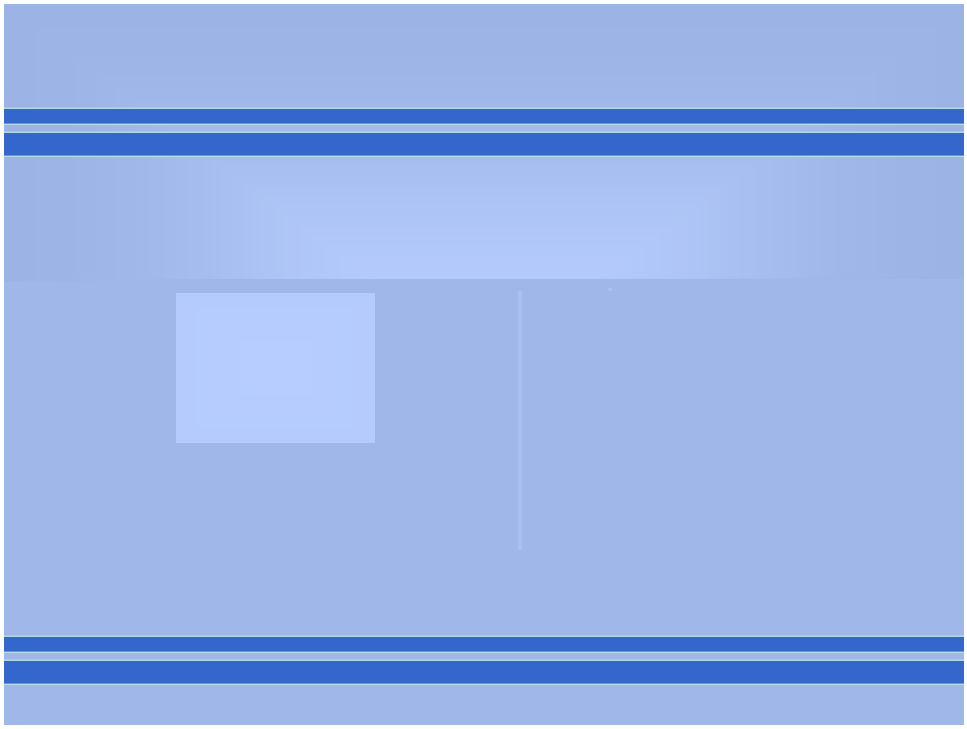
Great Lakes Training Program

Reference Manual

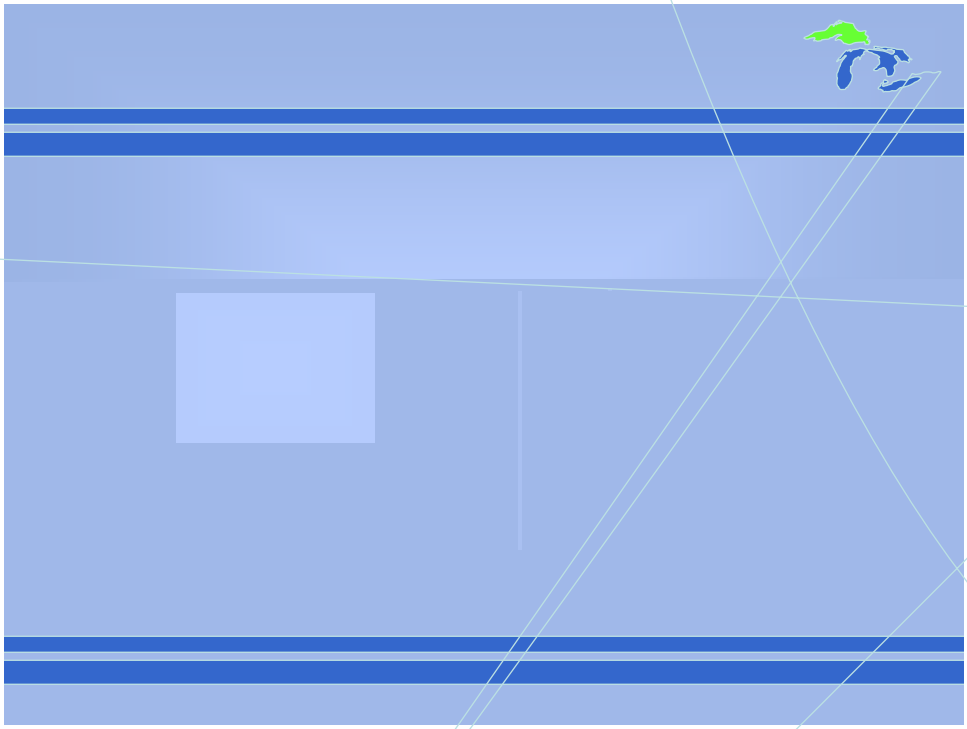
The Delta Institute
53 West Jackson
Suite 230
Chicago, IL 60604



Introduction

-
-
-
-
-
-
-
-
-

Agenda



Great Lakes Facts

1. The Great Lakes represent what percentage of the world's freshwater supply?

   18%

2. How many people reside within the Great Lakes basin?

   35,000,000 (25 million in the US, 10 million in Canada)

3. How deep is Lake Superior?

   a. 483 feet b. 653 feet c. 1,248 feet **d. 1,332 feet** e. 1,684 feet

4. How many miles of coastline are there on the Great Lakes?

   a. 5,208 **b. 10,210** c. 8,690 d. 16,784 e. 21,347

5. How many years is water retained in Lake Michigan? Lake Erie?

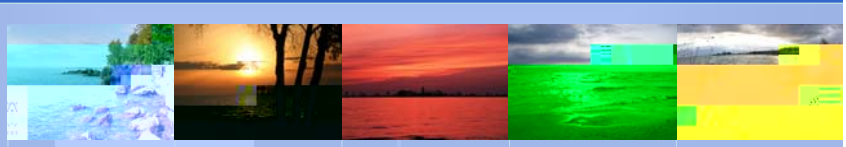
   a. 1.5 **b. 2.6** c. 5.8 d. 13.4 e. 21 f. 35 g. 50 **h. 99**

Discussion

Great Lakes Facts

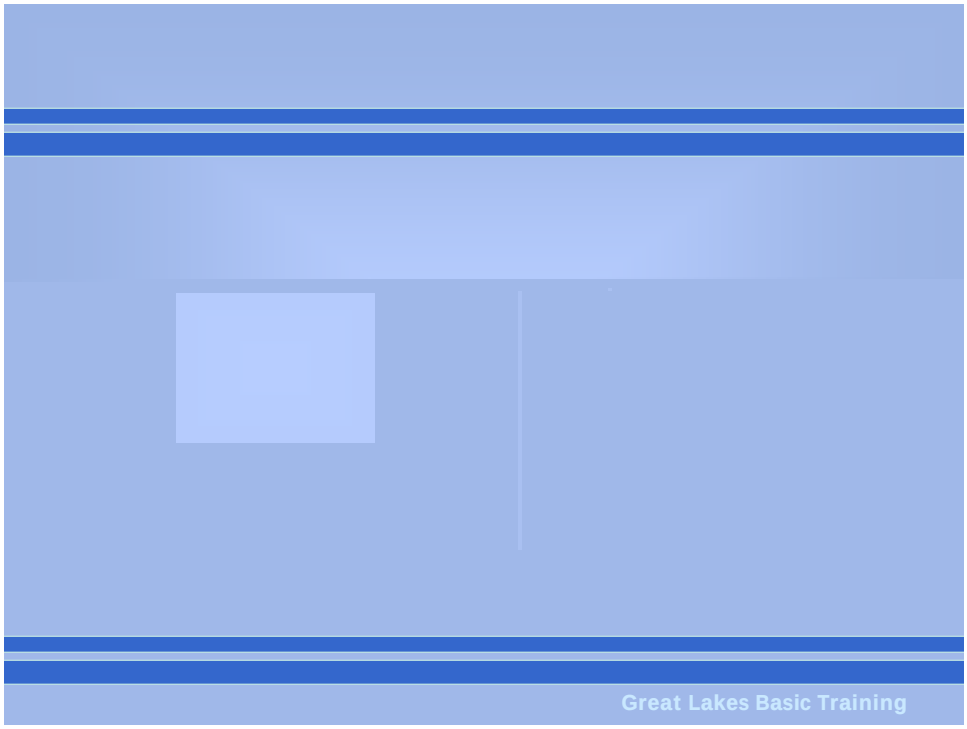
- The Great Lakes were formed around 10,000 years ago from glacial meltwater.
- Parts of the glaciers were over a mile thick.
- The glaciers did not retreat all at once, there were several

Great Lakes Facts

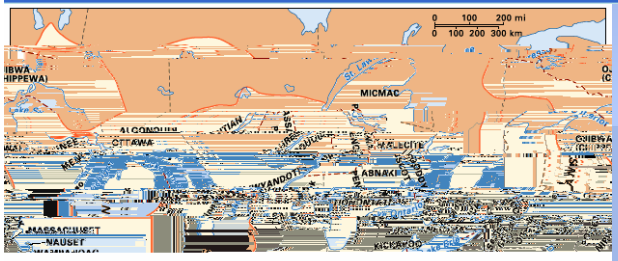


Lake	Superior
Elevation	600 ft
Length	
Breadth	Dr
Ave. Depth	
Max. Depth	
Volume	
Surface Area	
Drainage Area	
Shoreline	
Retention	

