficult for the public to hold the governments accountable for their actions or inactions.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments publicly respond, in a timely manner, to IJC reports and recommendations.

Over the past several years, both the U.S. and Canadian governments have been unnecessarily slow at filling vacant Commission positions on the IJC. For example, for the two-year period between December 1980 and December 1982 the IJC never had its full complement of Commissioners. For one six-month period during that time, there was only one Commissioner. During the last six months of 1985, only one of the three Canadian positions was filled. Several speakers pointed to this situation as yet another

example of the governments' lack of commitment to the IJC and the Agreement. The existence of such vacancies hampers the ability of the IJC to provide leadership in implementing the Agreement.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal governments appoint new Commissioners as soon as vacancies occur on the IJC.

Accountability of IJC Commissioners would be improved if their appointments were publicly scrutinized. Currently the U.S. appointees must be approved by the Senate although these reviews, if they occur, have not been well-publicized in the Great Lakes Basin. The Canadian Commissioners are appointed in a completely closed process by the Canadian Cabinet.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the U.S. Senate and Canadian Parliament hold hearings to approve the appointment of Commissioners.

The GLWQA is a commitment by the two federal governments to clean up and protect the Great Lakes. The state and provincial governments, however, are the ones who frequently must play the lead role in implementing the Agreement. Representatives of state governments who testified at the hearings repeatedly called for financial support from the U.S. government to help them implement the Agreement.

Partnerships between the federal governments and the states and provinces are essential for proper implementation of the Agreement.

Several speakers from the Great Lakes states, as well as from Quebec, looked enviously at the "Canada-Ontario Agreement Respecting Great Lakes Water Quality." Under this arrangement, in

return for federal financial support, the Ontario government has agreed to carry out some of the Canadian government's responsibilities under the Agreement, for example, reporting on industrial discharges and constructing and upgrading sewage treatment plants. Partnerships such as this between the federal governments and the states and provinces are essential for proper implementation of the Agreement.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the Canada-Ontario Agreement be assessed as a possible model for facilitating implementation of the GLWQA through shared federal-state and federal-provincial responsibilities and resources. The governments should consider using this model for Quebec and Canada, and the States and the U.S. federal government.

HUMAN HEALTH

"The health of the Lakes determines the health of the people." In this straightforward way, at GLU's Marquette hearing Cathy Doman of the Upper Peninsula Environmental Coalition pointed to the alarm bells that news of toxic chemicals in the Lakes is raising in the public's mind.

"The health of the Lakes determines the health of the people."

Citizens throughout the Great Lakes region are worried about the impacts toxic chemicals may be having on their health and the health of their offspring. Repeatedly, people at the GLU hearings referred to the statement from the Royal Society of Canada and National Academy of Sciences that residents in the Great Lakes Basin have higher levels of toxic substances in their bodies than do residents of other regions of North America. They want to know what effects

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the toxics in their bodies are having.

Information on exposure levels and of health impacts is critical to the public to help them assess the cleanup and control measures that need to be taken in the Great Lakes. Albert Laese of the Ecumenical Task Force of the Niagara Frontier, a group that has provided considerable support to former and current residents of the Love Canal, said at the Buffalo hearing, "Only when we begin to combine studies of the cumulative effect of all exposures with studies of ambient levels in air and water, can we begin to draw conclusions about what--if any--discharges may be permitted in the future."

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC, with the help of the Science Advisory Board, insure that all epidemiological, medical and health statistics and assessments are made available to the public. The IJC and the federal, provincial and state governments should prepare and widely distribute publications on health impacts of toxics in the Great Lakes. These publications should be written in a style that is easily understandable by the public.

Speakers at the hearings pointed out major deficiencies in the information now available and described areas in which they want more research to be conducted.

A commonly repeated concern was cumulative effects. Tom Washington of the Michigan United Conservation Clubs said, "We still don't know the cumulative, long-term impacts from these chemicals on our lakes and on the human population." "How will the cumulative effect of these toxins affect the health of our pregnant women, breast-fed children and all human beings living in the Great Lakes Basin?" asked Sister Pat Lupo of the Sierra Club at the Erie hearing. In Sarnia, David Innes, a biologist at Windsor's Great Lakes Institute, said, "The apparent absence of the acute effects should not lull us into

ignoring the accumulation of these contaminants in the organisms in this area and probably in our own bodies."

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the governments substantially expand their funding of research on human health effects of toxics.

The information the public needs includes:

- (i) information on total body exposures to chemicals, and the effects of these exposures on human health,
- (ii) information on the effects of chemicals and mixtures of chemicals on the food chain, and
- (iii) information on the levels of a wider array of contaminants in foods, air and water than is now available.

Each year Ontario issues a "Guide to Eating Ontario Sport Fish", aimed at protecting human health. Susan Rang of the Institute of Environmental Studies at the University of Toronto cited this guide as "evidence that we are in trouble."

"The apparent absence of the acute effects should not lull us into ignoring the accumulation of these contaminants in the organism in this area and probably in our own bodies."

Advisories recommending limited consumption of some species and sizes of fish have been issued in each of the Great Lakes because of concern about human health risks posed by the contamination levels in the fish. Speaking in Windsor, Dennis Dresser of the Essex County Fish and Game Advisory Committee said, "The only local fish given a clean bill of health in all sizes is the sucker." Lakes Michigan, St. Clair,

Superior and Ontario have been closed to commercial fishing for some species for the same reason. Evidence was presented at GLU's hearings showing that numerous forms of wildlife have become so contaminated they are unfit for human consumption.

... the worst health costs from this contamination are "borne by the rural citizens and Native Americans."

Alan Ruger, an environmental biologist for the Great Lakes Indian Fish and Wildlife Commission, said in Duluth that the worst health costs from this contamination are "borne by the rural citizens and Native Americans who rely on wild fish and game for a greater portion of their sustenance... Many of these costs are deferred to future years and future generations."

Serious limitations were described during the hearings about fish consumption advisories. Dennis Dresser pointed out that the fish are tested for only a limited number of contaminants. He called for "thorough, up-to-date and more general testing of the fish with recommendations for consumption based on acceptable health standards for all the dangerous chemicals currently known to be present in our waters."

... asking people to change their eating habits and food sources should not be seen as the solution to the problem.

A major concern is the inconsistencies between various government jurisdictions in the methods used to measure contaminants in fish and the levels at which consumption advisories are issued. Alan Ruger pointed out that "with the exception of the Lake Michigan fish consumption advisory, advisories are issued by each state and province." This means a fish may be considered unsafe to consume

at one spot, but, if it swims across the border, it becomes safe to eat. Testifying in Cleveland, Jeffery Foran of the National Wildlife Federation said:

No fish consumption advisories are posted by Ohio, although other states on Lake Erie do warn anglers and others about eating some Lake Erie fish. The reason Ohio has not posted fish consumption advisories for the [Cuyahoga "area of concern"] is not because the fish are clean, but rather because no one has bothered to collect and analyze information on contaminants in fish from the [area].

Several delegations stressed the need to extend consumption advisories beyond fish to include ducks, muskrats and other kinds of wild meat consumed by Native Americans and hunters.

Some speakers stressed that, while consumption advisories are necessary to protect human health, asking people to change their eating habits and food sources should not be seen as the solution to the problem. At the Sarnia hearing, Laurie Montour of the Walpole Island Indian Band described the difficulty of asking people to discard the most contaminated parts of their catches:

Here's where science and traditional Indian life have a little conflict. Scientists said, "All you have to do to avoid PCBs is do not eat the fat of muskrats." Try telling that to Indian people who fry everything. I mean, you just slide out of the kitchen. This goes the same for wild duck liver pate; high in PCBs, bad for gourmets.

The long-term solution to the threats posed to human health by contamination of

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fish and wildlife is to clean up the Lakes, thus making consumption advisories unnecessary. Consumption advisories should be viewed as a temporary, but necessary, way to address the problem.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC's Science Advisory Board establish uniform procedures basin-wide for fish and wildlife consumption advisories.

In Erie, Ken Springirth said, "There's nothing more satisfying than a glass of clean, unpolluted water." But the public no longer trusts that a glass of water is safe to drink.

"There's nothing more satisfying than a glass of clean, unpolluted water."

Residents of Lake Ontario and the St. Lawrence River Basin are alarmed about the chemicals being added to their drinking water from leaking industrial landfill sites along the Niagara River. A ton of dioxin sits in the Hyde Park landfill in Niagara Falls, leaking into the Niagara River and flowing from there to Lake Ontario and the St. Lawrence River. They have been told by Environment Canada scientists that one shovelful of dioxin would render the water of Lake Ontario unsafe to drink. This is only one region of the Great Lakes Basin where residents fear that their water is, or may become, unsafe to drink.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the governments conduct more studies on the health effects of chemicals in drinking water. These studies should include an examination of the chronic exposure and synergistic effects of chemicals. Epidemiological studies on the link between drinking water and human health should be conducted on Great Lakes residents.

Doubts were raised by some speakers as

to the degree of protection current water treatment methods provide. Residents downstream of the "chemical valley" along the St. Clair River just south of Sarnia said they want more testing of their drinking water and new water purification processes such as carbon adsorption.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments work with Great Lakes municipalities to reevaluate and upgrade water purification techniques, with a goal of maximizing the removal of all chemicals detected in Great Lakes waters.

Risk assessment is a technique which involves mathematical modeling to determine the level of discharge of carcinogens that will result in no more than an "acceptable" number of human deaths. Risk assessments are increasingly being used to set standards and develop permits for polluting industries.

Risk assessment was criticized on the tour primarily because, as Mark Peterson told us in Duluth, it does not examine "the combined effects of chemical toxicants acting together." Risk assessment looks only at the impact of a single chemical, often ignoring the effects of different isomers of the chemical or the effects of different chemicals frequently associated with the chemical being considered. A more prudent approach would be a discharge level of non-detectability or zero as contained in the Agreement.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that risk assessment not be the primary criterion for determining acceptable discharge levels.

FISH AND WILDLIFE

Speakers in all parts of the Great Lakes Basin told the GLU Task Force about the devastating effects toxics are having on fish and wildlife. Cancerous tumors are being found in fish in many parts of the Basin. Pesticides, PCBs and heavy



PHOTO COURTESY U.S. FISH & WILDLIFE SERVICE

Fish-eating cormorant from Green Bay.

metals are contributing to the deaths of Beluga whales in the Gulf of St. Lawrence. Cormorants with birth defects, including twisted beaks, are being found in Door County, just north of Green Bay. Endangered species of birds in the Lake Superior region are being harmed by the toxic contaminants in their food sources.

Pesticides, PCBs, and heavy metals are contributing to the deaths of Beluga whales in the Gulf of St. Lawrence.

The public believes that the governments are allocating far too few resources to understanding the impacts of toxics on fish and wildlife that live in the Great Lakes Basin.

Several speakers emphasized another reason for conducting more research on contaminants in living things: they can serve as valuable early warning signals of threats to the ecosystem's health and can be the basis for measuring progress in reducing loadings of toxics in the Basin.

The Great Lakes Institute in Windsor told the Task Force about their research

in the St. Clair River. They are analyzing aquatic organisms for contaminants to determine which compounds they are bioaccumulating; they are also using fresh water clams to detect short- and long-term changes in contaminant concentrations. In Sarnia, Ronald Griffiths of Aquatic Ecostudies Limited in Kitchener said, "We need fewer chemists and engineers and more biologists and ecologists."

"We need fewer chemists and engineers and more biologists and ecologists."

One problem raised in using such studies as a basis for measuring ecosystem health is inconsistencies in sampling and analyzing techniques. Another problem brought forward was the uncertainties in research funding that results in insufficient long-term comparative studies being carried out.

At several of the hearings, speakers said the governments are forsaking their responsibility to support research on tracking toxics in the Great Lakes and assessing the impacts of toxics on fish and wildlife. Recent federal budget cuts in both countries have forced scientists to reduce or drop valuable research.

In Green Bay, Thomas Erdman, assistant curator of the Richter Museum of Natural History, criticized the lack of U.S. funding for this kind of research. "Currently," he said, "in terms of wildlife research, the Toxics Branch of the Canadian Wildlife Service is spending more on Green Bay and Lake Michigan than either Wisconsin DNR [Department of Natural Resources] or the [U.S.] Fish and Wildlife Service."

Many Canadians feel that their governments' efforts are inadequate as well. Several Canadian speakers were upset over the federal government's cutbacks in the herring gull monitoring program.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the governments focus much more

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attention on measuring concentrations and effects of toxics in fish and wildlife in the Great Lakes Basin.

Uniform and consistent sampling and analytical procedures should be developed to measure toxic concentrations in Great Lakes aquatic and wildlife resources.

Several speakers were concerned that most of the vast swamps surrounding the Lakes, which provided nesting, resting and feeding areas for birds and habitat for fish, have been drained, filled, tilled and developed. In addition to their uses as fish and wildlife habitat, wetlands serve as groundwater recharge areas and filtering and buffer strips for land runoff. Occasionally, the U.S. and Canadian federal governments inventory wetlands, but the information from the two countries is not compiled to arrive at a basin-wide understanding of trends and an overall protective strategy is not developed.

At the Toronto hearing, Kevin Kavanagh of the Botany Conservation Group at the University of Toronto described how developers and planners ignore the need to preserve wetlands. He said that, within a two-month period during the summer of 1985, the Metropolitan Toronto Region Conservation Authority granted 62 exemptions from its regulations. He concluded that the Conservation Authorities should be renamed the "Development Authorities."

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments institute measures to protect and preserve the few remaining wetlands on the Great Lakes. The Water Quality Board or Science Advisory Board reports should include statistics on wetland loss along the coasts.

The Botany Conservation Group began their presentation at GLU's Toronto hearing by saying, "We consider wetland habitats and regional watersheds to be integrally tied to Great Lakes water

quality." Through the ecosystem approach adopted in the GLWQA, the two federal governments have endorsed this concept. The Agreement requires that the "interacting components of air, land, water and living organisms, including man" be considered in understanding and managing the Lakes.

"We consider wetland habitats and regional watersheds to be integrally tied to Great Lakes water quality."

Many speakers said that the governments have failed to live up to this promise. They called for management of the land to be integrated with protection and cleanup of the water. Too often the water quality impacts of land management decisions have been overlooked because responsibility for the two rest with different agencies. A few speakers suggested that the Remedial Action Planning process was an opportunity to address some of these issues.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that flood plain and coastal resource management planning be integrated with Great Lakes water quality management programs.

PHOSPHORUS

The IJC reports that since signing the original GLWQA in 1972, the U.S. and Canada have spent \$8.8 billion to construct or upgrade municipal sewage treatment plants. As a result of this and limitations on phosphates in detergents, cultural eutrophication in the Lakes has been checked and algae blooms have decreased. Lake Erie has been revived; all the Lakes are visibly cleaner and fish populations are thriving because of the higher dissolved oxygen levels.

Although most of the concerns of those who spoke at the hearings focussed on

toxic contaminants, many speakers came forward to urge the governments to continue their programs limiting phosphorus loadings into the Great Lakes. They lauded the expenditures on sewage treatment plants, but warned that continued upgrading is necessary. They also said the governments should focus more attention on controlling non-point sources of phosphorus, especially from agricultural operations.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the governments press for further phosphorus controls by enforcing the effluent limitation of one milligram per liter for all municipal sewage treatment plants discharging more than one million gallons per day and by implementing programs to control non-point runoff.

Pennsylvania and Ohio have benefited more than any other jurisdiction from the phosphorus reductions which helped clean up Lake Erie. The walleye fishery in Lake Erie has skyrocketed bringing thousands of midwesterners to Ohio. Yet Pennsylvania and Ohio remain the only jurisdictions in the Basin that have not enacted limitations on phosphates in detergents.

Pennsylvania and Ohio remain the only jurisdictions in the Basin that have not enacted limitations on phosphates in detergents.

The other Great Lakes States have adopted legislation limiting phosphate in detergents to 0.5% elemental phosphorus by weight. In Canada, national legislation passed in 1972 limits phosphorus in laundry detergents to 2.2% by weight. Lakes Erie and Ontario are still struggling to meet target loads for phosphorus control. The IJC's biennial reports and the reports of the Water Quality Board have repeatedly called upon Ohio and Pennsylvania to enact phosphorus

"We are offering to you a spiritual understanding of the wholeness, the oneness of our living earth. She takes good care of us, we want to take good care of her."

limitations. As Steve Forgacs from the Michigan United Conservation Clubs said at the Saginaw Bay hearing, "We have to ask, 'What are they waiting for?'"

THEREFORE, THE GLU TASK FORCE RECOMMENDS that phosphates in detergents be limited to no higher than 0.5% by weight in all jurisdictions. Pennsylvania, Ohio and Ontario should immediately limit phosphates to this standard.

SOURCES OF TOXICS

The inclusion of the ecosystem approach in the 1978 GLWQA was a monumental step forward, which made the Agreement a model for the world. Speakers at nearly every hearing insisted that the concept be maintained in the Agreement, and urged the governments to act according to the ecosystem approach. Several speakers said, in effect, "now that it has been recognized, we must start following it."

Native groups who testified said they find it amusing when they hear of this so-called novel approach to managing resources referred to as the ecosystem approach. To them it's a simple part of their culture and spirituality that has guided their actions for tens of thousands of years. Laurie Montour of the Walpole Island Indian Band said in Sarnia, "We are offering to you a spiritual understanding of the wholeness, the oneness of our living earth. She takes good care of us, we want to take good care of her."

The ecosystem approach requires that people assess the implications of their lifestyles. As Doug Martin said at the

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Saginaw Bay hearing, "The public must be responsible for their own actions; they get what they deserve. No action gets no results."

"The public must be responsible for their own actions; they get what they deserve. No action gets no results."

Consumer demands have encouraged the creation of thousands of new chemicals, hundreds of which can now be detected in the Great Lakes. Contrary to the ecosystem approach, too often attempts to control these chemicals are made only after they create problems in the environment.

Citizens who spoke at the hearings insisted that the proactive approach be used to manage chemicals. Several speakers said that chemicals should be presumed guilty until proven innocent.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that new chemicals be adequately tested for human health and environmental effects before being produced or marketed.

THE ATMOSPHERE

In 1978, PCBs were found in Lake Siskiwit, an inland lake on Isle Royale in Lake Superior. The only way for PCBs and the cocktail of other chemicals that have since been found there to contaminate this wilderness lake was through the atmosphere.

Across the Basin, citizens are demanding more action to protect the Great Lakes from toxic fallout. They want more information on suspected sources of toxic rain, like volatilization of chemicals from waste water treatment plants and evaporation from the Lakes' surfaces, and they want more controls on known sources like smokestacks and automobile exhaust pipes.

People at the hearings in the Lake Superior area were especially concerned

about toxic fallout. They repeated what the Royal Society of Canada and the National Academy of Sciences concluded in their review of the Agreement: the atmosphere is the largest source of toxic organics and heavy metals in Lakes Superior, Michigan and Huron.

Lake Superior receives an estimated 10 metric tonnes per year of PCBs from the air, over 80% of the lakes total loading. Approximately 87% of the Lake's loading of lead and significant amounts of mercury, dioxins and dibenzofurans come from the atmosphere. Toxaphene, a pesticide that was widely used in the southern U.S. but rarely in the midwest, has blown into Lake Superior and is found in Lake Trout in concentrations averaging 2.7 parts per million.

The Agreement specifies in Article VI that the contributions of airborne pollutants and their impacts on tributaries and the Great Lakes should be assessed and appropriate control measures developed.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that inventories be developed on atmospheric sources of toxics to the Great Lakes Basin from both within and outside of the Basin.

In future reports on implementation of the GLWQA, the IJC, federal, provincial and state governments should include updates on atmospheric sources, their impacts and control measures.

The most pressing issue at the Windsor hearing was concern over the construction of a huge garbage incinerator. . .

The most pressing issue at the Windsor hearing was concern over the construction of a huge garbage incinerator by the City of Detroit. Speaker after speaker denounced construction of the incinerator because the design did not include the best available technology to control

hazardous emissions. Several people pointed out the inconsistency in building polluting incinerators while becoming more concerned about toxic fallout.

Steven Langdon, a Windsor member of the Canadian Parliament, called on the IJC to demand a halt to operation of the incinerator until the best available control technology is installed. The IJC refused to become involved.

Because the atmosphere respects no political boundaries, it is essential that an agency with transboundary, basin-wide jurisdiction review proposals for discharges of toxics into the atmosphere. The IJC should use its powers under Article VII of the Agreement to "tender advice and recommendations" on projects such as this.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC review proposals for new or increased discharges of toxics into the atmosphere.

GROUNDWATER

Groundwater was described by several speakers as frequently being the link between improperly disposed of hazardous wastes and contamination of the Great Lakes. Many speakers were concerned that the Agreement does not specifically refer to groundwater, and as a result this emerging issue would not receive enough attention.

In Grand Rapids, Congressman Paul Henry described groundwater as "the environmental issue for the future." He said that in Michigan "an average of four newly contaminated wells are discovered each month." Shari Schaftlein testified that "there are over 1000 contaminated sites in Michigan. How much contaminated groundwater is flowing into rivers...and the Great Lakes?"

The public believes that a comprehensive approach to understanding and controlling the movement of toxic chemicals through groundwater to the Lakes is needed. Fundamental to this

approach must be the recognition that because contaminated groundwater is extremely difficult, if not impossible, to clean up it is essential to prevent further contamination of groundwater resources.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, state and provincial governments institute a policy to protect and restore groundwater quality.

"... there are over 1000 contaminated sites in Michigan. How much contaminated groundwater is flowing into rivers . . . and the Great Lakes?"

Another essential component of this comprehensive approach is an expanded understanding of the existing state of groundwater resources. In Erie, Sister Pat Lupo suggested the adoption of "a recommendation proposed by the 1985 Great Lakes Science Advisory Board which calls for the mapping of groundwater conditions around and under the Great Lakes Basin and for the necessity of data on geology and hydrology, soils, and depth to water tables."

THEREFORE THE GLU TASK FORCE RECOMMENDS that further research be conducted on groundwater with particular focus on:

- i) the extent of contamination in existing groundwater,
- ii) mapping of the connections between and the extent of aquifer systems, and
- iii) connection and movement between ground and surface waters.

AGRICULTURAL RUNOFF

Speakers in Erie, Toledo and Saginaw told the GLU Task Force of their concerns about soils contaminated with pesticides and fertilizers eroding off agricultural lands.

Jo-Ellen Darcy of the State of Michigan said in Auburn that 50% of the phosphorus in Saginaw Bay comes from non-point runoff. She said that most of this comes from fertilizers used in agriculture.

The major source of the sediments in the mouth of the Maumee River at Toledo is agricultural runoff. This sedimentation results in the need for major dredging operations to keep the Maumee open for shipping. Disposing of the dredge spoils poses a major problem because they are contaminated with pesticides and fertilizers.

The Task Force was told of no-till and conservation tillage techniques being developed to minimize soil erosion. In the Huron and Tuscola County area in Saginaw Bay, government cost-sharing of conservation tillage practices has demonstrated to farmers that these techniques can save them soil, time, water and energy and not sacrifice net profits.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that governments require best management practices to control agricultural runoff, especially in areas where it has been demonstrated that agricultural sources are significantly contributing to water quality degradation.

NON-AGRICULTURAL PESTICIDES

Several speakers in Buffalo were alarmed about the use of pesticides and herbicides on residential lawns and in parks and recreational areas. Karen Blake from the group Help Eliminate Lawn Pesticides called for better public information on the contents of pesticides and their dangers. Because of incomplete information on the health effects of many commercial pesticides and herbicides, they want the public to carefully consider the risks of pesticide usage and runoff.