Hydrologic


Great Lakes Basic Training

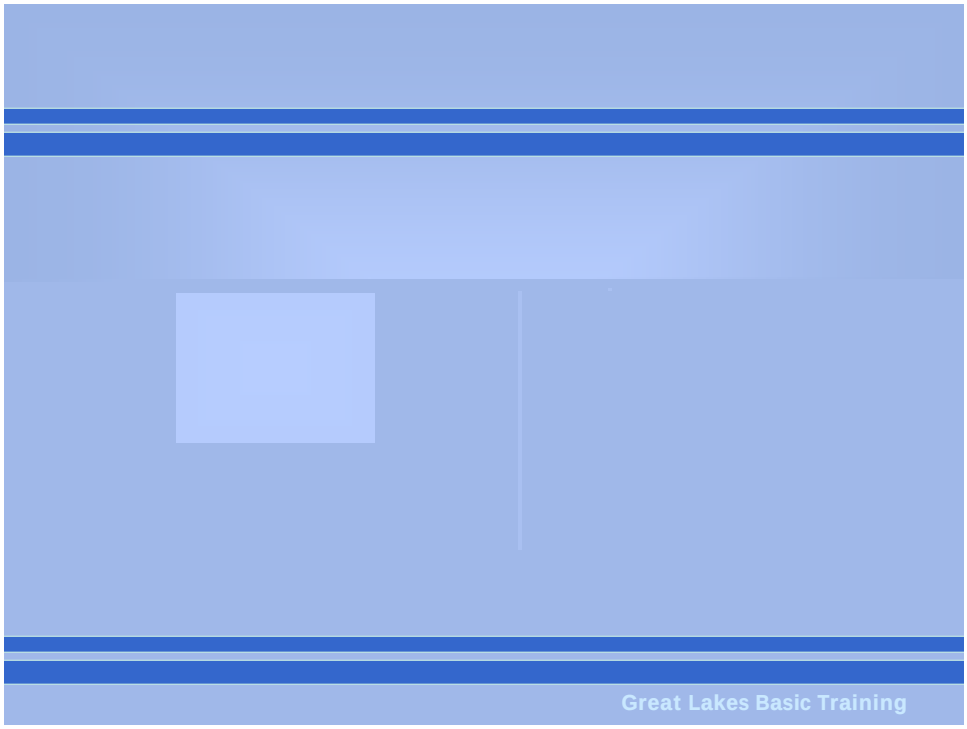
Great Lakes Facts

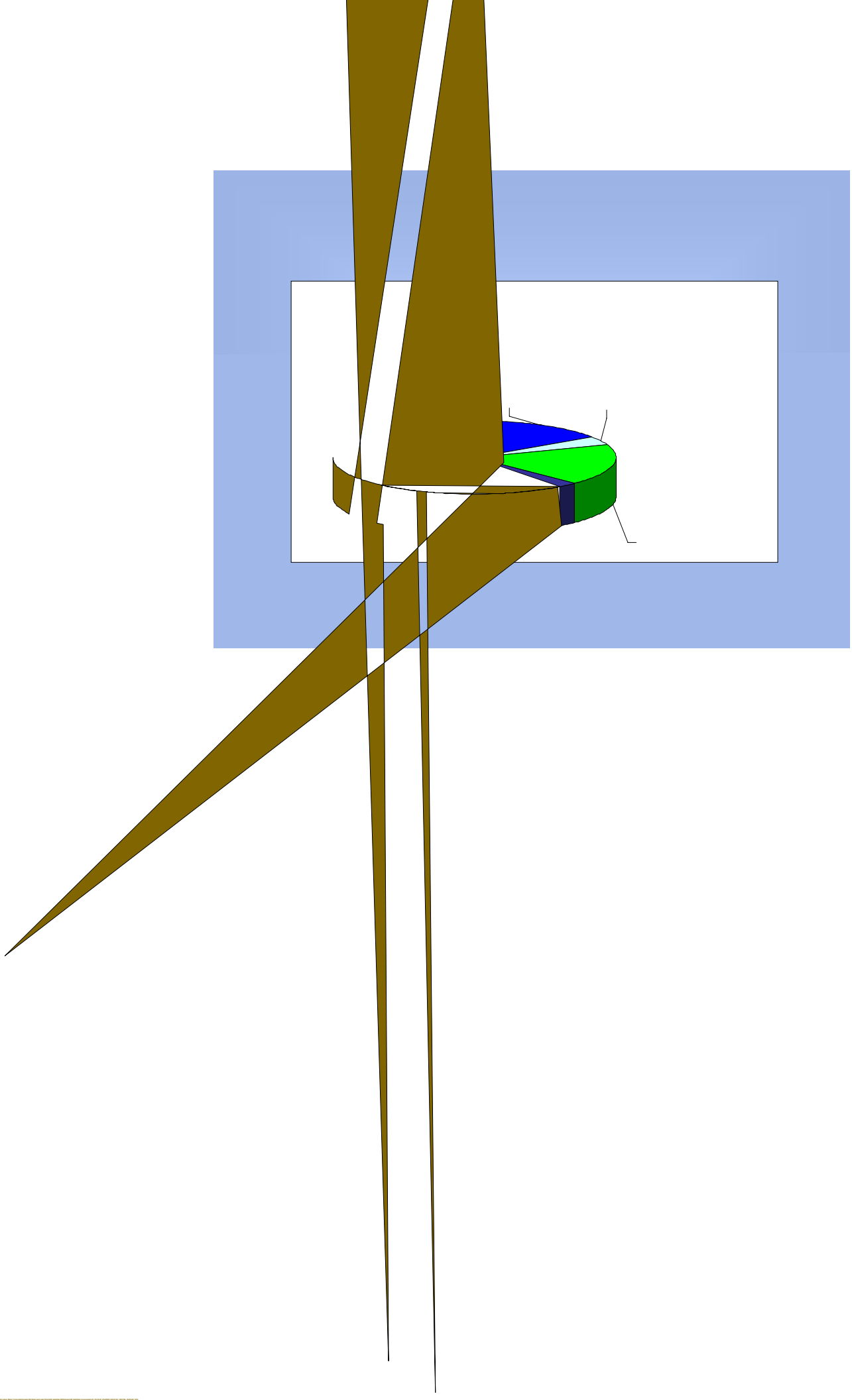


- Human settlement began around 8,000-9,000 years ago.
- Approximately 120 bands of Native Americans have occupied the Great Lakes basin comprising the many tribes in the area.
- In 1615, French explorers first encountered Native Americans by Lake Huron.
- Europeans traded their iron tools (needles, hatchets, traps, guns, etc.) for the furs and skins of the Native peoples.
- Relations deteriorated after the American revolution as settlers spread westward.

Great Lakes Facts

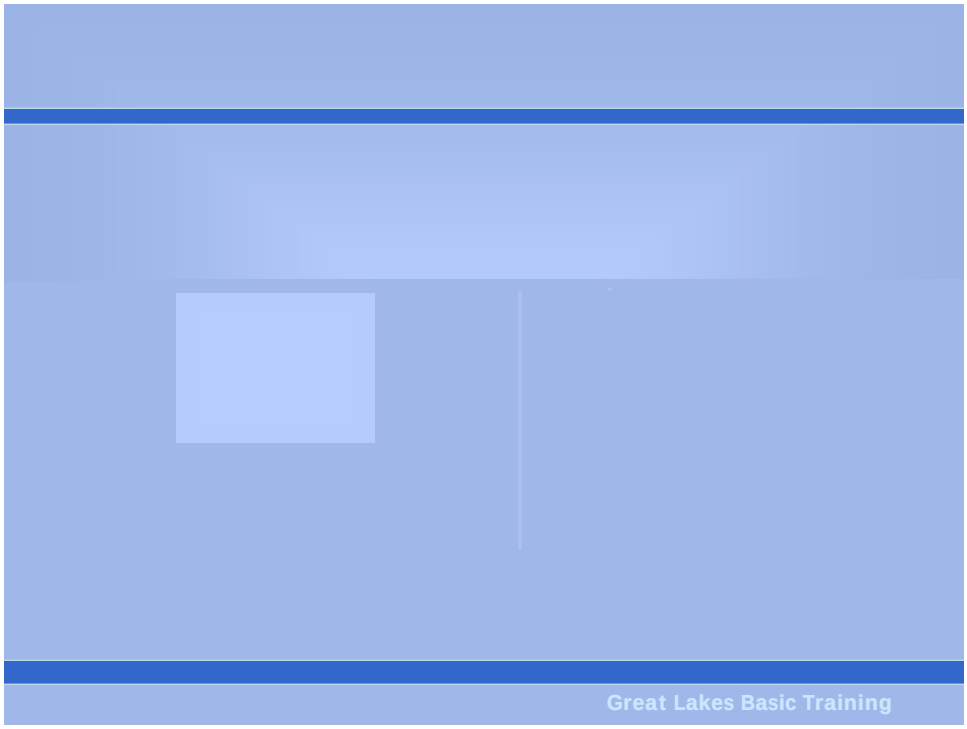
Population

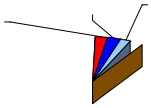

Great Lakes Basic Training



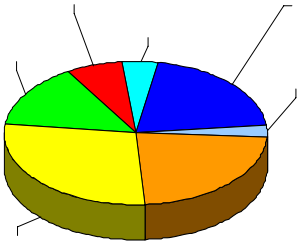
Great Lakes Facts

Water Use


Great Lakes Basic Training



130.4 Mgal/d Consumed
3570.2 Mgal/d Withdrawn

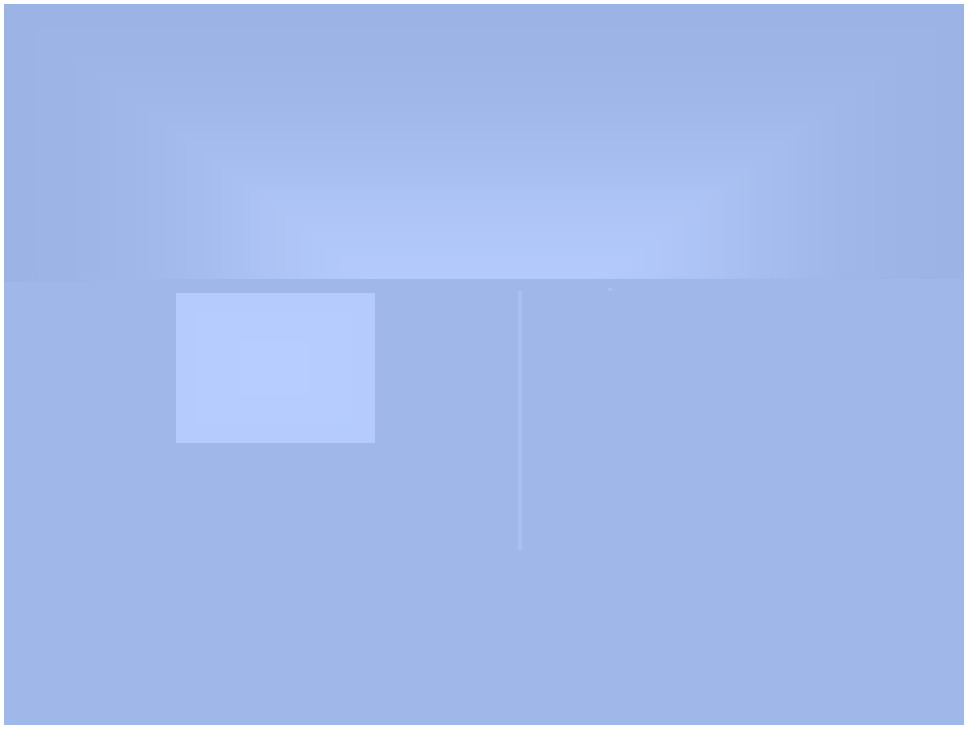


- Public Supply
- Domestic Supply
- Irrigation
- Livestock
- Industrial
- Fossil Fuel Power
- Nuclear Power

Wisconsin - Lake Superior8.2 Mgal/d Consumed49.2 M

Great Lakes Facts

Gross State Product



Environmental & Natural Resources Issues

Discussion

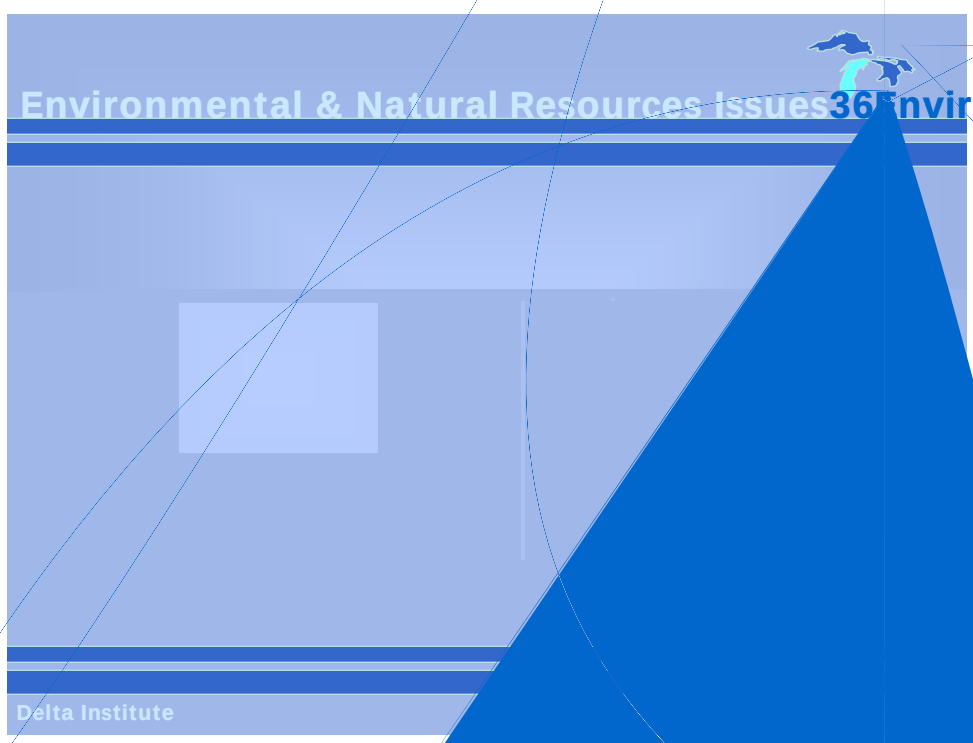
Environmental & Natural Resources Issues

Non-Point Source

Environmental & Natural Resources Issues

- Sewage
  - From combined sewer overflows and leaking septic systems.
  - Causes spread of disease, bacterial blooms, and adds nutrients to the water.
- Nutrients
  - From sewage and agricultural runoff.
  - Phosphorus and nitrogen cause algal blooms and creates eutrophication in the lakes and ultimately results in “dead zones.”
- Toxics
  - From a variety of sources around the Great Lakes and cause a multitude of different problems. Pesticides, heavy metals, organochemicals, and endocrine disruptors are regarded as having serious impacts on the Great Lakes. 452.56þ.(452.0.22 660.4 c52.0. 660.4 c525. 660.72 45226.6 666048 c8162 686034 445462 686022 4