Speakers at several other hearings described pesticide use for "aesthetic purposes" as unnecessary additions to the

... pesticide use for "aesthetic purposes" is an unnecessary addition of pesticides to the environment.

pesticides in the environment. The use of pesticides in large open spaces like golf courses, cemeteries and parks was described as threats to waterways, wetlands, groundwater recharge areas, as well as people using these facilities.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the use of pesticides, herbicides and other harmful chemicals for purely aesthetic purposes be banned.

OPEN STORAGE OF MATERIALS



Coal piles — Duluth

Piles of coal, salt and scrap metal are stored at the waters' edge at most industrial ports around the Great Lakes. They represent a large portion of the non-point source runoff in many waters.

In Milwaukee, the Task Force was told that a U.S. Geologic Survey report determined that these piles release significant amounts of lead, chromium, mercury, arsenic and phenols into the air and water. The Survey found that up to 80% of the mercury going into Milwaukee Harbor comes from piles of materials stored at the waters' edge.

In Sault Ste. Marie, Algoma Steels' slag fill extends several hundred meters into the St. Mary's River and stretches for nearly a mile. The Ontario Ministry of the Environment has just begun to assess the impact this is having on the River.

Concern was raised at the hearings that the huge steel slag piles at old industrial facilities, like the ones in Sault Ste. Marie, Gary, Cleveland and Buffalo, may have made attractive places for operators to dispose of toxic wastes.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that piles of salt, coal, scrap iron, steel mill slag and other materials stored on or near the waters' edge be monitored and controlled.

LAKE-FILLING

In Toronto, the Task Force saw a dramatic example of lake-filling, a largely unrecognized source of contamination to the Great Lakes. The Leslie Street Spit, which stretches out five kilometers into Lake Ontario, has been constructed over the past 25 years on Toronto's waterfront. It is made of excavation wastes from construction sites in the city and from dredge spoils. Belated testing of the fill shows that contaminants in it exceed by over 50% existing government guidelines for open water dumping.

Sarah Miller of Stop Contaminating Our Waterfront said that as waterfront property in urban centers becomes increasingly scarce, there will likely be development pressures to create more islands, spits and peninsulas for use as

parks, marinas, housing, commercial uses and waste disposal. She pointed out that the fill to create these is likely to be significantly contaminated since the soils in urban environments contain high levels of heavy metals such as lead and often are laden with hazardous wastes deposited or spilled by past industrial activities.

Many of the speakers at the hearings were concerned about the loss of fish and wildlife habitat along the waters' edge. Some said that lake-fill projects can cause additional disruptions on already stressed and rare habitat.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that lake-fill projects be assessed to insure that fill contamination levels do not exceed open water dumping guidelines.

The IJC should evaluate lake-filling as a source of contamination to the Great Lakes and develop criteria for fill quality and engineering of these projects.

RADIOACTIVE MATERIALS

Speakers in Marquette, Kingston, Toledo, Cleveland and Saginaw were worried about contamination of the Great Lakes by radioactive materials. Their concerns included discharges from nuclear power plants in Ohio, low level radioactive wastes eroding into Lakes Ontario and Erie, radioactive materials being spilt as they are transported over the Mackinac and Thousand Islands Bridges and proposals for construction of a depository for high level radioactive wastes in the granite formations around Lake Superior.

Information is lacking on the impacts of radioactive materials in the Basin.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC review the sources of radioactive materials to the Great Lakes Basin and assess the impacts those materials are having on the ecosystem.

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Transportation of high level radioactive materials over the Great Lakes or through the Basin should not occur unless the vessels and spill response mechanisms insure public safety and protection of the ecosystem.

INDUSTRY

The most frequently recurring complaint from the public at GLU's 19 hearings was that industry continues to discharge hazardous wastes into the air, water and land every day. This is happening in direct contravention of the GLWQA's goal of zero discharge of persistent toxic substances.

The public does not have faith in most of the waste destruction and disposal techniques now used by industry. They are viewed primarily as ways to disperse contaminants into the environment where they will come back some day to haunt this and future generations.

"There is too much concentration on end-of-pipe discharges. We should stop the wastes before they get out of the pipe." In this way, Edith Chase of the Ohio Coastal Resource Management Project summarized the overwhelming view of the residents of the Great Lakes Basin when she made this statement in Cleveland. Product substitution, waste minimization, recycling, reuse of wastes--these were the principles constantly repeated across the Basin.

"There is too much concentration on end-of-pipe discharges. We should stop the wastes before they get out of the pipe."

Doug Martin of Midland, Michigan, said, "We must investigate manufacturing processes that involve less toxic materials." Klaus Proemm of Canton, New York, said in Cornwall that, in cases where production processes leave wastes that cannot be reasonably handled, the product should be banned. In Auburn, Mary Sinclair of the Great Lakes Energy Alliance

recommended similar action; she said that once a toxic substance is banned, industry will find something safer to replace it "in record time."

Several speakers said that government must take a much more active role in encouraging and requiring the use of safer materials and waste reduction techniques. They called upon government to educate industry, conduct research, provide economic incentives and put legislation in place requiring the use of these techniques. This was seen as the only way to achieve the Agreement's goal of zero discharge of persistent toxic substances.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, state and provincial governments review and revise their hazardous waste management and industrial discharge permitting programs to reflect the goal of waste minimization in order to achieve the Agreement's objective of zero discharge of persistent toxic substances.

Government and industry should fund research on alternative techniques for the elimination, reduction, reuse and recycling of hazardous wastes.

In the U.S., industrial discharges to waterways are controlled through the National Pollutant Discharge Elimination System (NPDES). In Ontario, certificates of approval and control orders are used to limit discharges.

Much dissatisfaction was expressed about these permitting processes. People are concerned because the permits are often a product of negotiation between industry and government that result in "licenses to pollute."

The NPDES and certificate of approval processes focus on end-of-pipe and end-of-stack discharges. The public feels the focus must be shifted back to a full assessment of production processes.

This would require new kinds of operating permits. Such an approach may

seem to be an unnecessary intrusion on industry, but citizens throughout the Great Lakes Basin see no alternative but to take drastic action. Existing permit and regulatory processes have fallen far short of dealing with the urgent situation confronting the environment and people's health.

... permits are often a product of negotiation between industry and governments that result in "licenses to pollute."

THEREFORE, THE GLU TASK FORCE RECOMMENDS that producers and users of potentially hazardous materials be required to demonstrate the following before being granted permits to operate:

(i) that materials will be stored and handled safely and can be quickly and completely recovered in the event of a spill,

(ii) that they are using all possible means to avoid producing hazardous wastes, including substituting less hazardous materials in their processes, reducing wastes, recycling and reusing hazardous materials whenever possible, and

(iii) that they have a plan for handling and disposing of their wastes that will avoid contamination of the environment.

One of the most frequent criticisms of discharge control programs was that they focus on concentration, not total volumes of toxics released. Several speakers pointed out that dilution does not render pollutants harmless.

At the Saginaw Bay hearing, Diane Hebert of Greenpeace said that the State missed the point when it issued a statement after Dow's waste treatment system was flooded releasing toxic contaminants, including dioxins and hexachlorobenzenes. The State said there was no problem because the wastes were diluted by the

flood waters. Hebert said that some of those wastes would be in Saginaw Bay and the Great Lakes for the next hundred years or more, concentrating and accumulating up the food chain.

In Toronto, Michael McLachlan of the Sierra Club pointed out another problem in the criteria used in New York State, for example, to determine acceptable discharges. He said they are based on the assumption that the stream's waters are pure when they arrive at the plant's discharge pipe. "Their waste allocation plan doesn't even account for waste coming from sources a few hundred yards upstream [along the Niagara River]," he said.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that criteria for issuing discharge permits reflect priority concern for total mass loadings of toxics.

Many industries discharge wastes into municipal sewers. Municipal sewage treatment plants remove some of the toxics, but even the best designed ones are limited in their effectiveness. Their primary purpose is to break down human wastes.

He pointed out that Ontario's new Municipal and Industrial Strategy for Abatement has 11,700 loopholes, because it does not control the industries that discharge wastes into sewer systems.

Colin Isaacs of Pollution Probe said that 291,000 kilograms of synthetic organic and heavy metal pollutants are discharged into Lake Ontario from Toronto's main sewage treatment plant each year. Most of these pollutants come from industrial sources. He pointed out that Ontario's new Municipal and Industrial Strategy for Abatement has 11,700 loopholes, because it does not control the industries that discharge wastes into sewer systems.

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The U.S. Clean Water Act requires dischargers to sewage systems to pretreat their wastes. Bill Stough of the Waste System Institute in Grand Rapids testified that many of the estimated 60,000 small generators of hazardous wastes in Michigan are unaware of these requirements and of how to fulfill them. He called on the federal government to help small business find ways to pretreat, reduce and eliminate wastes.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that dischargers to sewage treatment plants be required to eliminate, reduce and pretreat toxic wastes.

Throughout the tour, the Task Force was told of the failings of waste disposal methods used by industry. Two methods drew particularly strong condemnation: deep well injection and landfill.

Wastes injected into a deep well in Erie moved approximately four miles to Presque Isle Bay and have surfaced in a state park.

The practice of injecting hazardous wastes into deep wells was condemned by speakers at the hearings in Milwaukee, Gary, Sarnia, Cleveland and Erie. In Sarnia, some citizens and scientists suspect that Dow's deep wells are leaking into the St. Clair River and may even be the cause of the "blob." Wastes injected into a deep well in Erie moved approximately four miles to Presque Isle Bay and have surfaced in a state park.

Bill Warner testified in Cleveland on behalf of Northern Ohioans for the Protection of the Environment (NOPE). His group has spent more than a decade "suffering, fearing, striving and spending" to try and force the closure of existing wells. They are presently opposing applications for six more deep wells in Vickery. Warner listed a litany of problems with deep wells in Ohio and throughout the U.S. One deep well was

suspected of contributing to an earthquake near a nuclear power plant on Lake Erie. Forty-five million gallons of hazardous wastes have leaked from six wells in Ohio. Improper identification and treatment of wastes caused corrosive waste mixtures to destroy the casing on one deep well.

THE GLU TASK FORCE RECOMMENDS that deep well injection of hazardous wastes be banned.

... a municipal landfill site is leaking 60,000 gallons of wastes each day into the Ottawa River.

Just prior to the Task Force's arrival in Toledo, news was released that a municipal landfill site is leaking 60,000 gallons of wastes each day into the Ottawa River. The leachate contained PCBs and other hazardous materials. This is only one of innumerable leaking landfills around the Great Lakes.

Hazardous wastes buried in the ground are contaminating groundwater and surface water throughout the Great Lakes. Diane Heminway of Citizens Organized to Protect the Environment said in Buffalo, "Until we are certain--absolutely certain--that safe methods have been found, on-site storage, in well-monitored containers should be mandatory."

THEREFORE, THE GLU TASK FORCE RECOMMENDS that land disposal of wastes in locations where the wastes are likely to contaminate waters of the Great Lakes Ecosystem be eliminated.

Jeff Foran of the National Wildlife Federation testified at the Cleveland hearing that "NPDES permits of many point source dischargers [along the Cuyahoga River] have been expired for years, discharge limits for toxic materials in effective permits are practically nonexistent, and where toxic discharge

limits do exist, they are frequently violated." The NWF study recommended that permit review and renewal be scheduled so that all permits on a watershed or stream segment expire at the same time. This would facilitate a waste load allocation system based on the water quality of a stream segment, rather than the needs of individual dischargers.

To achieve the GLWQA's goal of zero discharge, it is essential that discharge permits be repeatedly updated and made more strict.

To achieve the GLWQA's goal of zero discharge, it is essential that discharge permits be repeatedly updated and made more strict.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that operating and discharge permits be periodically reviewed. Operators must meet increasingly strict controls on quantity and toxicity of wastes discharged.

Throughout this report, the importance of public information and involvement in decisions affecting Great Lakes water quality has been stressed. This applies also to information and decisions concerning industrial discharges. The development of operating and discharge permits should no longer be a matter for negotiation between industry and government. The public should be full partners in that decision-making process. It is their communities and their health that is endangered if inappropriate decisions are made.

The provisions in the U.S. Clean Water Act providing public access to information on discharge permits and monitoring results and giving citizens the right to sue are useful models to be applied elsewhere.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the public be involved in the per-

mitting and review processes. Information on how operators propose to meet the above criteria for operating and discharge permits should be available to the public. Information on operators' performance should also be public.

HAZARDOUS WASTE SITES

At the Toronto hearing, Colin Isaacs of Pollution Probe said:

Unquestionably the biggest real threat and largest fear in the minds of the public living here around the shores of Lake Ontario is found in the eight million tons of toxic wastes buried in hundreds of dump sites along the American shore of the Niagara River.

In the hearings at each of the communities downstream of the Niagara River--Toronto, Kingston, Cornwall and Montreal--fear, frustration and anger were expressed about the impacts of the toxic wastes flowing from these sites.

The problem of leaking toxic waste dumps is not limited to the Niagara. At every hearing, speakers were worried about dumps in their community or upstream. The eight Great Lakes States contain 327 of the 857 sites on or proposed for inclusion on the EPA's Superfund National Priority List for cleanup.

Living with the tragedies being created by past inadequate waste disposal practices is creating strong public determination to insure that waste reduction practices are maximized to avoid creating more problems for future generations.

People are frustrated by the delays and inadequate proposals made for cleaning up leaking hazardous waste sites. The present policy of containing wastes in leaking sites by capping the dump and putting in barriers was condemned by many speakers as inadequate, being a temporary solution at best.

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Others, while endorsing digging up the wastes, were worried about what is done with the wastes after they are dug up. Simply burying them somewhere else or burning them in an inadequate incinerator that spews contaminants into the air was condemned. In Buffalo, Diane Heminway of Citizens Organized to Protect the Environment warned, "We must stop moving the problems around and giving them to someone else."

Toronto's Pollution Probe joined many other groups around the Basin in advocating that hazardous waste sites be dug up and their contents destroyed or stored above ground until suitable destruction technologies are available.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, state and provincial government programs for cleanup of hazardous waste sites be guided by the principle that destruction is the only satisfactory solution.

Government and industry should fund research on alternative techniques for excavation, destruction and long-term storage of wastes in leaking hazardous waste sites.

The cleanup of all leaking hazardous waste sites in the Basin will be one of the most expensive propositions undertaken by governments in the U.S. and Canada. But the public feels the expenditures must be made. Sr. Pat Lupo of the Erie County Environmental Coalition said:

We must increase action toward an effective long-term solution to leaking toxic waste dumps, recognizing that although expensive in the short-term, the result can be expected to be of benefit to the health of the Great Lakes Ecosystem, and the human population.

Numerous references were made to the U.S. Superfund by which industries and government contribute to a fund for cleanup where funds cannot be raised from the original polluter. Several Canadians, including Herb Gray, a Windsor member of the federal parliament, called for superfund legislation in Canada. Some speakers from the U.S. said a superfund should be developed more specific to Great Lakes needs. At the Buffalo hearing, several speakers called for passage of the New York Environmental Quality Bond Act to allow the State to raise money for cleanup by selling bonds.

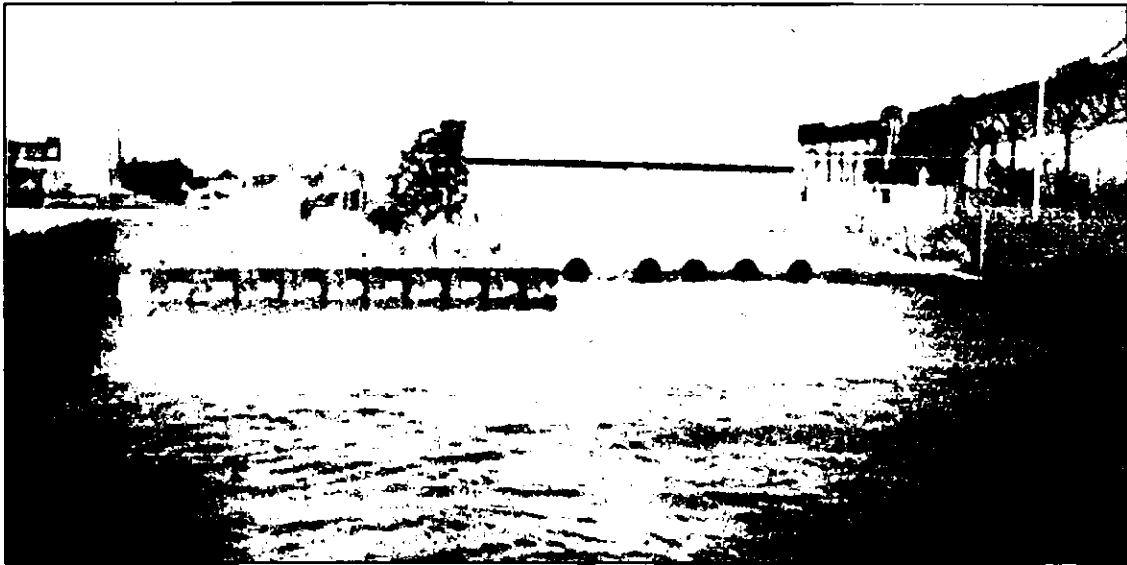
THEREFORE, THE GLU TASK FORCE RECOMMENDS that funding programs for hazardous waste cleanup be developed and expanded in all jurisdictions. Programs like the U.S. Superfund and New York's Environmental Quality Bond Act must be established in those jurisdictions that do not now have them. Expanded programs are needed to deal with the remaining sites that won't be cleaned up with existing programs. Funding for cleanup programs should come from both industry and government.

"We must stop moving the problems around and giving them to someone else!"

MUNICIPAL SEWAGE SYSTEMS

The U.S. EPA has estimated that it will take \$100 billion to upgrade U.S. sewage treatment plants through the year 2000. One of the most costly endeavors needed for continued improvement is to eliminate combined sewer overflows. Retrofitting treatment plants and collection systems in older cities with storm water retention and treatment capacity will also be extremely expensive. State, provincial and local governments cannot afford to meet this need without federal support.

Article II of the GLWQA states that it is the policy of the parties to the



Combined sewer pipes — Detroit

GLU Photo

Agreement that "financial assistance to construct publicly owned waste treatment works be provided by a combination of local, state, provincial, and federal participation." Unfortunately, both federal governments have recently been stepping back from this commitment.

Amendments to the Clean Water Act passed by the U.S. Congress in early 1987 allocate \$18 billion through 1994 for federal cost sharing of municipal wastewater treatment plant improvements but include plans to phase out the program in the 1990's. The new law will require states to establish revolving loan accounts for improvements beyond the mid-1990s.

In Canada, the Canada-Ontario Agreement provides for federal cost-sharing with the Province for construction of municipal sewage treatment systems. Bernie Newman, a Windsor member of the provincial legislature, said, "Mr. Bradley [Ontario's Minister of the Environment] is currently pressing Tom McMillan, the Federal Minister of Environment, for assistance in the long-range overhauling of the municipal sewage infrastructure. ...Without Federal cooperation this industrial basin will never be able to

control all of its environmental problems." Quebec has been unable to obtain federal financial support to develop desperately needed sewage treatment systems.

Federal support for continued improvements in wastewater treatment is essential to insure uniform and consistently high quality treatment. Substantial amounts of federal funding will be necessary to fulfill these promises.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the federal, provincial and state governments insure that sufficient funding is available to continue to improve treatment of domestic sewage by municipalities.

Household pesticides, drain oil, cleaning products, solvents, paint thinners and countless other products stored in garages and under kitchen sinks are a tremendous pool of potentially toxic contamination to the Great Lakes. These products are often carelessly disposed of by being dumped down the drain or thrown out with the weekly trash. Several citizens testified at the hearings that the public desperately

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needs information on how to safely dispose of household hazardous wastes.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that communities develop public information programs, collection systems and treatment centers for safe handling and disposal of household hazardous wastes.

Many municipalities in the basin have very expensive and efficient municipal sewage treatment plants that completely fail when it rains. The City of Detroit has over 200 storm sewer outlets, many of which discharge untreated sewage during rains. In Erie, Ralph Corvaglia graphically described the raw, untreated human wastes in Presque Isle Bay caused by a sewage treatment system with many problems, including combined sewer overflows.

Hazardous products are often carelessly disposed of by being dumped down the drain or thrown out with the weekly trash.

In Grand Rapids, Geoff Hughes said, "Grand Rapids itself has a highly efficient waste water treatment plant but it overloads under conditions of quite moderate rainfall." In 1986, rainfall in Michigan was far more than moderate but Hughes reported that "27 million gallons of diluted raw sewage were discharged into the river during a not unusually heavy rainfall. Last week's exceptionally heavy rainfall resulted in over 150 million gallons being discharged into the river."

Overflows occur when storm runoff and sanitary sewers are collected in the same pipes. Under normal conditions domestic sewage and the minimal amount of street runoff is treated then discharged to a receiving body of water. During rainstorms, however, the treatment plants fill up and all the wastewater, storm runoff, domestic and industrial wastes are discharged into the receiving body of water with no treatment except dilution.

In Milwaukee and Chicago, deep tunnels are being constructed to store storm water and release it slowly after rains cease. Other cities are separating storm from sanitary sewers so that storm water will be discharged directly rather than go through a sewage treatment plant. Hughes suggested disconnecting roof and footing drains from storm sewers and preventing urban sprawl to reduce the problem.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that combined sewer overflows be eliminated.

IN-PLACE POLLUTANTS AND DREDGING

The problems associated with dredging and disposal of contaminated sediments was one of the most frequently voiced concerns at the GLU hearings. In-place pollutants are the most common source of continuing water quality problems in 36 of the 42 "areas of concern" in the Great Lakes, according to the IJC. The sediments in these areas are contaminated with a host of toxic substances including PCBs, heavy metals, polycyclic aromatic hydrocarbons (PAHs), DDT and other pesticides.

Dredging to maintain adequate depths for commercial navigation is necessary at most of the major harbors in the Great Lakes. It is no coincidence that, as centers of heavy industry and commerce, the dredge spoil in most harbors is contaminated.

The first element of dealing with the problem of dredging and in-place pollutants must be to control the sources of the problem.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that governments develop overall management strategies for controlling sedimentation and in-place pollution. The principles of this strategy should be:

- (i) elimination of sources of in-place contaminants, and
- (ii) substantial reduction of sedimentation.

Part of this comprehensive process should include reviewing alternatives to dredging to maintain navigation. It may be less expensive to reduce the rate of sedimentation by controlling erosion in a watershed than it would be to repeatedly dredge the same waterway.