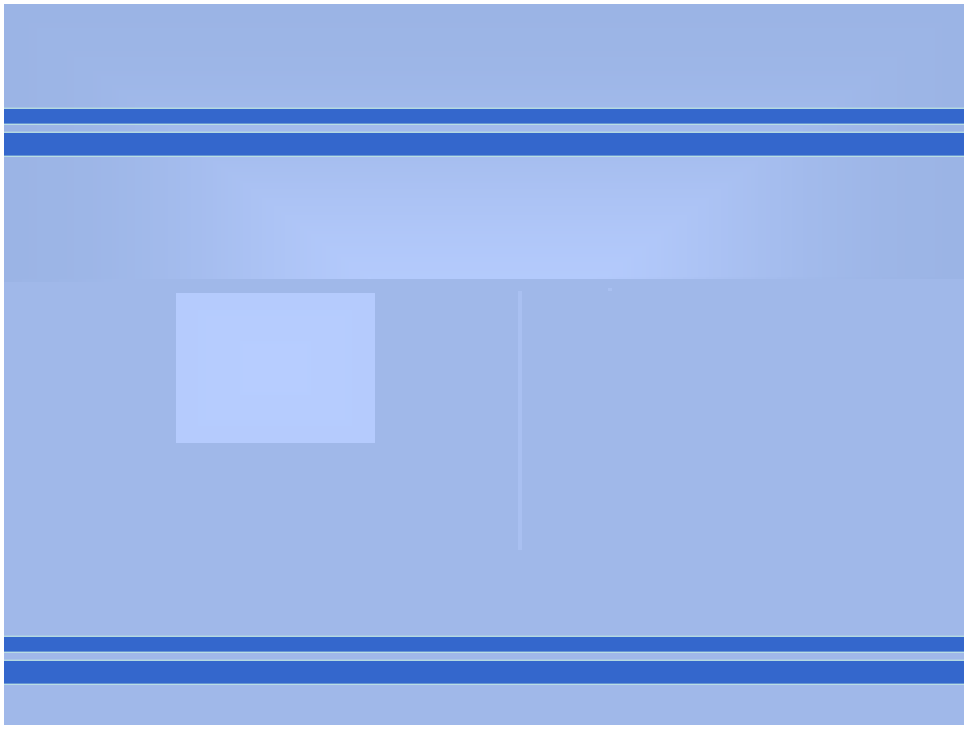
Impacts



Environmental & Natural Resources Issues36 Environmental & Natu

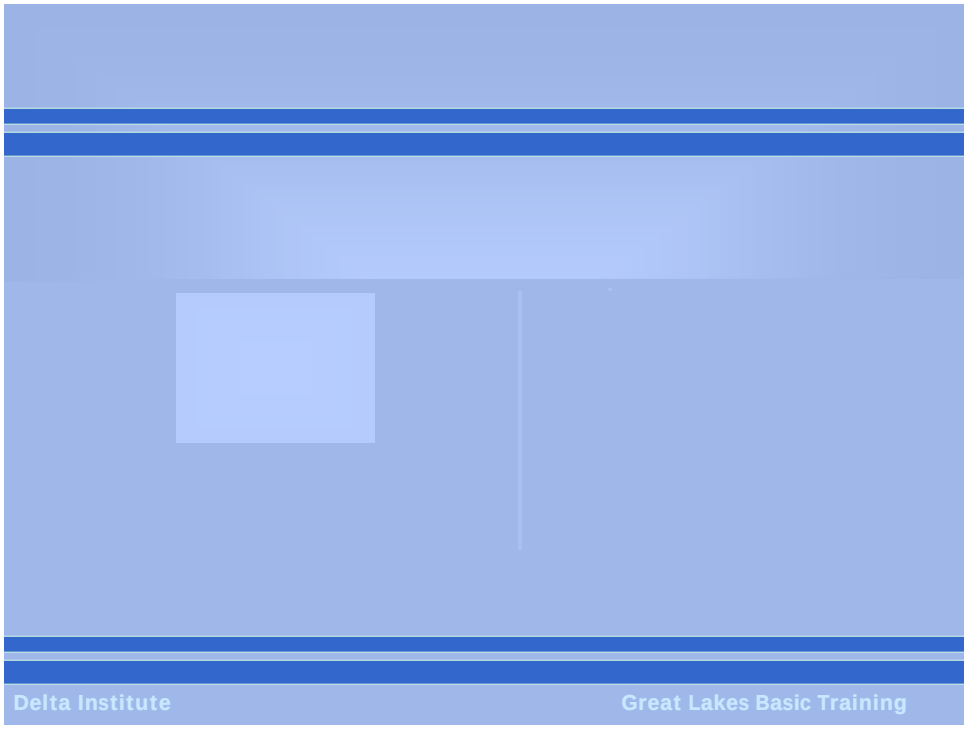
Delta Institute

Fish Consumption Advisories38Great



- The Legacy Act of 2002 calls for $270 million to be used for sediment remediation in AoCs.
  - $10 million was appropriated for FY04 and $45 million for FY05.
- While 3 million cubic yards has been remediated, it is estimated that over 76 million cubic yards of sediment needs to be cleaned up around the Great Lakes.

Contaminated Sediments



Dredging

- Dredging is overseen by the U.S. Army Corps of Engineers.
- Corps maintains 139 channels and harbors around the basin.
- Great Lakes dredging is performed for:
  - navigation channels,
  - flood protection,
  - waterfront construction,
  - clearing water supply intakes,
  - placing or repairing utilities that cross under rivers, and
  - environmental remediation.
- Approximately 5 million cubic yards dredged in the Great Lakes. Disposal of per year dredged material:
  - 32% disposed of in open water off shore;
  - 12% disposed of near shore for beach restoration.
  - Remainder in Confined Disposal Facilities (CDFs).
- Dredging can resuspend contaminants from sediments and alter natural shoreline systems.


Environmental & Natural Resources
Coastal Wetland
region
20,881.5

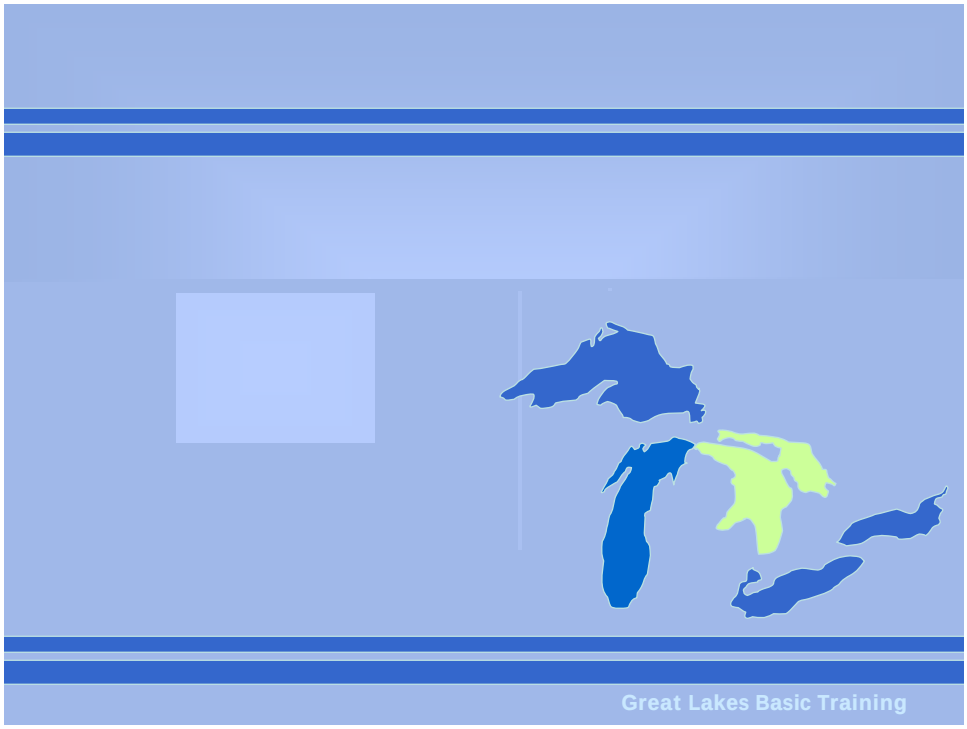
Groundwater

Environm… …s Issues

- …s
  - Dec…
  - Cha…
  - Decl…
  - Incre… deple…
- Streams/W…
  - Early ic… and bre…
  - Reduced … groundwa…
  - Increase uV… organisms

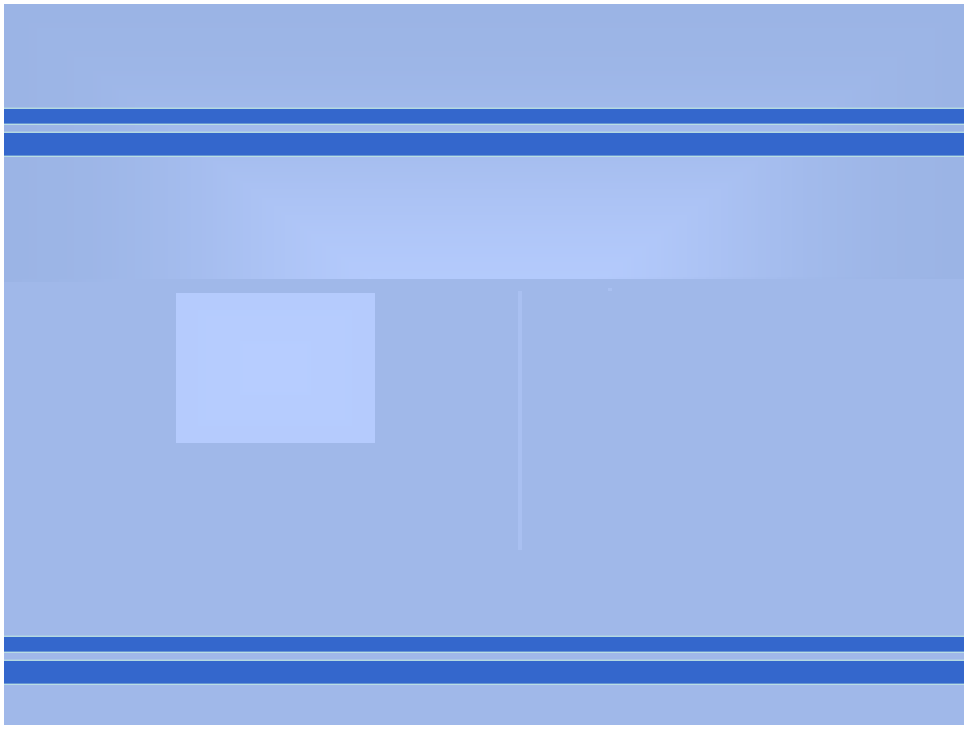
Climate …

Great Lake…


Great Lakes Basic Training

Treaties, Agreements, & Compacts

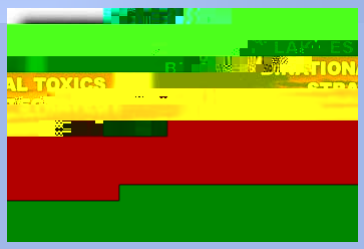
Discussion



Treaties, Agreements, & Compacts

- Signed by U.S. and Canada in 1997 in response to a 1994 IJC report calling for the parties to virtually eliminate toxic substances from the Great Lakes environment.

- Strategy follows four step process:
  - Information gathering
  - Analyze current regulations and programs that manage or control substances
  - Identify cost-effective options to achieve further reductions
  - Implement actions to work toward the goal of virtual elimination



Binational Toxics Strategy

Treaties, Agreements, & Compacts

- Signed in 1955 between the U.S. and Canada.
- Created the Great Lakes Fishery Commission (GLFC):
  -

Fisheries

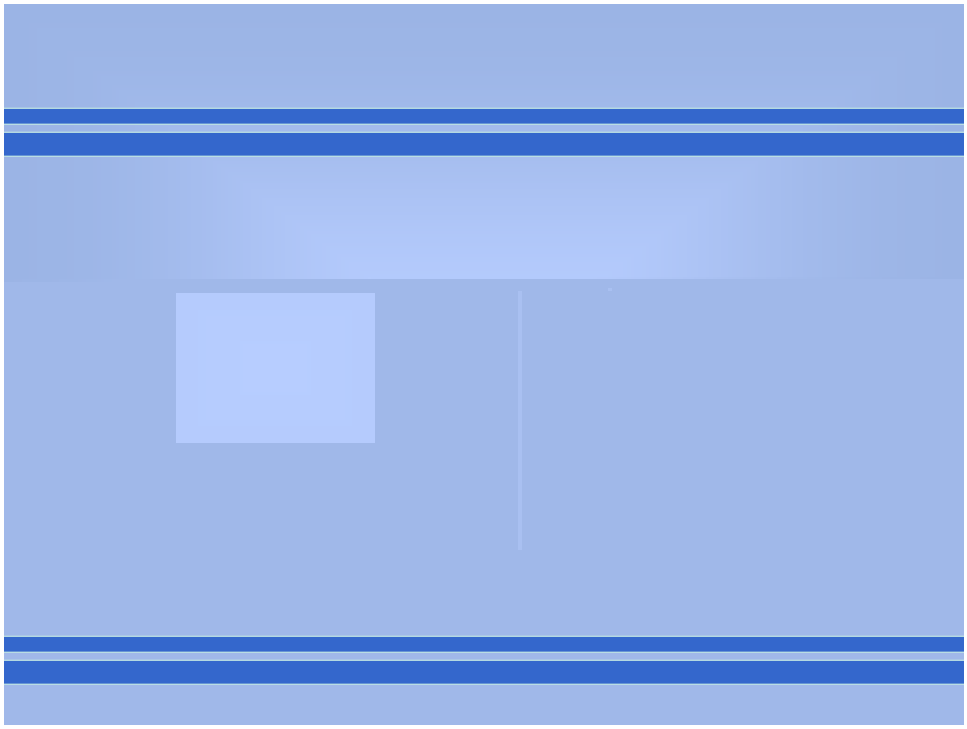
Treaties, Agreements, & Compacts

- A non-binding agreement signed in 1985 by the eight Great Lake State Governors and the two Provincial Premiers.
- Intended to conserve the levels and flow of the Great Lakes, focusing on the control of water use and supply.
- States were required to notify and solicit consultation of all states on any new or increased diversions or consumptive uses over 5 million gallons/day.
- Established the Water Resources Management Committee to collect water use data and a system to exchange information.