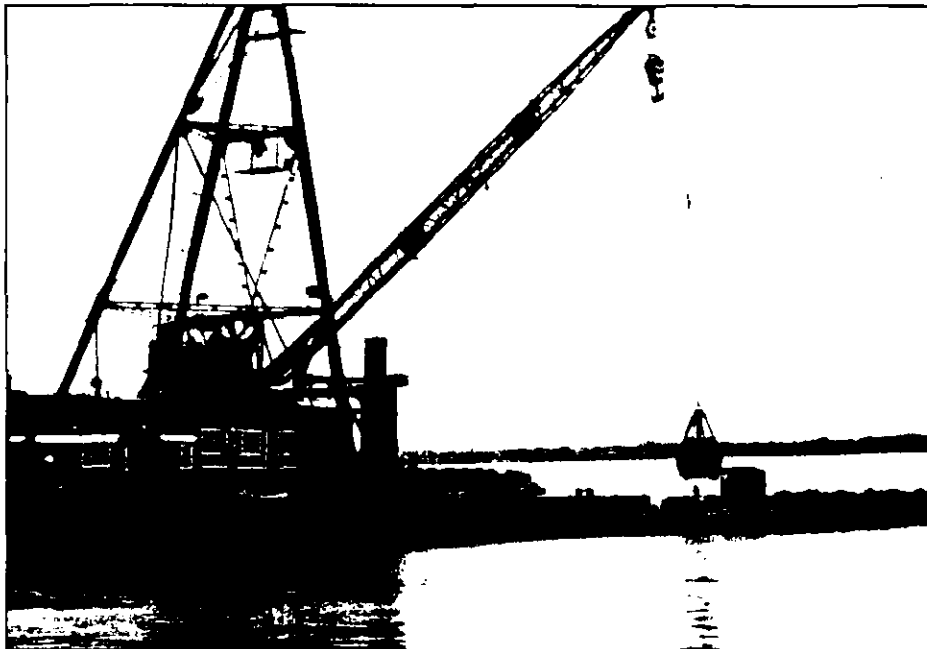
It may be less expensive to reduce the rate of sedimentation by controlling erosion in a watershed than it would be to repeatedly dredge.

When the Corps of Engineers dredged the Buffalo River, they refused requests to remove contaminants because they were not in the actual navigation channel. If a waterway is to be dredged for navigation, governments should consider the feasibility of removing nearby contaminated sediments at the same time. In some cases, dredging may stir up contaminants and it may be more desirable to leave them in place.

Several speakers in Milwaukee, Green Bay, Gary and Duluth advocated upland disposal sites for contaminated spoils. All disposal options should be reviewed publicly prior to dredging projects.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that proposals for dredging and dredge disposal:

- (i) incorporate a plan to reduce or eliminate the need to dredge in the future,
- (ii) carefully consider the need for dredging, the costs and negative impacts of dredging,
- (iii) incorporate site-specific assessment of the feasibility and desirability of removing in-place pollutants,
- (iv) carefully consider the pros and cons of various disposal options, and
- (v) provide for public input and review.



Dredging in Toronto

PHOTO: C. ROSE / VISUMPHOTO

Fulfilling the Promises

People were extremely angry in Saginaw Bay and Toledo that contaminated sediments were dredged and then dumped back into the water.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that overflow dredging and open-lake disposal be banned.

John Egan of the Stop Toxics Organizing Project raised several important questions about the efficacy of the confined disposal facility (CDF) in Green Bay. The facility was constructed out of rock and rubble and its ability to contain what is dumped in it is highly suspect. Egan said that there has never been even a simple dye test to see if the facility leaks. Breaches of the dikes during storms are common on CDFs in Saginaw Bay and Green Bay.

In the U.S., the Army Corps of Engineers contracts most dredging projects. Their criteria for analyzing sediments and construction of CDFs was criticized. In Green Bay, John Egan pointed out the irony that sediments from the Lower Fox River containing 43 parts per million of PCBs were disposed of in a facility in Green Bay that was suspected of leaking, but hazardous wastes containing 50 parts per million or more of PCBs require special treatment and handling.

As CDFs fill up, they act as islands attracting birds for nesting and feeding. On the Saginaw Bay tour, Michigan Department of Natural Resources' officials explained that preliminary research on the CDF there suggests that the facility is adding to birds' body burdens of toxic chemicals and may interfere with nesting success.

South of Detroit at Pointe Mouillee, a CDF known as the Big Banana is helping replace the barrier islands that formerly protected the western shore of Lake Erie from storms. In other areas, however, CDFs are constructed near shore, in areas that are important fish and wildlife habitat.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the IJC establish criteria for confined disposal facilities. These criteria should insure that:

(i) U.S. Army Corps of Engineers' procedure for analyzing sediment are adequate to insure protection of the ecosystem,

(ii) confined disposal facilities are not constructed where they create a net loss of fish and wildlife habitat, and

(iii) confined disposal facilities are constructed and operated so that contaminants are contained.

Testing CDFs for leakage with tracer dyes is simple and inexpensive. Determining whether contaminants are moving out of CDFs is more expensive but also necessary. Monitoring of fish, birds and aquatic organisms near CDFs should be part of the investigations.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that existing confined disposal facilities be examined and monitored for release of contaminants. Those leaking must be cleaned up.

Peter Wise, head of the U.S. EPA's Great Lakes National Program Office, described in-place pollutants as "a reservoir of toxins back into the lakes." Disturbance from boats, wind and wave action and even microorganisms moving through the sediment can stir up pollutants.

... in-place pollutants are "a reservoir of toxins back into the Lakes."

Cleaning up in-place pollutants is one of the most difficult and expensive problems in the Great Lakes. Addressing this issue, including the question of "who pays" is the key to the success of Remedial Action Plans.

The recently passed Great Lakes Amendment to the U.S. Clean Water Act will allocate \$22 million for demonstration projects to deal with polluted sediments in five severely polluted Great Lakes waterways--the Buffalo River, the Sheboygan Harbor in Wisconsin, the Saginaw River, the Grand Calumet River and the Ashtabula River. This funding should be an important first step to a basin-wide solution.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that governments insure that adequate funds are available for control and removal of in-place pollutants. Upstream polluters should be forced to pay for dredging and disposal of in-place pollutants.

John Stauss of the Sheboygan County Water Quality Task Force spoke in Milwaukee about the frustration Sheboygan has experienced because no one wants the PCB-contaminated spoils from the Sheboygan Harbor disposed of in their backyard. He implored the U.S. EPA to find a more creative way to deal with the problem.

The demonstration program under the Clean Water Act should help answer some important questions, such as how to dredge without stirring up and recirculating contaminants and how contaminants are repartitioned back through the ecosystem. Repartitioning occurs when contaminants break their bonds with sediments and re-enter the water column.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that governments and polluters fund research on the following topics:

- (i) destruction, treatment and neutralization of toxics without removing sediments,
- (ii) methods for avoiding resuspension and repartitioning,
- (iii) methods for destroying, treating, reclaiming, and disposing of contaminated sediments that are removed.

REMEDIAL ACTION PLANS

The IJC's Water Quality Board has identified 42 hot-spots or "areas of concern" where water quality conditions are severely degraded. They have asked the provincial and state governments to develop Remedial Action Plans (RAPs) for each of these areas. The RAPs should identify the extent of contamination problems in the area, the impact of the contamination, define goals for cleanup and state cleanup methods, including financing.

RAPs are a source of hope for the cleanup of many seriously contaminated locations around the Great Lakes. But the public is largely unaware that RAPs are being developed. People at many of GLU's hearings said this was the first time they had heard about RAPs.

Speakers at the hearings stressed that public involvement in RAPs is essential for two main reasons. First, they emphasized the basic right that those most directly affected by the problems, the residents, should play a lead role in developing and implementing plans that affect their communities. Secondly, the only hope for generating the political will and funding to implement RAPs is through grass-roots support. The public must be involved to generate that ground swell.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the states and provinces provide opportunities for the public to be involved in the development and implementation of RAPs. The public should be included in:

- (i) defining research needs,
- (ii) assessing and reviewing information gathered,
- (iii) defining the desired future state and desired uses of the area,
- (iv) defining remediation steps,
- (v) defining funding sources, and
- (vi) devising and reviewing progress and implementation plans and timelines.

Fulfilling the Promises

Most of the responsible jurisdictions around the Basin have not developed adequate programs for involving the public in RAPs. Two relatively successful models for public participation were described at the hearings. In Green Bay and Toronto, citizens have been involved in the actual writing of RAPs. In Green Bay, the Wisconsin Department of Natural Resources provided support for several committees which include representatives of the public and all affected interests. A Citizen Advisory Committee will have the final authority in deciding what the RAP recommends and how it will be implemented.

... the only hope for generating the political will and funding to implement RAPs is through grass-roots support.

In Toronto, the public grew so impatient waiting for the Ontario Ministry of Environment to prepare a RAP that they sought and received funding from the City to prepare a Waterfront Remedial Action Plan (WRAP). The WRAP is now completed, written by a citizens' committee.

THE GLU TASK FORCE RECOMMENDS that the states and provinces establish a citizens advisory committee for each RAP site. Citizens should also be appointed to all technical advisory committees.

No public participation program can succeed without funding. Money is essential for the transfer and interpretation of technical information, to administer meetings and mailings and supply public information.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the states and provinces support public involvement by providing funding and access to information.

Some speakers feared that the lengthy time involved in preparing RAPs could delay cleanup actions. Lin Kaatz Chary

of the Grand Calumet Task Force said in Gary, "We don't need any more study; we want action now!"

"We don't need any more study; we want action now!"

Some problems, such as in-place pollutants, may require further study before appropriate remedial actions can be prescribed. But in situations where pollutant sources are known and the feasible remedial measures defined, there is no excuse for not taking action now. The first basic step that must be taken is to cut off the sources of further contamination.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that cleanup of known sources of contaminants be carried out immediately.

The RAP process must include a mechanism for the public to assess and evaluate progress. Remediation steps must be specifically tied to responsible parties with definite timelines for taking actions. Mechanisms must be included for revising the RAP to adjust to new understandings of the problems and to incorporate new cleanup methodologies.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that RAPs include timelines and other mechanisms for evaluating progress in their implementation. The RAPs should be reviewed and revised on a regular basis.

RESEARCH

Annex 12 of the GLWQA commits the two federal governments to fund research on toxics in the Great Lakes and on the impacts of toxics on humans, aquatic life and wildlife. At almost every GLU hearing, speakers asked that more research be carried out to help them understand the effects of toxic contaminants. Despite this commitment in the Agreement and the public's demand for

more research, both the U.S. and Canadian governments have been reducing the funds available for research.

In the United States, the Reagan administration has consistently recommended zero funding for several important Great Lakes research programs. The Task Force was told that, even though Congress has restored most of the cuts, the uncertainty of funding has caused key scientists to accept jobs with more secure futures. The amounts Congress restored into budgets have generally not kept pace with cost of living increases.

At the Toronto hearing, the Task Force was told about the impacts of Canadian government cuts in research funding. These impacts included dropping plans for a new toxicology research center and the herring gull monitoring program, one of the longest running data bases on organochlorine contaminants in the Great Lakes Ecosystem. Frank Giorno of the Canadian Environmental Law Association said that these cuts resulted in "a storm of outrage from Canadians concerned about the quality of their environment."

... cuts in the herring gull monitoring program resulted in "a storm of outrage from Canadians concerned about the quality of their environment."

THEREFORE, THE GLU TASK FORCE RECOMMENDS that federal funding of Great Lakes research be increased.

One of the problems referred to at the hearings was the incompatibility of research and information collected and analyzed by different jurisdictions. The Water Quality Board has repeatedly recommended that the jurisdictions attempt to be uniform and consistent in data collection and analysis methods. An example is in fish monitoring. Some jurisdictions monitor contaminants in edible portions of skinless filets. Other jurisdictions monitor contaminants

in the same species from the same body of water but by analyzing homogeneous (whole fish) samples. Still others report on contaminants in skin-on filets.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that there be better coordination among Great Lakes research agencies in defining research methodologies.

One of the main demands of speakers at the GLU hearings was for information on the effects of toxics on their environment and on their own and future generations. In the "Human Health" section of this report, the GLU Task Force recommended that all research studies be made available to the public.

The public's demand for research means that they should be given the opportunity to define the research programs that will most directly address their concerns. Mechanisms to include the public in assessing research priorities should be set up. These mechanisms could include public membership on research review committees or holding public meetings to survey the public's priorities.

THEREFORE, THE GLU TASK FORCE RECOMMENDS that the public be involved in establishing research priorities.