Charter

Treaties, Agreements, & Compacts

Canadian Ontario Agreement



Governance Framework

- Federal
  - Boundary Waters Treaty of 1909
    - International Joint Commission
  - Great Lakes Fishery Convention
    - Great Lakes Fishery Commission
  - Water Quality Agreement
    - International Joint Commission
  - Air Quality Agreement
    - International Joint Commission
- State
  - Great Lakes Basin Compact
    - Great Lakes Commission
  - Great Lakes Charter
    - Council of Great Lakes Governors
- Local
  - Great Lakes and St. Lawrence Cities Initiative

Great Lakes Fishery Commission

Mandate:

- US-Canada Convention on Great Lakes Fisheries (1955)

Mission:

- Research on fishery management
- Set lake objectives for fisheries
- Eradication of sea lamprey

Organization:

- 4 Commissioners per country
- Staff in Ann Arbor, Michigan

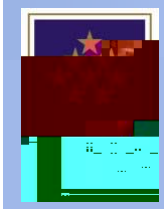
Institutions, Programs & Authorities

- Agency for Toxic Substances and Disease Registry
- National Oceanic and Atmospheric Administration
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Department of Agriculture
- U.S. Environmental Protection Agency
- Great Lakes National Program Office
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- National Park Service
- U.S. Geological Survey

Federal Role

- **The Congressional Research Service identified 84 specific programs with various types of funding authorities to address Great Lakes issues involving 13 federal agencies including:**
  -

Native American & First Nations Role



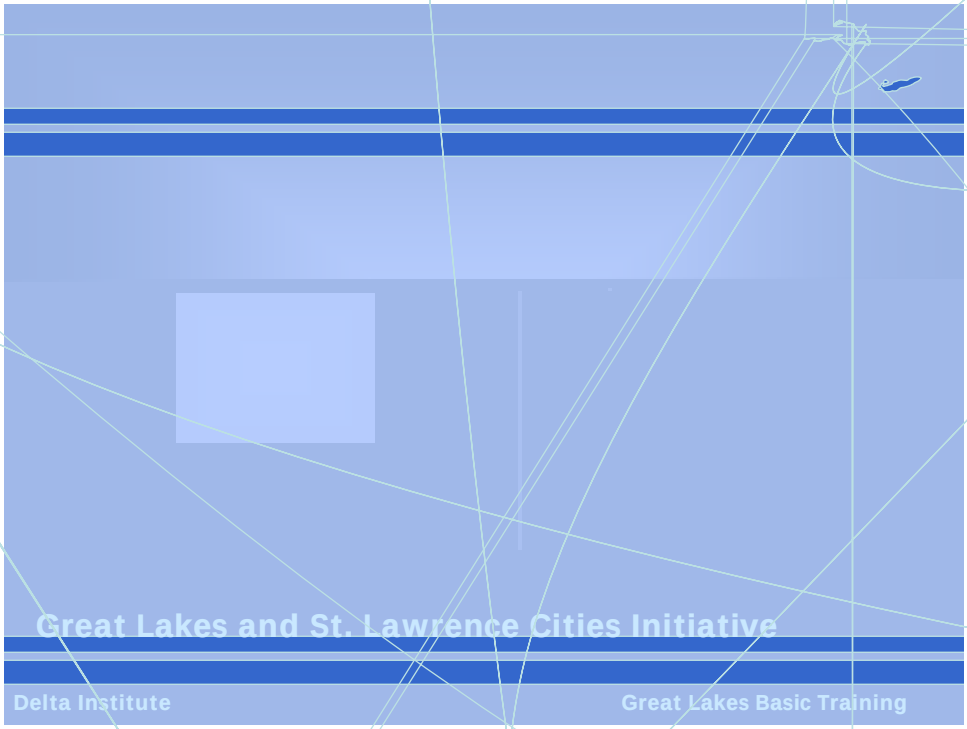
CGLG

-
-
-
-
  -
  -
  -
-

GLPF

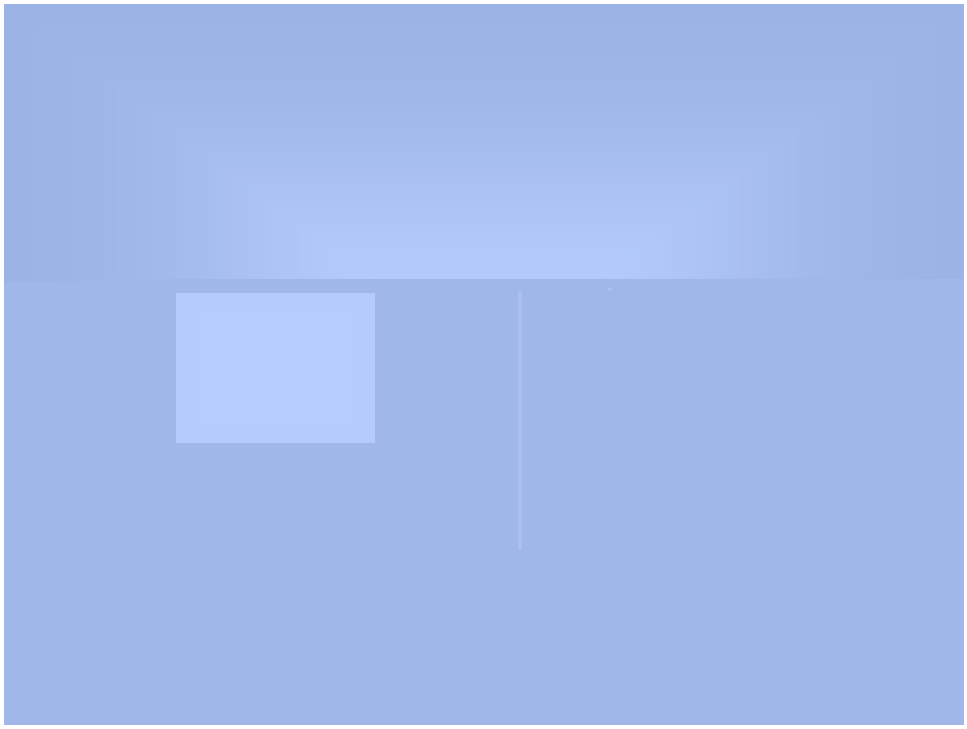
- Under agreement, States agree to act on Commission recommendations on:
  - Stabilization of lake levels
  - Measures for combating pollution, beach erosion, floods, and shore inundation
  - Uniformity of navigation regulations
  - Uniformity of fishing laws and cooperative action to eradicate parasitical forces
  - Suitable hydroelectric power developments
  - Cooperative controls for soil and bank erosion

GLC


Great Lakes and St. Lawrence Cities Initiative
Delta Institute
Great Lakes Basic Training

- **Monitoring Programs**

1. Restrictions on Fish and Wildlife Consumption
2. Tainting of Fish and Wildlife Flavor

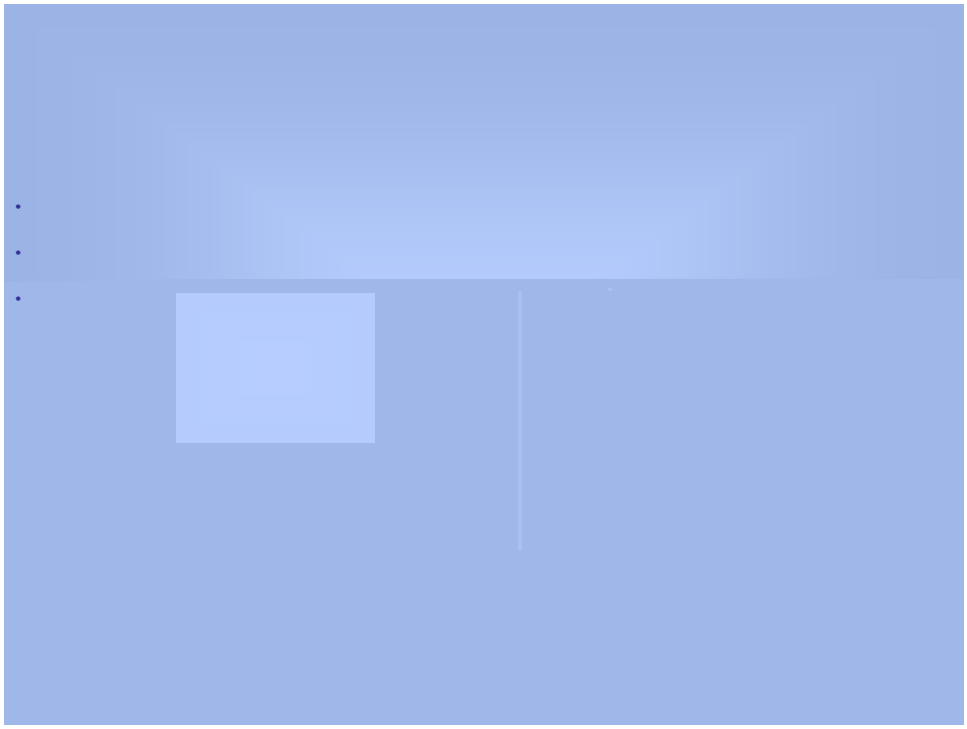


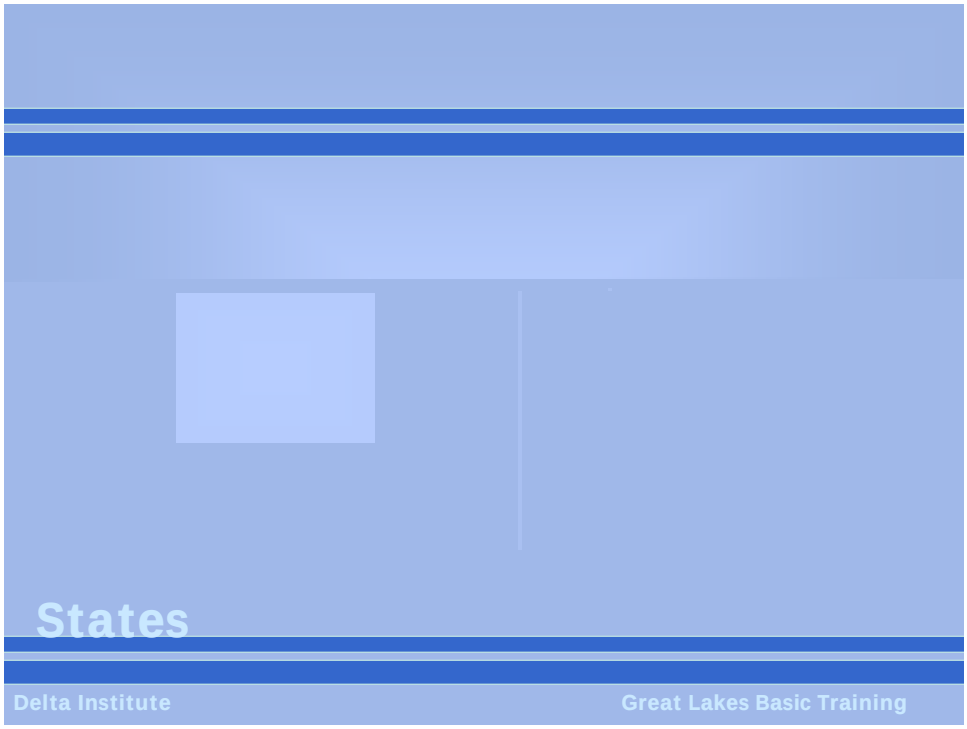
- The Lake Huron Binational Partnership was formed in 2002.

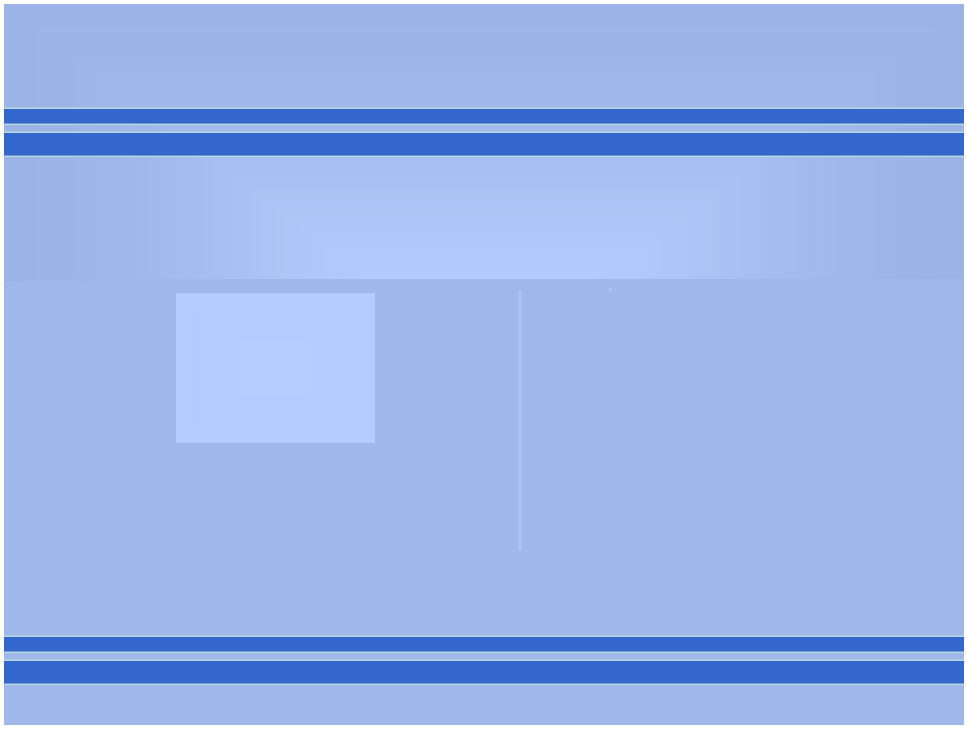
- Focus on three initial binational issues:
  - Contaminants in fish and wildlife;
  - Biodiversity and ecosystem change; and
  - Fish and wildlife habitat.

- Additional Lake Huron Issues:
  - AoCs
  - Low Water Levels
  - Botulism
  - Cormorants
  - Blue-green Algae Blooms in Georgian Bay
  - Tributary Access for Spawning Fish
  - Aquaculture
  - Global Climate Change
  - Low-Level Contaminants

Lake Huron LaMP




States



Emerging Policy Opportunities

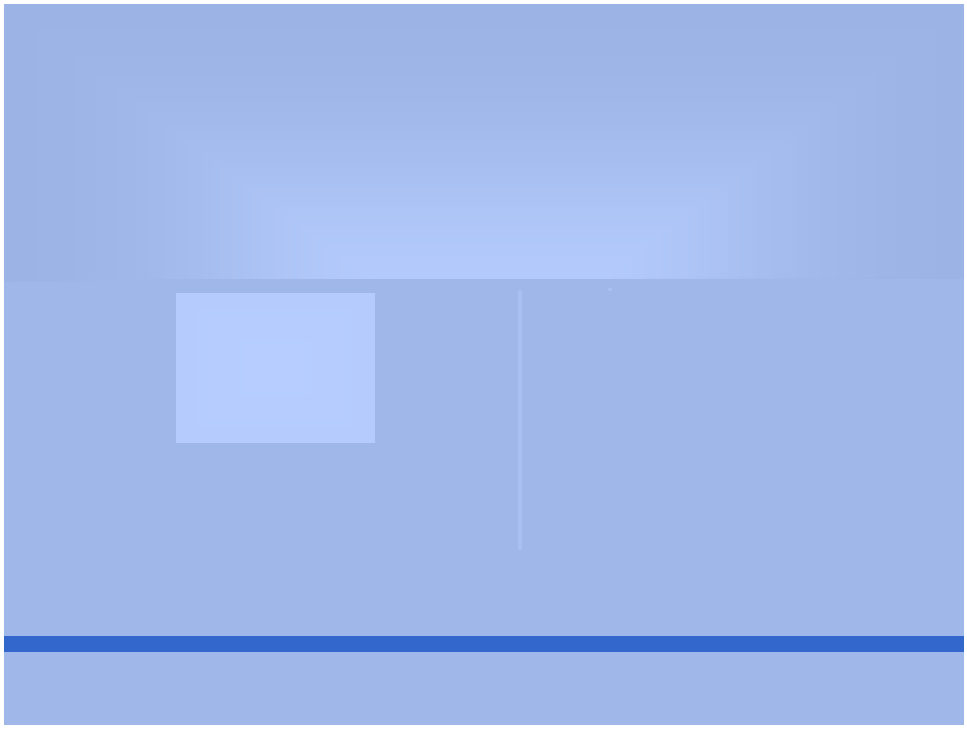
- Importance/Stake:
  - Revitalization of historically important tool
  - Canadian commitment and involvement
- Current Status:
  - IJC Review and Recommendations Report
    - Expected to be released in early 2006
    - Governments decision on path expected shortly after
  - IJC public meetings to hear ideas and concerns
    - Last meeting held 11/10 in NY
    - Meetings were well attended
    - 11/30 Online Comment Deadline

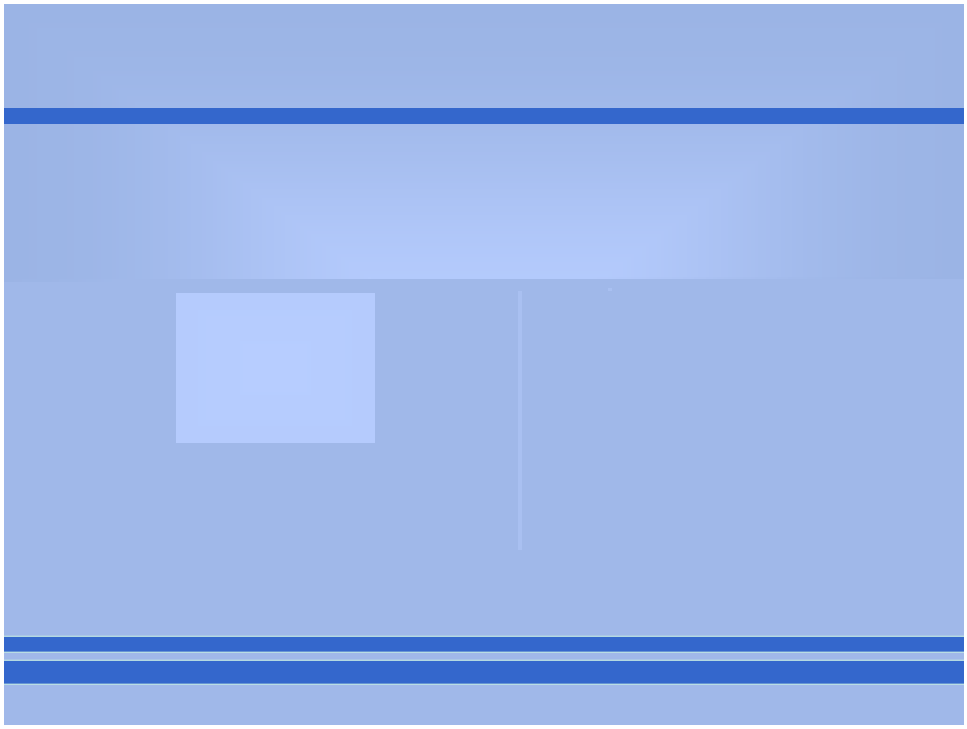
GLWQA

- Major Issues:
  - Culmination of years of work by States and Provinces

Emerging Policy Opportunities

Annex 2001





Slide #	Source

Section: Great Lakes Facts

7	The Great Lakes Atlas
8	North America's High Performance Heartland, Council of Great Lakes Governors http://www.cglg.org/pub/heartlan/intro.html Great Lakes Strategy 2002, U.S. EPA GLNPO http://www.epa.gov/glnpo/gls/ "Confronting Climate Change in the Great Lakes Region" Union of Concerned Scientist and Ecology Society of America http://www.ucsusa.org/greatlakes/ The St. Lawrence Seaway 2003 Traffic Report Great Lakes St. Lawrence Seaway System http://www.greatlakes-seaway.com/en/pdf/traffic_report_en_2003.pdf United States Electoral College
9	The Great Lakes Atlas (page 6)
10	Picture: http://www.glc.org/basin/images/basinstates.jpg Source: Basin Area—Great Lakes Information Network, State Area—Wikipedia.
11	The Great Lakes Atlas (page 4) Pictures: http://www.lakesuperiorgeology.org/Institute%20of%20Lake%20Superior%20Geology_files/lake_superior.jpg http://www.hi-michigan.org/Spring%20Sunset%20on%20Lake%20Michigan.jpg http://www.mccullagh.org/db9/10d-18/lake-ontario-sunset.jpg http://k41.pbase.com/u32/gwilburn/upload/21066756.20030600cs236sunsetsouthampton.jpg http://www.math.uwaterloo.ca/~jamuir/pics/rondeau-park-2004/lake-erie.jpg
12	Great Lakes System Profile, Great Lakes Information Network http://www.great-lakes.net/gis/maps/
13-14	United States Fish & Wildlife Service, Great Lakes Ecosystem Team

Slide #	Source
15	Great Lakes Information Network http://www.great-lakes.net/teach/history/native
	The Great Lakes Atlas (page 17)
	Picture: Britannica, 1600s geographic areas of habitation
16	The Great Lakes Atlas (page 18)
17	U.S. Census, July 2004
18	Pictures: Courtesy of Openlands and Metropolis 2020. Featured in Revealing Chicago Exhibit, Millenium Park, Chicago, IL.

Slide #	Source
42	Data: U.S. EPA, GLNPO, Contaminated Sediments Remaining Estimates Memo from Dave Cowgill
43	Data: Testing The Waters 2005, National Resources Defense Council
44	Chart: “Our Great Lakes,” U.S. EPA/Environment Canada
45-46	Images: Mills, E.; Holeck, K; et. al. “Bioinvasions in North America Great Lakes and the Shipping Vector.”
47	Images: http://www.glerl.noaa.gov/pubs/brochures/dipo-fish/dipo-fish.html
48	

Slide #	Source
70	Canadian Ontario agreement (http://www.on.ec.gc.ca/laws/coa/coa94-e.html)

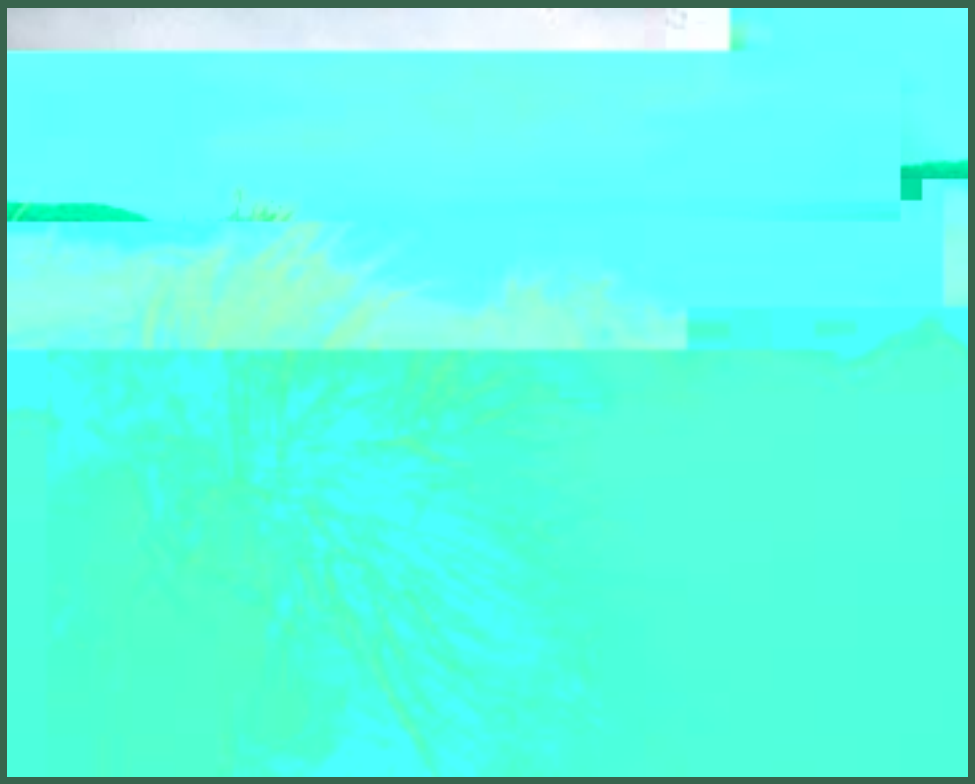
Section: Institutions, Programs, & Authorities

77	International Joint Commission http://www.ijc.org/rel/agree/water.html
78	Great Lakes Fisheries Commission http://www.glfc.org/pubs/conv.htm
79-80	U.S. EPA, GLNPO Great Lakes "101" presentation
81-82	U.S. EPA GLNPO http://www.epa.gov/glnpo/glwqa/
83	CRS Memorandum: October 4, 2005. Subject: Selected Federal Programs Related to Great Lakes Ecosystem Restoration
84	Great Lakes Indian Fish & Wildlife Commission, http://www.glifwc.org
85	Great Lakes Strategy 2002, US Policy Committee for the Great Lakes
86-87	Council of Great Lakes Governors, http://www.cglg.org/pub/charter/
88	Great Lakes Protection Fund, http://www.glpf.org
89-90	Great Lakes Commission, http://www.glc.org
91-92	http://www.greatlakescities.org
97-102	http://www.epa.gov/glnpo/gl2000/lamps/index.html

Section: Emerging Policy Issues

Table of Contents

Executive Summary



EXECUTIVE SUMMARY

Qeb Obpl ro`b

The Great Lakes are a unique and extraordinary resource that have provided vast amounts of fresh water to nourish the history, culture, economy, and well-being of the people in this part of the United States. They have done so for millennia for the region's Native Americans whose life ways and communities have been and remain intertwined with the natural resources found in their ancestral homelands. And, for the past few hundred years since the earliest journeys of European explorers, the Great Lakes natural bounty has provided for the needs of a growing nation.