APPENDIX 1: HEARING DATES, LOCATIONS AND PANELISTS

July 10, 1986

University of Wisconsin
Milwaukee, Wisconsin

Fred Brown, Chair, Midland,
Michigan
Tim Eder, Task Force, Buffalo, New
York
John Laue, Task Force, Gary,
Indiana
Daniel Green, GLU Board of
Directors, Montreal, Quebec

July 14

Neville Public Museum
Green Bay, Wisconsin

John Jackson, Chair, Kitchener,
Ontario
Fred Brown, Task Force
Kai Millyard, Task Force, Toronto
Julia Langer, GLU Board of
Directors, Toronto
Ruth Clusen, League of Women
Voters, Green Bay

July 17

City Council Chambers
Duluth, Minnesota

John Jackson, Chair
Ron Scrudato, Task Force, Oswego,
New York
Robert Jauch, Wisconsin State
Representative, Poplar
Willard Munger, Minnesota
State Representative, Duluth

August 5

Holiday Inn
Marquette, Michigan

John Jackson, Chair
Steve Sedam, Task Force, Columbus,
Ohio
William Robinson, Northern Michigan
University, Marquette

August 7

City Council Chambers
Sault Ste. Marie, Michigan

John Jackson, Chair
Fred Brown, Task Force
Scot Stewart, GLU Board of
Directors, Marquette, Michigan

August 19

Howard Johnson's
Kingston, Ontario

Ron Scrudato, Chair
Sarah Miller, Task Force
Pamela Millar, Pollution Probe,
Toronto
Helen Cooper, Alderwoman, City
of Kingston

August 21
House of Labour
Cornwall, Ontario

Ron Scrudato, Chair
Sarah Miller, Task Force
Mario Sarda, Ecology Awareness
Group, Cornwall
Ron LaFrance, Cornell University
Ithaca, New York

September 8
CIDEM Building
Montreal, Quebec

John Jackson, Chair
Robert Boice, GLU Past President,
Watertown, New York
Julia Langer, GLU Board of
Directors
Magali Marc, Societe pour Vaincre
la Pollution, Montreal
Victor Goldbloom, former Quebec
Minister of the Environment,
Toronto
Charles Bedard, former IJC
Commissioner, Montreal

September 16
Chicago Cultural Center
Chicago, Illinois

John Jackson, Chair
Fred Brown, Task Force
Tim Eder, Task Force
John Laue, Task Force

September 18
Indiana University NW
Gary, Indiana

John Jackson, Chair
Tim Eder, Task Force
Robert Ginsburg, Task Force
John Laue, Task Force

September 22
Gerald R. Ford Museum
Grand Rapids, Michigan

Fred Brown, Chair
Tim Eder, Task Force
John Laue, Task Force
Carol Swinehart, Task Force,
Brighton, Michigan
Kay Dodge, Center for Environmental
Study, Grand Rapids
Frank Ruswick, West Michigan
Environmental Action Council,
Grand Rapids

September 25
Williams Township Hall
Auburn, Michigan
(Saginaw Bay)

Fred Brown, Chair
Tim Eder, Task Force
Carol Swinehart, Task Force
Don Platt, East Central Planning
and Development Commission,
Saginaw, Michigan
Mike Gray, Williams Township Clerk

October 7
University of Windsor
Windsor, Ontario

John Jackson, Chair
Fred Brown, Task Force
Tim Eder, Task Force
Robert Ginsburg, Task Force
Kai Millyard, Task Force

October 9
City Council Chambers
Sarnia, Ontario

John Jackson, Chair
Robert Ginsburg, Task Force
Sarah Miller, Task Force
Kai Millyard, Task Force
Richard Pruner, Lake St. Clair
Advisory Committee, Mt. Clemens,
Michigan

October 14
University of Toledo
Toledo, Ohio

John Jackson, Chair
Steve Sedam, Task Force
Carol Swinehart, Task Force

October 16
Cleveland State University
Cleveland, Ohio

Robert Ginsburg, Chair
Sarah Miller, Task Force
Steve Sedam, Task Force

October 21
City Council Chambers
Erie, Pennsylvania

Ron Scudato, Chair
Kai Millyard, Task Force
Steve Sedam, Task Force
Richard Kubiak, GLU Board of
Directors, Erie

October 23
City Council Chambers
Toronto, Ontario

John Jackson, Chair
Robert Ginsburg, Task Force
Carol Swinehart, Task Force
Cathy Alpaugh, GLU Board of
Directors, Windsor, Ontario
Ross Hall, Chairperson, Pollution
Probe, Hamilton, Ontario
A.S. Macpherson, Toronto Department
of Public Health

October 30
County Chambers
Buffalo, New York

John Jackson, Chair
Sarah Miller, Task Force
Ron Scudato, Task Force
David Miller, GLU Executive
Director, Buffalo

APPENDIX 2: PRESENTERS' LIST

* Indicates presentation of written information on file with Great Lakes United.

Milwaukee, Wisconsin

1. *Roger Boesch - Wisconsin Environmental Decade, Milwaukee
2. Leo J. Breirather - Sheboygan Area UAW-CAP Council, Sheboygan
3. *Miriam G. Dahl - Milwaukee Chapter, Izaak Walton League of America, Milwaukee
4. Ray Felton - Wisconsin Wildlife Federation, Racine, Wisconsin
5. Kenneth Germanson - Wisconsin OSHA/Environmental Network, Milwaukee
6. *Helen Jacobs - Wisconsin Department of Natural Resources Commission, Milwaukee
7. James Kuperberg - Milwaukee
8. *Michael Llewelyn - Wisconsin Department of Natural Resources, Madison
9. Susan Mudd - Citizens for a Better Environment, Milwaukee
10. Jeffrey Neubauer - Wisconsin State Representative
11. William Neuhaus - UAW Racine Kenosha CAP Council, Racine
12. John Norquist - Wisconsin State Senator
13. *Louise Petering - League of Women Voters, Milwaukee
14. Frank C. Shaw - Sierra Club, Milwaukee
15. John Stauss - Sheboygan County Water Quality Task Force

Green Bay, Wisconsin

1. Bruce Baker - Wisconsin Department of Natural Resources, Madison
2. Mitchell Bent - Wisconsin Trout Unlimited, DePere, Wisconsin
3. Karen A. Ebbeson - League of Women Voters, Door County, Wisconsin
4. John P. Egan - Stop Toxics Organizing Project (STOP), Green Bay
5. *Thomas Erdman - Richter Museum of Natural History, Green Bay
6. William Galbraith - Northeast Wisconsin Audubon Society, Denmark, Wisconsin
7. Hallet Harris - Green Bay
8. *Carol Holden - League of Women Voters of Greater Green Bay, DePere
9. Robert Howe - Northeastern Wisconsin Audubon Society, Green Bay
10. Carl Hujet - Green Bay
11. *William Hurrle - STOP, Green Bay
12. Dale Klaybor - Wisconsin's Environmental Decade, Appleton, Wisconsin
13. *Michael Kraft - University of Wisconsin, Green Bay
14. Gary Lapacz - Great Lakes Bioregional Congress, Green Bay
15. *Donna Lash - Egg Harbor, Green Bay
16. Becky Leighton - Lake Michigan Federation, Green Bay
17. Gerald Lemerond - Northeastern Wisconsin Audubon Society, Green Bay
18. Richard Presnell
19. George Rock - Wisconsin Resources Protection Council, Green Bay
20. Tony Saladino - Citizens for a Better Environment, Green Bay
21. Robert Schmitz - Wolf River Watershed Alliance, Green Bay
22. Paul Willems - Candidate for Congress, Green Bay

Duluth, Minnesota

1. *Dorothy Anway - League of Women Voters, Superior, Wisconsin
2. Walt Bresette - Lake Superior Green Party, Bayfield, Wisconsin
3. Bob Eikum - Sierra Club Great Lakes Committee, Moose Lake, Minnesota
4. *Lee Gehrke - Chequamegon/Wisconsin Audubon Societies, Drummond, Wisconsin
5. *Gary Glass - Duluth
6. *Laura Jacobs - League of Women Voters, Duluth
7. *Alden Lind - Save Lake Superior Association, Duluth
8. Bonnie McCarvel - Representing U.S. Senator David Durenberger, Minneapolis
9. *Edward Manteuffel - Duluth
10. *Lloyd Mattson - Camping Guidepost, Cotton, Minnesota
11. *Willard Munger - Minnesota State Representative, Duluth
12. Peder Otterson - Minnesota Department of Natural Resources, Arrowhead Regional Environmental Education Council, Duluth
13. *Arnold Overby - Save Lake Superior Association, Beaver Bay, Minnesota
14. *Milton Pelletier - United Northern Sportsmen's Club, Duluth
15. *Mark Peterson - Sigurd Olson Environmental Institute, Ashland, Wisconsin
16. *Bill Richard - Representing Congressman James Oberstar, Duluth
17. *Lovell Richie - Minnesota Pollution Control Agency, Roseville, Minnesota
18. *Alan Ruger - Great Lakes Indian Fish and Wildlife Commission, Odanah, Wisconsin
19. *Ann Schimpf - Duluth Audubon Society, Duluth
20. *Marree Seitz - Izaak Walton League, Duluth
21. Pat Sheridan - Citizens Concerned About Radioactive Waste, Port Wing, Wisconsin

Marquette, Michigan

1. Robert Brown - Upper Peninsula Environmental Coalition (UPEC), Houghton, Michigan
2. Gayle Coyer - UPEC, Skandia, Michigan
3. *Frank D'Itri - Michigan State University, East Lansing, Michigan
4. Cathy Doman - UPEC, L'Anse, Michigan
5. *Jan Hacker - Office of the Great Lakes, State of Michigan, Lansing
6. John Rutherford - Central Upper Peninsula Steelheaders, Marquette
7. Scot Stewart - Great Lakes United, Marquette

Sault Ste. Marie, Michigan

1. Earl Commanda - Serpent River Indian Band, Cutler, Ontario
2. Ruth Fletcher - Great Lakes United, Sault Ste. Marie, Ontario
3. John Gannon - IJC Regional Office, Windsor, Ontario
4. Steve Gipp - Soo Area Sportsmen's Club, Sault Ste. Marie, Michigan
5. Dee Griggs - TriCops, Kincheloe, Michigan
6. *Jan Hacker - Office of the Great Lakes, State of Michigan, Lansing
7. Jarl Hiltunen - Sugar Island, Michigan
8. Mitch Irwin - Michigan State Senator, Sault Ste. Marie
9. *Peter Kauss - Ontario Ministry of Environment, Toronto
10. *Karl Morin-Strom - Member of Provincial Parliament, Sault Ste. Marie, Ontario
11. *Katherine Murphy - SAFE Inc., Onaway, Michigan
12. Dan Pine - Garden River Band, Ontario
13. Wade Teeple - Bay Mills Indian Community, Brimley, Michigan
14. Jim Thibert - Sault Ste. Marie, Ontario

Kingston, Ontario

1. Joseph Allerton - Water Commission, City of Fulton, New York
2. *Faith Avis - Kingston
3. Joan Baldwin - FISH; Inc., Clayton, New York
4. *David Bigley - Save the River, Clayton, New York
5. *Robert Boice - New York State Conservation Council, Watertown, New York
6. *John Cooke - Kingston District Chamber of Commerce
7. John Gerretson - Mayor of Kingston
8. Hunter Grimes - Ducks Unlimited, Redwood, New York
9. Robert Hannum - Ducks Unlimited, Redwood, New York
10. *Helen Henrikson - Little Cataraqui Environment Association, Kingston
11. *Amy Hueber - Mexico, New York
12. *Robin Lunn - Bay of Quinte Environmental Group, Picton, Ontario
13. Paul MacKenzie - Kingston Field Naturalists, Kingston
14. Vince Maloney - Kingston
15. *David O. B. Martin - U.S. Congressman, Canton, New York
16. *Robert M. McGregor - St. Lawrence Valley Council, Ogdensburg, New York and Brockville, Ontario
17. David Mowat - Kingston, Frontenac, Lennox, Addington Health Unit, Kingston
18. *Pat Phinney - Chamber of Commerce, Clayton, New York
19. Janet Picunas - Clayton, New York
20. Jan Samis - Newburg, Ontario
21. *Bea Schermerhorn - Hammond, New York
22. *Marguerite Shand - Decisions for the Great Lakes, Kingston
23. Camilla Smith - Thousand Islands Land Trust, Watch Island, New York
24. Larry South - Member of Provincial Parliament, Kingston
25. *Charles Tebbutt - Thousand Islands Park, New York
26. *J.R. Vallentyne - Canada Centre for Inland Waters, Burlington, Ontario
27. *Sandy Weston - Fulton Safe Drinking Water Action Committee, Fulton, New York
28. *David White - Save Oswego County, Oswego, New York
29. Richard Winter - Kingston