Today, more than 35 million Americans receive the benefits of drinking water, food, a place to work and live, and transportation from the Great Lakes. Millions of people enjoy fishing, hunting, swimming, boating, and the sheer beauty of the Lakes in remote parks and on the stunning shorelines of some of our largest cities, and agricultural fields yield abundant harvests of a large variety of crops. The region's many Native American communities rely upon the Great Lakes' natural resources to meet their subsistence, economic, cultural, medicinal, and spiritual needs. We have thrived on the richness the Lakes have brought us, but have not protected them adequately to ensure that future generations will be able to enjoy them as we have.

Introduction

INTRODUCTION

Municipal wastewater treatment infrastructure is old and deteriorating, and sewage overÿows during storm events allow inadequately treated wastes to enter the Lakes. Contaminated sediments continue to leach toxic pollutants into the food chain, causing

The GLRC Strategy is based on òRecommendations from the Strategy Teamsó which represent each Teamôs highest priority recommendations for actions that can be taken over a period of time to effectuate improvements in the Great Lakes basin. They do not represent all that needs to be done to completely restore the Great Lakes. Other recommendations the Teams developed during the collaborative process, as well as much supporting information, appear in the appendices.

The overarching issues of human health, research and information, and tribal perspectives were considered by each of the Strategy Teams as they pursued their work. Human health issues are discussed by a number of recommendations made by the Strategy Teams, particularly the Coastal Health Team, the Persistent Toxics Team, and the Areas of Concern / Sediment Team. Research and information issues are included chieÿy in recommendations from the Indicators and Information Team.

Similarly, the Collaboration expects that the Strategy will be used by decision makers and funding

Strategy Team Recommendations

Strategy Team Recommendations

>NR>QF@ FKS>PFSB PMB@FBP

Reþne or develop techniques or models to improve assessment and exploitation strategies and management protocols for important þsh species such as yellow perch, lake whiteþsh, lake trout, and walleye stocks.

Develop an understanding of factors involved in recruitment of lake trout and other important native species, and remove or mitigate major impediments to recruitment.

Tbqi^kapllkd*qbo j dl^ip Wetland conditions should be sufþcient to p ovid
incluging hydrologic retention, nutrient and se iment trap ing, spaw
nurse y habitats, and othe habitat ne s of þsh and wildlife

FF+ D l ^ip ^ka J fibpq l kbp

Goal: By 2020[19] or sooner where possible, eliminate inputs of untreated or inadequately treated[20] human and industrial waste to Great Lakes basin waters from municipal wastewater treatment systems and on-site disposal systems.[21]

Interim Milestones:

By 2006, EPA and the Great Lakes States will actively enforce NPDES authority to ensure pretreatment programs are properly implemented;
By 2007, U.S. EPA and the Great Lakes States will undertake a thorough review of their ongoing wet weather control programs to identify and correct deþciencies, including adequate stafþng and funding, to ensure that programs are achieving the requirements of the Clean Water Act (CWA), including anti-degradation;
By 2007, watershed planning and applications of best management practices to promote inþltration and reduce impervious cover shall be components of wet weather management implemented by local governments;
By 2007, Congress should fully fund the Clean Water State Revolving Fund;
By 2008, U.S. EPA, in cooperation with Great Lakes States, will promulgate rules governing the disbursement of new wet weather management grant funds;
By 2009, Congress will appropriate grant funds for a wet weather control program;

Goal: Achieve a 90-95 percent reduction in bacterial, algal, and chemical contamination at all local beaches. Steps to achieve this include: identify indirect pollution sources capable of adversely impacting Great Lakes coastal health; educate communities regarding their environmental impact; and remediate all potential indirect pollution sources through identiþcation, estimation of relative contribution (based on historical data and sanitary inspection), and remediation of these sources. This will result in 90-95 percent of all Great Lakes public bathing beaches being classiþed as having ògoodó water quality.

Interim Milestones:

- By 2005, the BEACH Act will be fully funded to continue routine compliance monitoring of coastal waters;
- By 2006, real-time testing methodologies will be evaluated and trialed at Great Lakes beaches;
- By 2006, coastal states will have complied with the BEACH Act requirements for public notiþcation;
- By 2006, a standardized sanitary survey form will be drafted;
- By 2007, standardized sanitary surveys will be trialed at select coastal communities;
- By 2008, states will add to their existing water quality monitoring programs a standardized tool for conducting sanitary surveys that will identify sources of contamination at the local level in those instances when bacterial indicator levels exceed published standards;
- By 2009, real-time test methodologies will supplant existing test methods (which take in excess of 18 hours before results become available) under the BEACH Act of 2000; and
- By 2010, regional predictive models will be available using local data and forecasts of water mass movements derived from the Great Lakes Observation System.

Goal: At the local level, individual contamination events will occur no more than þve percent of available days per bathing season, sources of these contamination events will be identiþed through standardized sanitary surveys, and remediation measures will be in place to address these events.

Interim Milestones:

- By 2007, coastal communities will have an education and outreach program in place for K-12, college, the general public, and coastal decision-makers, with assistance of the Great Lakes Sea Grant Network;
- By 2008, enforceable city ordinances will be in place that call for the placement of signs regarding the health risk associated with bather shedding, provision of adequate sanitary facilities for bathers, availability and importance of proper boater waste disposal, and prohibition of practices that attract nuisance wildlife to which þnes are attached for violations;
- By 2008, use sanitary surveys to identify 90 to 95% of all indirect pollutant sources resulting in beach closures;
- By 2009, begin to control, manage, and/or remediate pollutant sources identiþed through sanitary surveys; and
- By 2020, nutrient loading will have decreased as evidenced by a decrease in nuisance algal blooms and ambient water concentrations of nitrogen and phosphorous in coastal areas.

Goal: The quality of Great Lakes basin drinking water from coastal and tributary sources will be protected from chronic and episodic threats of chemical and biological contamination that pose unacceptable risk following conventional water treatment.

1& Molqb`q aofkhfkd plro`b t^qbo nr^ifqv+

U.S. EPA will establish ambient water quality criteria for parasites, pathogens, and disinfectant by-product (DBP) precursors for states to implement.

The Clean Water State Revolving Fund (CWSRF) should be fully funded, and states should implement programs to assure that ambient water quality, following conventional treatment, does not pose an unacceptable risk to consumers.

States should work with public water systems to reduce vulnerabilities identiþed in the source water assessments.

Rationale: In addition to effective implementation and enforcement of existing Safe Drinking Water Act (SDWA) and CWA requirements by EPA and the states, this action requires a combination of enhanced federal policy requirements to include ambient water quality criteria for parasites, pathogens and disinfectant by-product precursors, full federal funding and greater ÿexibility in how State Revolving Funds may be used. Ambient water quality criteria related to drinking water following conventional treatment are needed to support source water protection programs. Water quality criteria for pathogens, such as cryptosporidium, have not been promulgated under CWA authority, nor have criteria for DBP precursors been developed, while risk-based standards are being developed for þnished water supplied by public water systems.

making better use of existing programs and funds through increased coordination at the federal, state, local and tribal levels; and

potential for an accelerated sediment remediation program that builds on considerable preparatory work by federal, state, local, and tribal agencies and PRPs to evaluate contaminated sediments and to design and implement remedial options.

Appropriations under the Legacy Act have lagged substantially behind authorized levels. U.S. EPA received $9.9 million in FY 2004 and $22.3 million in FY 2005, compared to authorized funding of $50 million annually for remedial activities. If Congress were to appropriate the full $50 million annually, the interim milestone of delisting ten AOCs by 2010 can be achieved. However, this spending level will not be adequate to reach the ultimate goal of remediating all contaminated sediment sites in the AOCs by 2020. Based on estimated volumes of contaminated sediments and depending on the remediation options selected, $150 million (on average) each year matches up with both resource needs and state, local, and tribal capacity to plan and implement remedial projects.

/& >L@ Moldo^ j @^m^`fqv

- The Administration should request and Congress should appropriate $10 million annually to the Great Lakes states and community-based coordinating councils in the AOCs; and $1.7 million to U.S. EPAös Great Lakes National Program Ofþce for regional coordination and program implementation.
- Furthermore, the U.S. Army Corps of Engineers Great Lakes Remedial Action Plan Program, authorized in Section 401 of the Water Resources Development Act of 1990, should be included in the Presidentös budget to enable the Corps to participate in the Federal-State AOC Coordinating Committee and to request funding for projects that advance restoration of the AOCs.

Rationale: Restoration of the AOCs is critical to the restoration of the Great Lakes, yet the Clean Water Act provides no speciþc regulatory authority or funding for the AOC program. The decline in program effectiveness in the late 1990s, which corresponds directly to declining federal þnancial support and the associated loss of federal, state, tribal, and local programmatic capacity, is testament to the need to build and maintain core capacity among the partners involved in AOC restoration. Current funding levels should be enhanced to the recommended levels to ensure adequate technical capacity at the federal, state, local, and tribal levels so that large-scale cleanup programs, such as the Great Lakes Legacy Act, are utilized effectively.

To further enhance AOC program capacity, U.S. EPA and each state, in consultation with local AOC advisory groups, should establish cooperative agreements that outline their respective roles and responsibilities, priorities, anticipated outcomes, resource needs, staffing levels, and procedures for documenting and reporting progress.

The core funding recommended above also will enable more rapid development of the delisting targets that are a necessary foundation of remedial projects. Federal, state, local, and tribal partners should collaboratively develop delisting targets for each U.S. AOC by the end of 2008, in accordance with the Delisting Principles and Guidelines adopted by the U.S. Policy Committee in December 2001.

0& Cbabo^i*Pq^qb @lii^_lo^qflk

The existing U.S. EPA/State RAP Work Group should be expanded to a Federal-State AOC Coordinating Committee to better coordinate efforts and optimize existing programs and authorities to advance restoration of the AOCs.

KLKMLFKQ PLRO@B

Rationale: Buffer strips include a variety of practices including riparian buffers, þlter strips, grassed waterways, windbreaks, living snow fences, contour grass strips, cross-wind trap strips, þeld borders and other vegetative barriers. Vegetative buffer strips slow water runoff, trap sediment; enhance inþltration within the buffer while trapping fertilizers, pesticides, pathogens, and heavy metals; and reduce blowing soil in areas with strong winds.

The anticipated results and beneþts of increasing riparian buffer acreage will be improved water quality based on a measurable reduction of sediment load and of fertilizer, pesticide, pathogen and heavy metal contaminants, subsequently improving overall stream and riparian ecology for þsh and wildlife habitat. A history of the program indicates that landowner willingness to participate exceeds program goals and that a stateõs ability to increase its acreage goal is directly related to the availability of adequate funding.

Cost: $67 million annually for þve years.

0& !./- jfiiflk pelria _b ^iil`^qba _v /-.- ql ^`efbsb ^ 1- mbo`bkq obar`qflk fk plfi ilpp fk qbk pbib`qba t^qbopebap7

- By 2015, an additional $48 million should be invested to reach a total of $168,000,000.
- USDA and NRCS to lead in partnership with other federal, state, tribal, and local agencies and organizations. Utilize EQIP as the lead federal program to provide þnancial and technical assistance.
- Critical Geographies: Land areas draining to western and central Lake Erie, the Maumee River watershed, Green Bay, Saginaw Bay, Lake St. Clair, nearshore waters of Lake Michigan, and AOCs.

Rationale: Although conservation tillage has been heavily promoted in many areas of the Great Lakes region, many farmers still choose to use conventional tilling methods, which plow crop residues into the soil. Keeping crop residues can assist in preventing erosion between planting seasons. Achieving a 40 percent reduction in sediment loss from croplands will result in greater water clarity, greater desirable aquatic plant growth, less algae, better þsh habitat, and less sedimentation of bays and harbors. The 40 percent reduction is largely consistent with the percent reduction in sediment and phosphorus loads (where information is available) to meet designated uses. Based on a cost of $60/acre and a 2.5 ton/acre reduction in soil loss, this level of funding should lead to a 40 percent reduction in soil loss in these watersheds.

Cost: $24 million annually over þve years.

1& !.-3 jfiiflkfkcrkafkdpelria _bmolsfabaql prmmloqqebabsbilm jbkq^kafj mibjbkq^qflk lc`l jmobebkpfsb krqofbkq ^ka j^krob j^k^dbjbkq lk ifsbpql`h c^ojp7

- This includes $96 million to assist the approximate 12,000 farms with more than 50 animals (estimated cost of $8,000 per CNMP), $5 million for educational material development grants, and $5 million for increased technical assistance at NRCS.[30]
- USDA and NRCS to lead in partnership with other federal, state, tribal, and local agencies and organizations.
- Critical Geographies: Phosphorous impaired watersheds and leading livestock producing counties.

[30] 50 animals is the number used to derive 12,000 farms in accordance with the 2002 Agricultural Census. The number does not reÿect a regulatory or statutory threshold for what deþnes an animal feeding operation; it is a value selected to ensure that resources go toward correction of problems on farms with greater nutrient management risk.

Rationale: Manures and nutrients generated by livestock production facilities contribute to nonpoint source pollution in the absence of conservation planning. If poorly controlled, manure and nutrient products can contaminate surface and ground waters, cause odor problems, and serve as a source of infectious disease. Increased comprehensive management of nutrients and manure on livestock farms will greatly reduce livestock agriculture's contribution to nonpoint source loading.

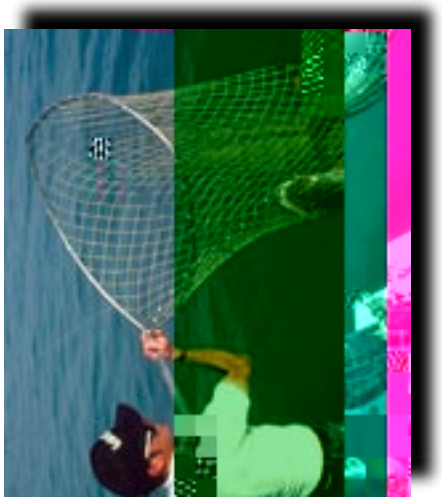
The anticipated results and benefits of the recommendation will be a 40-70 percent reduction in nonpoint source contribution of phosphorus from livestock agriculture. This result is from the fact that farms with certified CNMPs apply 20-30 lbs of phosphorous less per acre than farms that do not have CNMPs and minimize nutrients leaving the farm through site-specific conservation planning. The actions would provide livestock farmers with financial and technical assistance to complete certified CNMPs, reward farmers that complete and maintain CNMPs, and increase market demand for certified CNMP providers.

Cost: $106 million over five years.

2& !.5 jfiiflk pelria _b molsfaba ^kkr^iiv lsbo ªsb vb^op⁰· ql evaolildf`^iiv fj molsb qbk ro_^k t^qbopebap lc s^oflrp pfwbp+

Four federal agencies, the Army Corps of Engineers (USACE), the U.S. Geological Survey (USGS), United States Department of Agriculture (USDA), and U.S. EPA have resources, expertise, and experience to assist in various aspects of any new federal initiative. USDA would modify/expand its focus to incorporate off-site impacts into their conservation programs. The CWA Section 319 funding for nonpoint source control programs would be used to address urban stream ÿow issues related to aquatic life impairments; however, traditional non-pollution abatement activities are the current focus. Lead agencies will work in partnership with other federal, state, tribal, and local agencies and organizations.

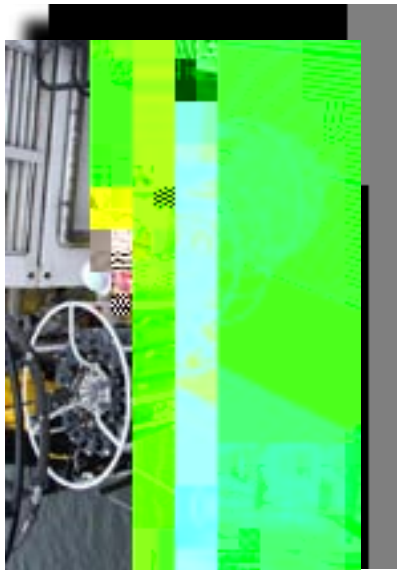
Critical Geographies: The new program should focus on urbanized areas wherT



/& Mobsbkq kb t qluf` `eb j f`^ip co l j bkqbofkd qeb Dob^q I^hbp _^pfk7 Q^odbq mo l ar`qf l k) rpb ^ka p l rka afpm l p^i l c qluf` `eb j f`^ip ^`o l pp qeb Dob^q I^hbp _^pfk qeo l rde pqo^qbdf` abmi l v j bkq l c m l iirqf l k mobsbkqf l k ^ka t ^pqb j fkf j fw^qf l k mo l do^ j p+

To provide easier access and broaden dissemination of these programs to small and medium sized businesses, States should òbundleó technical assistance services, such as compliance assistance, pollution prevention (P2) audits, and energy efþciency (E2) audits, in òone-stop-shopó programs.

Tax incentives and low interest loans should be utilized to promote investments in] '] A N A m



Communication efforts in the Great Lakes will deliver accurate scientiþc and technical Great Lakes information to fulþll the needs of the decision makers, stakeholder groups, and the general public. Communication avenues must also be two-way, conveying user needs to information providers.

FFF+ Ob`l j j bkaba >`qflkp

Each of the following recommended actions call for greater coordination within the Great Lakes region, including participation of numerous partners at the federal, state, local/municipal, Native American, and binational levels and partners from industry, academia, and public interest groups. Additional recommendations, further rationale and supporting information are contained in an appendix to the Information and Indicators strategy.

Ob`l j j bka^qflk .7 Ql molsfab ^``ro^qb) `l j mibqb ^ka `lkpfpqbkq fkclo j ^qflk) qeb Dob^q I^hbp obdflk j rpq fk`ob^pb ^ka _bqqbo `lloafk^qb qeb `liib`qflk lc `ofqf`^i fkclo j ^qflk obd^oafkd qeb Dob^q I^hbp b`lpvpqb j+ Qeb Dob^q I^hbp Fkqbo^dbk`v Q^ph Clo`b ^ka lqebo

facilitate two-way communication between scientists and stakeholders, also allowing stakeholder needs to inform the investigations. The information management infrastructure should mesh with and augment existing infrastructure, such as the Great Lakes Information Network (GLIN) and provide for sustainability of such a network as an independent regional asset. A workgroup of information management professionals is needed to implement the distributed network of servers and databases to support this infrastructure. The workgroup should include representatives from key stakeholders with recognized data stewardship expertise and would coordinate interagency and inter-jurisdictional partnerships and mitigate institutional and legal barriers. The workgroup would promulgate data standards, quality assurance protocols, metadata production and region-wide multi-server search and access capabilities.

Cost: $2 million per year for þve years

Ob`l j jbka^qflk 27 Ql `lloafk^qb ^ka j^k^db `l j jrkf`^qflk lc p`fbkqfª` ^ka qb`ekf`^i fkclo j^qflk) qeb Dob^q I^hbp Fkqbo^dbk`v Q^ph Clo`b pelria bpq^_ifpe ^ `l j jrkf`^qflkp tlohdolrm `l jmlpba lc mr_if` ^cc^fop pmb`f^ifpqp col j Cbabo^i) Pq^qb) ^ka obdflk^i bkqfqfbp ^ka hbv fkarpqofbp+

Rationale: Communications professionals from federal and state governmental agencies, environmental groups, regional and local organizations, Native American interests, relevant industry associations and academia would participate in the workgroup and provide oversight for the development and implementation of a comprehensive regional communications plan. The communication plan would include periodic reviews of audience needs and assess optimal methods of information delivery to decision-makers and the public. By sharing experience, tools and workloads, the workgroup would facilitate efþcient and consistent delivery of Great Lakes information to disparate audiences and oversee small grants to regional and local organizations to enhance communications efforts. The workgroup should rely upon the expertise of established networks, such as the Great Lakes Sea Grant Network and the Great Lakes Information Network.

Cost: $1 million per year for þve years

Forest Service (USFS), US Dept of Interior (USDOI) and US Fish & Wildlife Service (USFWS), Land and Water Conservation Fund; NOAA Coastal Brownþelds and Portþelds (with USEPA) programs, US Army Corps of Engineers (USACE), Great Lakes Remedial Action Plan, Beneþcial Use of Dredged Material and ecosystem restoration programs.

An important tool in encouraging sustainable practices is to develop and apply speciþc metrics for sustainability, such as a set of standards for ògreenó marinas, sustainable forestry, or for sustainable urban, suburban and

ur® l ג MP Mem_ Por?vo na Plam US¾ ג ɣ $ep & M]Plem ^ Ƀ asis$m ^ US

um ʿ is in Plan ĦϪ ꝑ ק Cn ʾ ᴰ ꞥ ӟ ȝ ג M Ѧ By, e ꭓ engi

Appendices

>_lrq qeb >mmbkaf`bp

The Appendices to the GLRC strategy (included on the CD) contain supplementary materials used or developed in the course of preparing the Strategy Team Reports included in the þnal GLRC Strategy. For example, they identify many successful ongoing efforts that contribute to Great Lakes protection and restoration, as well as recommendations that may be utilized for future action. They also contain valuable reference materials and other supplementary information that are an important part of the strategic collaborative process. However, the materials in the Appendices are not necessarily products of consensus and might not represent the views of all strategy team members; and, unless otherwise indicated in a particular item itself, have not received ofþcial endorsement by the Executive Committee, or the entities who are members of the Collaboration.

Great Lakes Water

Revised

Great Lakes Water Quality Agreement of 1978

Agreement, with Annexes
and Terms of Reference,
between the
United States and Canada
signed at Ottawa
November 22, 1978

and

Phosphorus Load Reduction Supplement
signed October 16, 1983

as amended by Protocol
signed November 18, 1987

Office Consolidation
INTERNATIONAL JOINT COMMISSION
UNITED STATES AND CANADA

[redacted]

Reprint February, 1994

REVISED GREAT LAKES WATER QUALITY AGREEMENT OF 1978

ARTICLE SUBJECT PAGE

[redacted]

PROTOCOL AMENDING THE 1978 AGREEMENT BETWEEN THE UNITED STATES OF AMERICA AND CANADA ON GREAT LAKES WATER QUALITY, AS AMENDED ON OCTOBER 16, 1983

The Government of the United States of America and the Government of Canada,

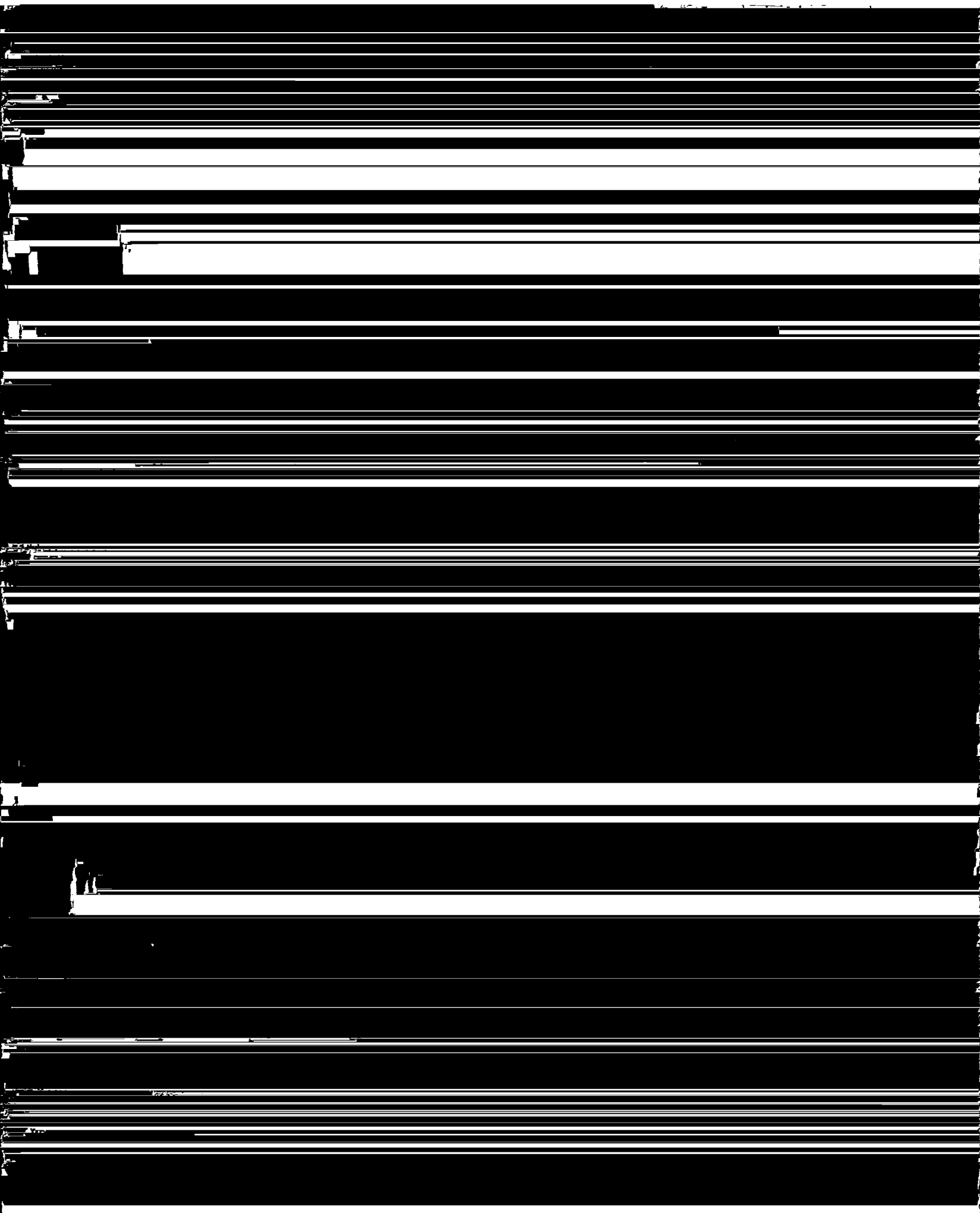
REAFFIRMING their commitment to achieving the purpose and objectives of the 1978 Agreement between the United States of America and Canada on Great Lakes Water Quality, as amended on October 16, 1983;