Cornwall, Ontario

1. Marg Alexander - Lung Association of the Eastern Counties, Cornwall
2. Gerald Charlebois - Alderman, City of Cornwall
3. Richard Grover - Potsdam, New York
4. Bob Hillyar - Ontario Ministry of Environment, Cornwall
5. Henry Lickers - St. Regis Environmental Health Services, Cornwall
6. Robin McClellan - Potsdam, New York
7. *Russ Mt. Pleasant - New York State Department of Environmental Conservation, Albany, New York
8. Robert Mulvaugh - United Auto Workers, Massena, New York
9. Klaus Proemm - Canton, New York
10. *James Ransom - St. Regis Mohawk Health Services, Hogansburg, New York
11. Ward Stone - New York State Department of Environmental Conservation, Delmar
12. Geoff Thornburg - International Joint Commission, Ottawa
13. Norm Walker - Member of Canadian Parliament, Stormont, Dundas

Montreal, Quebec

1. *Yves Blais - Environment Critic, Parti Quebecois, Terrebonne, Quebec
2. Marcel Couture - Association Quebecoise des Techniques de l'Eau, Montreal
3. *Daniel Green - Societe pour Vaincre la Pollution, Montreal
4. *Claude Grondin - Union Quebecoise pour la Conservation de la Nature, Quebec City
5. Jacques Guilbeault - Liberal Party of Canada, Montreal
6. *Jean-Paul Harney - New Democratic Party of Quebec, Montreal
7. Bruce McKay - Greenpeace, Montreal
8. *Richard Nadeau - Union Quebecoise pour la Conservation de la Nature, Quebec City
9. Jean Piette - Environment Quebec, Quebec City
10. Harm Sloterdijk - Environment Canada, Montreal
11. *Yvan Vigneault - Canadian Department of Fisheries and Oceans, Quebec City
12. Bruce Walker - STOP, Montreal
13. *Dwayne White - Mohawk Council of Kahnawake, Kahnawake, Quebec

Chicago, Illinois

1. Joanne Alter - Metropolitan Sanitary District, Chicago
2. Jeff Barrett-Howard - Greenpeace, Chicago
3. *Lee Botts - Lake Michigan Federation, Chicago
4. Henry T. Chandler - Lake Michigan Federation, Chicago
5. *Jacob Dumelle - Illinois Pollution Control Board, Chicago
6. *Lincoln Edmands - Chicago
7. Al Feldman - Chicago Audubon Society, Shedd Aquarium, Chicago
8. Robert Ginsburg - Citizens for a Better Environment, Chicago
9. Jim Griffith - Lake Michigan Federation, Chicago
10. Robert Handelsman - Evanston
11. *Bobby Rush - City Council, Committee on Energy, Environmental Protection & Public Utilities, Chicago
12. Marcelle Wilkins - Sierra Club, Eagle Foundation, Audubon Society, Chicago
13. *Jill Wine-Banks - Representing Illinois Attorney General Neil Hartigan, Chicago
14. *Peter Wise - United States Environmental Protection Agency, Chicago

Gary, Indiana

1. John Beckman - Lake Michigan Federation, Hammond, Indiana
2. Lin Kaatz Chary - Grand Calumet Task Force, East Chicago, Indiana
3. *Blythe Cozza - People Against Hazardous Landfill Sites (PAHLS), Wheeler, Indiana
4. *Robert Dargitz - Butler University, Indianapolis, Indiana
5. Charles Davidson - Lake County Fish and Game Protective Association, Hammond, Indiana
6. Larry Davis - PAHLS, Wheeler, Indiana
7. *Lincoln Edmands - Chicago
8. Gerald Hayes - Councillor, City of Gary
9. Gerald B. Hebert - Grand Calumet Task Force, Gary
10. *Bob Hilton - Indiana Department of Environmental Management, Indianapolis
11. *Orie Loucks - Holcomb Research Institute, Indianapolis, Indiana

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12. Daniel Pappas - Burns International Harbor, Portage, Indiana
 13. Sarah Pavlovic - U.S. EPA Great Lakes National Program Office, Chicago, Illinois
 14. Tim Sanders - Representing U.S. Senators Lugar and Quayle, Indiana
 15. Lorraine Stasek - United Citizen Organization, East Chicago, Indiana
 - 16.*John Swanson - Representing Congressman Visclosky, Gary
 17. Mark Venzke - Hammond, Indiana

Grand Rapids, Michigan

1. *Beth Bandstra - Commissioner, Kent County, Michigan
2. Wendell Briggs - Michigan United Conservation Clubs, Grand Rapids
3. Russell DuBuis - Wyoming, Michigan
4. *Lincoln Edmands - Chicago
5. Clare Harrington - UAW Local 730, Wyoming, Michigan
6. Dayle Harrison - Kalamazoo River Protection Association, Kalamazoo, Michigan
7. Gerald Helmholtz - Mayor of Grand Rapids
8. *Paul R. Henry - Congressman, Grand Rapids
9. *Barbara Howard - League of Women Voters of the Grand Rapids Area, Grand Rapids
- 10.*Geoff Hughes - Inventor's Council, Grand Rapids
11. Martha C. Johnson - Michigan Pure Water Council, Lansing, Michigan
12. Michael Karolle - West Michigan Environmental Action Council, Grand Rapids
- 13.*Thomas Martin - Office of Great Lakes, State of Michigan, Lansing
- 14.*George McMahon - Great Lakes Coalition, Lake Michigan Chapter
15. Brad Miller - Representing U.S. Senator Donald Riegle, Grand Rapids
16. Edward Mullian - Grand Rapids
- 17.*Mary Pasikowski - Sierra Club, Grand Rapids
- 18.*Mary Remer - Grand Rapids Audubon Club, Wyoming, Michigan
- 19.*Richard Santer - Department of Geography, Ferris State College, Big Rapids, Michigan
- 20.*Shari Schaftlein - West Michigan Environmental Action Council, Grand Rapids
21. Bill Stough - Waste Systems Institute, Grand Rapids

Saginaw Bay, Michigan

1. Virgil Bouck - Michigan United Conservation Clubs (MUCC), Pigeon, Michigan
2. Allan Brouillet - Michigan Department of Natural Resources (DNR), Saginaw
3. Brenda Brouillet - Michigan DNR, Saginaw
4. John Campbell - MUCC
5. *Jo-Ellen Darcy - Great Lakes & Water Resources Planning Commission, Lansing, Michigan
6. Patrick Demers - Lone Tree Council, Bay City, Michigan
7. David Dolan - IJC Regional Office, Windsor, Ontario
8. Steve Forgacs - MUCC, Lansing, Michigan

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9. Betty Gillmore - Bay County League of Women Voters, Bay City, Michigan
 - 10.*Michael Gray - Williams Township, East Central Planning & Development Commission, Auburn, Michigan
 11. Diane Hebert - Greenpeace, Midland, Michigan
 12. Tom Hickner - State of Michigan Representative
 13. Ron Knublock - Huron County Board, Bad Axe, Michigan
 14. Wilfred Lambert - Auburn, Michigan
 15. Doug Martin - Midland, Michigan
 16. Terry Miller - Lone Tree Council, Bay City, Michigan
 17. Carl Reinke - Saginaw Bay Advisory Council, Bay City, Michigan
 - 18.*Mary Sinclair - Great Lakes Energy Alliance, Midland, Michigan
 19. Bernard Uhlmann - Saginaw Bay Advisory Council, Bay City, Michigan
 20. Joe Vitek - MUCC, Saginaw, Michigan
 21. Marc Weiler - Oscoda Area Schools, Oscoda, Michigan
 - 22.*Chris Yost - Representing U.S. Senator Donald Riegle, Flint, Michigan

Windsor, Ontario

1. Rick Bielicz - Windsor and District Clean Water Alliance, Windsor
2. Patrick Brunett - Southeast Michigan Council of Governments, Detroit
3. David Burr - Mayor, City of Windsor
4. *Jim Caldwell - Member of Canadian Parliament, Leamington, Ontario
5. Rick Coronado - Windsor and District Clean Water Alliance, Windsor
6. Daniel Crockett - Representing U.S. Senator Donald Riegle, Detroit
7. *Joseph Cummins - Greenpeace, London, Ontario
8. *Dennis Dresser - Essex County Fish & Game Advisory Committee, Tecumseh, Ontario
9. *Herb Gray - Member of Canadian Parliament, Windsor
- 10.*G.D. Haffner - Great Lakes Institute, University of Windsor, Windsor
- 11.*Elizabeth Harris - East Michigan Environmental Action Council (EMEAC), Birmingham, Michigan
12. John Hartig - International Joint Commission, Windsor
- 13.*Pat Hayes - Member of Provincial Parliament, Essex, Ontario
- 14.*Steven Langdon - Member of Canadian Parliament, Amherstburg, Ontario
- 15.*Wendi Maroon - Council of Canadians, Windsor
- 16.*Beth Miller - Recycling Detroit, Detroit
- 17.*Bruce Monson - Rouge River Watershed Council/Friends of the Rouge, Livonia, Michigan
- 18.*Bernie Newman - Member of Provincial Parliament, Windsor
- 19.*Gary Parent - Windsor & District Labour Council, Windsor
20. Eugene Perrin - EMEAC, Sierra Club, Wayne State University, Huntington Woods, Michigan
- 21.*Patricia Quinlan - Maidstone Against Dumping, Essex, Ontario
22. Michael Ray - Alderman, City of Windsor
23. Elliott Smith - Raytheon Service Co., Grosse Ile, Michigan
- 24.*Thomas Washington - Michigan United Conservation Clubs, Lansing, Michigan
25. Judith White - Lake St. Clair Advisory Committee, Mt. Clemens, Michigan
- 26.*Nancy White - League of Women Voters of Michigan, Plymouth, Michigan

Sarnia, Ontario

1. Louisa Albers - League of Women Voters, Port Huron, Michigan

2. Laura Barnowski - Citizens Organized Against Chemical Hazards (COACH), Algonac, Michigan
3. *Steve Bolt - Dow Chemical Canada Inc., Sarnia
4. Mike Bradley - Alderman, City of Sarnia, Sarnia
5. *Damien Brouillard - Representing U.S. Congressman David Bonior, Mt. Clemens, Michigan
6. Paul Carter - Sarnia
7. Scott Connop - Camlachie, Ontario
8. Rick Coronado - Windsor & District Clean Water Alliance, Windsor
9. *Ron Denning - Lambton Industrial Society, Sarnia
10. Ronald Griffiths - Aquatic Ecostudies Limited, Kitchener, Ontario
11. Janice Gunning - St. Clair River International Citizens' Network, Mt. Clemens, Michigan
- 12.*Jan Hacker - Michigan Office of the Great Lakes, State of Michigan, Lansing
- 13.*David Innes - Great Lakes Institute, Windsor
14. John Kunzig - Sarnia
- 15.*Laurie Montour - Walpole Island Indian Band, Walpole Island, Ontario
- 16.*Sara Moran - Marine City, Michigan
17. D. A. Patterson - Commissioner of Works, City of Sarnia, Sarnia
- 18.*Thomas Schoenherr - COACH, Marysville, Michigan
- 19.*Scott Shibley - Greenpeace, Toronto
20. Doug Steen - Wallaceburg Clean Water Committee, Wallaceburg, Ontario
21. Judith White - Lake St. Clair Advisory Committee, St. Clair Shores, Michigan
- 22.*J.M. Wright - Algonac, Michigan

Toledo, Ohio

1. *Shirley Axon - American Association of University Women, Ann Arbor, Michigan
2. David Baker - Water Quality Lab, Heidelberg College, Tiffin, Ohio
3. Sandy Bihn - Councillor, City of Oregon, Oregon, Ohio
4. *Thomas Eggers - Henry Soil & Water Conservation District, Napoleon, Ohio
5. Helen Elden - Toledo Coalition for Safe Energy, Sylvania, Ohio
6. *Peter Fraleigh - University of Toledo, Toledo
7. Charles Karlsen - Onekema, Michigan
8. *Cal Lakin - Toledo Metropolitan Area Council of Governments, Toledo
9. John Loftus - Toledo Lucas County Port Authority, Toledo
10. Ruth Mahler - Hazardous Environments Leak Poison (HELP), Maumee, Ohio
11. Bob Manson - Ohio Environmental Protection Agency, Bowling Green, Ohio
12. Gary Martin - Ohio EPA, Columbus, Ohio
13. Jennifer O'Donnell - Ohio Public Interest Campaign, Toledo
14. Helen O'Meara - Holland, Ohio
15. John O'Meara - Maumee Valley Audubon Society, Holland, Ohio
16. Leon Pfouts - Environmental Services Agency, City of Toledo, Toledo
- 17.*Bayliss Prater - Ohio Water Advisory Council, Willard, Ohio
18. Donald Romes - Division of Water Reclamation, City of Toledo, Toledo
- 19.*Howard Sachs - Sandusky County Soil and Water Conservation District, Fremont, Ohio
- 20.*Karl Schurr - Ohio Water Advisory Council, Bowling Green, Ohio
- 21.*Whit Van Cott - Division of Water, City of Toledo, Toledo

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- 22.*Bea Waterbury - Lake Erie Basin Committee, League of Women Voters, Toledo
 - 23.*Phil Wiseley - Western Lake Erie Sierra Club, Toledo

Cleveland, Ohio

1. Mrs. James Angel - Citizens for Land & Water Use, Inc., Cleveland
2. Gerry Armstrong - League of Women Voters of Geauga County, Chesterland, Ohio
3. *Richard Bartz - Ohio Department of Natural Resources, Columbus, Ohio
4. Mimi Becker - Hiram College Environmental Research Center, Hiram, Ohio
5. Edith Chase - Ohio Coastal Resource Management Project, Kent, Ohio
6. *Emeline Clawson - Sierra Club, Cleveland Heights, Ohio
7. *Stephen Coles - Cleveland Metroparks System, Cleveland
8. Genevieve Cook - Coalition for Safe Electric Power, Cleveland
9. Jack Delaney - Greater Cleveland Boating Association, Wickliffe, Ohio
- 10.*Dan Dudley - Ohio Environmental Protection Agency, Columbus, Ohio
11. Judy Fink - Sierra Club Hillcrest Area, Beachwood, Ohio
- 12.*Jeffery Foran - National Wildlife Federation, Ann Arbor, Michigan
- 13.*Noreen Gebauer - League of Women Voters, Rocky River, Ohio
14. Ed Hauser - Lakeland College, Sea Grant, Concord Township, Ohio
- 15.*Ed Hopkins - Representing Governor Richard Celeste, Columbus, Ohio
16. Frank Lichtkoppler - Ohio Sea Grant, Painesville, Ohio
- 17.*Nancy Martt - Cuyahoga County League of Women Voters, American Lung Association of Northern Ohio, Chagrin Falls, Ohio
18. Dennis Muchnicki - Office of Ohio Attorney General, Columbus, Ohio
19. Bob Nece - United Auto Workers, Cleveland
- 20.*Mary Rose Oakar - U.S. Congresswoman, Cleveland
- 21.*Sheila Somberg - Representing U.S. Congressman Dennis Eckart, Mentor, Ohio
22. Dennis Taylor - Hiram College, Hiram, Ohio
23. Rolf Tinge - Greater Cleveland Boating Association, Chagrin Falls, Ohio
24. Carol Tveekrem - Greater Akron Audubon Society, Akron, Ohio
- 25.*William Warner - Northern Ohioans Protecting the Environment, Vickery, Ohio

Erie, Pennsylvania

1. *Richard Boardman - Pennsylvania Department of Environmental Resources, Harrisburg, Pennsylvania
2. *Ralph Corvaglia - Save Our Native Species of Lake Erie (SONS), Erie, Pennsylvania
3. *Jimmy Dallas - 3-C-U Trout Association, Erie
4. Vernon George - Erie
5. LeRoy Gross - Erie County Conservation District, Waterford, Pennsylvania
6. *Roger Kenyon - Pennsylvania Fish Commission, Fairview, Pennsylvania
7. Tim Kimmel - Presque Isle Audubon Society, Erie
8. *Ed Kissell - SONS of Lake Erie, Erie
9. *Joan Lintelman - League of Women Voters of Erie County, Erie
- 10.*Pat Lupo - Benedictine Sisters, Erie
- 11.*Richard Neller - Sierra Club, Pittsburgh, Pennsylvania
- 12.*Stanley Prazer - Bureau of Water, City of Erie, Erie
13. Ken Springirth - Erie
14. Lew Steckler - Soil Conservation Service, Waterford, Pennsylvania

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15. David Sundean - Sierra Club, Edinboro, Pennsylvania
 16. *Robert Sundy - Erie
 17. *John Toth - Erie County Department of Health, Erie
 18. William Welch - Sierra Club, Erie
 19. Dean Wilpula - Citizens for Clean Water, Ashtabula, Ohio

Toronto, Ontario

1. *June Anderson - West Burlington Citizens' Group, Burlington, Ontario
2. Jim Bishop - Ontario Ministry of Environment, Toronto
3. *Piero Boldrini - Hamilton, Ontario
4. *Annie Booth - North York, Ontario
5. *Charles Caccia - Member of Canadian Parliament, Toronto
6. Anne Farraway - Friends of the Spit, Toronto
7. David Freeman - City of Hamilton, Hamilton, Ontario
8. James Garratt - Save the Rouge Valley System, Scarborough, Ontario
9. *Frank Giorno - Canadian Environmental Law Association, Toronto
10. *Denis Grecco - Roman Catholic Diocese of St. Catharines, Grimsby, Ontario
11. Ruth Grier - Member of Provincial Parliament for Lakeshore, Mississauga, Ontario
12. *Colin Isaacs - Pollution Probe Foundation, Toronto
13. *Kevin Kavanagh - Botany Conservation Group, University of Toronto, Toronto
14. Joanna Kidd - Waterfront Remedial Action Plan Committee, Toronto
15. *Jim Kingham - Canada-Ontario Agreement Review Board, Toronto
16. *Jack Layton - Alderman, City of Toronto, Toronto
17. *Douglas Martin - Lakefront Owners Association, Etobicoke, Ontario
18. *Michael McLachlan - Sierra Club of Ontario, Toronto
19. *Joyce McLean - Greenpeace, Toronto
20. *Doris Migus - Citizens for Modern Waste Management, Vineland, Ontario
21. Sarah Miller - Stop Contaminating Our Waterfront, Toronto
22. *Sarah Rang - Institute of Environmental Studies, University of Toronto, Toronto
23. Zelma Reive - Consumers Association of Canada, Toronto
24. Ken Richards - Ontario Ministry of Environment, Toronto
25. James Robb - Save the Rouge Valley System, Scarborough, Ontario
26. *David Scriven - Canadian Environmental Law Research Foundation, Toronto
27. *Joanne Sewell - Great Lakes Decisions, Kingston, Ontario
28. Stan Spencer - Region of Hamilton-Wentworth, Hamilton, Ontario
29. *Harold Stevens - Councillor, Town of Port Hope, Port Hope, Ontario
30. *Bill Van Gaal - Canadian Auto Workers, Oakville, Ontario

Buffalo, New York

1. *Michelle Bennett - North District Waterfront Review Committee, Buffalo
2. Karen Blake - Help Eliminate Lawn Pesticides (HELP), Springville, New York
3. Joan Bozer - Erie County Legislature, Buffalo
4. *John Bunz - New York State Conservation Council, Tonawanda, New York
5. *Dona Coville - Councillor, City of Niagara Falls, Niagara Falls, Ontario
6. John Daly - New York State Senator, Albany, New York
7. Mike Dickman - Niagara Ecosystem Task Force, St. Catharines, Ontario
8. Marc Ellenbogen - New York Public Interest Research Group (NYPIRG), Buffalo, New York

-
9. *Ron Gardner - Local 774, United Auto Workers, Buffalo, New York
 - 10.*Diane Heminway - Citizen Organized to Protect the Environment, Medina, New York
 - 11.*Beverly Horozko - HELP, Buffalo, New York
 12. Margherita Howe - Operation Clean Niagara, Niagara-on-the-Lake, Ontario
 13. Ed Hutton - Adirondack Mountain Club, Orchard Park, New York
 - 14.*Richard Janas - Buffalo
 - 15.*Albert Laese - Ecumenical Task Force, Niagara Falls, New York
 - 16.*Charles Lamb - Christian Church (Disciples of Christ), Buffalo
 17. Anthony Luppino - Citizen Action of NY, Buffalo
 - 18.*Dianna McGraw - Atlantic States Legal Foundation, Syracuse, New York
 - 19.*Doris Migus - Citizens for Modern Waste Management, Vineland, Ontario
 - 20.*Lester Milbrath - Environmental Studies SUNY/Buffalo, Buffalo, New York
 - 21.*Henry Nowak - U.S. Congressman, Buffalo, New York
 22. William Pearce - Great Lakes Fisheries Commission, Cape Vincent, New York
 - 23.*Edward Rebmann - South Shore Coalition, Blasdell, New York
 - 24.*Ralph Rumer - State University of New York at Buffalo, Buffalo, New York
 25. J.B. Sheffer - State Legislator, Williamsville, New York
 26. Kenneth Sherman - NYPIRG, Buffalo, New York
 27. Brian Shero - Medaille College, Buffalo, New York
 28. Harish Sikka - Great Lakes Laboratory, Buffalo, New York
 - 29.*James Spotila - State University College, Buffalo, New York
 - 30 *Deborah Volberg - Representing Attorney General Robert Abrams, State of New York, Buffalo
 - 31.*Henry Williams - Commissioner, New York State Department of Environmental Conservation, Albany, New York

APPENDIX 3:

THE WATER QUALITY TASK FORCE

John Jackson, Task Force Chair
Friends of the Earth
Kitchener, Ontario

Frederick Brown, GLU President
Michigan United Conservation Clubs
Midland, Michigan

Robert Ginsburg
Citizens For A Better Environment
Chicago, Illinois

John Laue
Lake Michigan Federation
Chicago, Illinois

Sarah Miller
Canadian Environmental Law Association
Toronto, Ontario

Kai Millyard
Pollution Probe
Toronto, Ontario

Ron Scrudato
Save Oswego County
Oswego, New York

Stephen Sedam
Ohio Environmental Council
Columbus, Ohio

Carol Swinehart
League of Women Voters
Brighton, Michigan

Project Coordinator:
Tim Eder

Western Consultants:
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Blue Mounds, Wisconsin

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Great Lakes United is a coalition of over 200 diverse groups from the United States and Canada striving for proper management and protection of the Great Lakes and St. Lawrence River. The Citizens' Hearings on Great Lakes Water Pollution and this report are classic examples of GLU and member groups working together to provide avenues for public input into Great Lakes decision-making. We urge you to join and support our efforts.

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