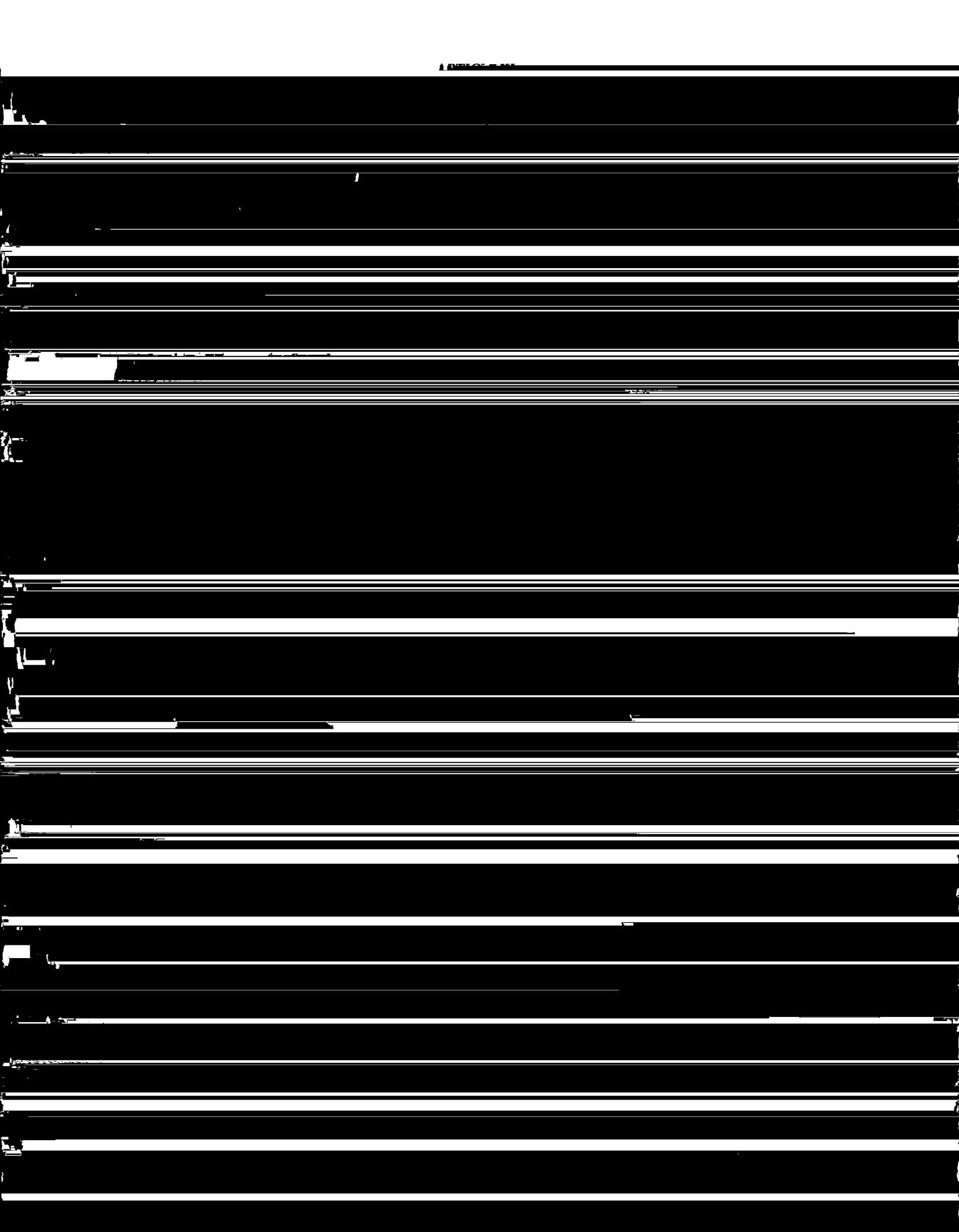
[redacted]

REAFFIRMING in a spirit of friendship and cooperation the rights and oblig

(g) "Great Lakes Basin Ecosystem" means the interacting components of air, land, water and living organisms, including *humans*, within the drainage basin of the St. Lawrence River at or upstream from the point at which this river becomes the international boundary between Canada and the United States;

(h) "Great Lakes System" means all of the streams river, lakes and other bodies of





(e) The Parties recognize that in certain areas of inshore waters natural phenomena exist which, despite the best efforts of the Parties, will prevent the achievement of some of the Specific Objectives. As early as possible, these areas should be

(b) Mechanisms be developed for appropriate cost-effective international cooperation; and

(c) Research priorities are undertaken in accordance with Annex 17.

ARTICLE VI

PROGRAMS AND OTHER MEASURES

1. The Parties, in cooperation with State and Provincial Governments, shall continue to develop and implement programs and other measures to fulfil the purpose of this Agreement and to meet the General and Specific Objectives. Where present treatment is inadequate to meet the General and Specific Objectives, additional treatment shall be required. The programs and measures shall include the following:

(a) **Pollution from Municipal Sources.** Programs for the abatement, control and prevention of municipal discharges and urban drainage into the Great Lakes System. These programs shall be completed and in operation as soon as practicable, and in the case of municipal sewage treatment facilities no later than December 31, 1982. These programs shall include:

(i) Construction and operation of waste treatment facilities in all municipalities having sewer systems to provide levels of treatment consistent with the achievement of phosphorus requirements and the General and Specific

(i) Establishment of water treatment or control requirements expressed as effluent limitations (concentrations and/or loading limits for specific pollutants where possible) for all industrial plants, including power generating facilities, to provide levels of treatment or reduction or elimination of inputs of substances and effects consistent with the achievement of the General and Specific Objectives and other control requirements, taking

(ii) Measures for the abatement and control of pollution from animal husbandry operations, including encouragement to appropriate agencies to adopt policies and regulations regarding utilization of animal wastes, and site selection and disposal of liquid and solid wastes, and to strengthen educational and technical assistance programs to enable farmers to establish waste utilization, handling and disposal systems;

(iii) Measures governing the hauling and disposal of liquid and solid wastes, including encouragement to appropriate regulatory agencies to ensure proper location, design and regulation governing land disposal, and to ensure sufficient, adequately trained technical and administrative capability

Annexes 4 and 5, for the safe and efficient handling of shipboard generated wastes, including oil, hazardous polluting substances, garbage, waste water and sewage, and for their subsequent disposal, including the type

(v) Establishment by the Canadian Coast Guard and the United States Coast

[redacted]

[redacted]

(a) A Great Lakes Water Quality Board which shall be the principal advisor to the Commission. The Board shall be composed of an equal number of members from Canada and the United States, including representatives from the Parties and each of the State and Provincial Governments; and

[redacted]

ARTICLE X

CONSULTATION AND REVIEW

[redacted]

ARTICLE XII

EXISTING RIGHTS AND OBLIGATIONS

[redacted]

SPECIFIC OBJECTIVES

These Objectives are based on available information on cause/effect relationships

Methoxychlor

The concentration of methoxychlor in water should not exceed 0.04

Copper

The concentration of total copper in an unfiltered water sample should not exceed 5 micrograms per litre to protect aquatic life.

Iron

The concentration of total iron in an unfiltered water sample should not exceed 300 micrograms per litre to protect aquatic life.

Lead

[redacted]

exceed 10 micrograms per litre in Lake Superior, 20 micrograms per litre in Lake Huron and 25 micrograms per litre in all remaining Great Lakes to protect aquatic life.

Mercury

The concentration of total mercury in a filtered water sample should not

1. **Organic Substances**

(a) **Pesticides**

Diazinon

The concentration of diazinon in an unfiltered water sample should not exceed 0.08 micrograms per litre for the protection of aquatic life.

Guthion

The concentration of guthion in an unfiltered water sample should not exceed 0.005 micrograms per litre for the protection of aquatic life.

Parathion

The concentration of parathion in an unfiltered water sample should not

Hydrogen Sulfide

The concentration of undissociated hydrogen sulfide should not exceed 2.0 micrograms per litre to protect aquatic life.

C. Other Substances

1. Dissolved oxygen

In the connecting channels and in the upper waters of the Lakes, the dissolved oxygen level should not be less than 6.0 milligrams per litre at any time; in hypolimnetic waters, it should be not less than necessary for the support of fishlife, particularly cold water species.

2. pH

Values of pH should not be outside the range of 6.5 to 9.0, nor should

II. PHYSICAL

A. Asbestos

Asbestos should be kept at the lowest practical level and in any event

[redacted]

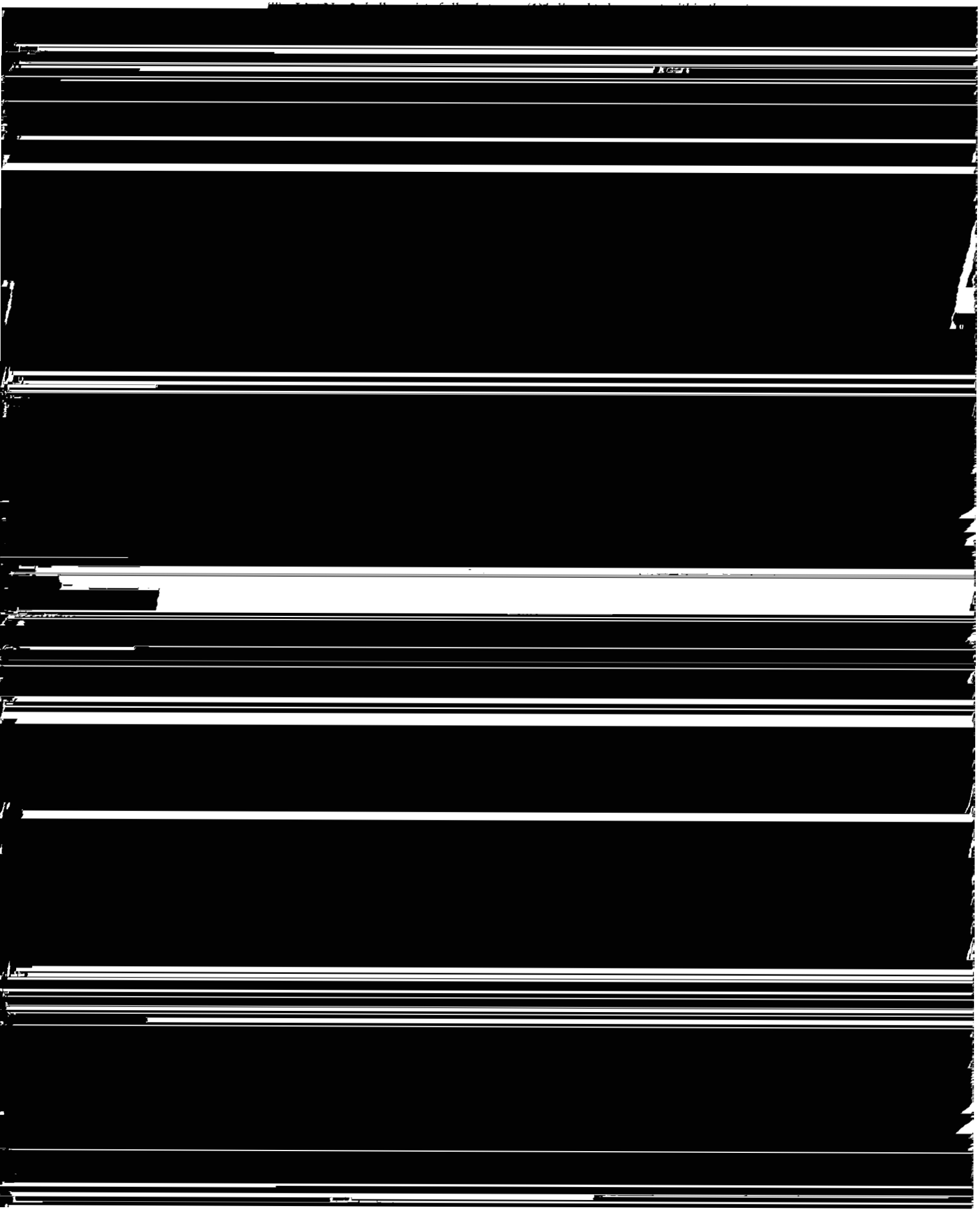
B. Temperature

There should be no change in temperature that would adversely affect any local or general use of the waters.

C. Settleable and suspended Solids, and Light Transmission

[redacted]

[redacted]



ANNEX 2

REMEDIAL ACTION PLANS AND LAKEWIDE MANAGEMENT PLANS

1. *Definitions*
As used in this Annex:

(a) "Areas of Concern" means a geographic area that fails to meet the General or Specific Objectives of the Agreement where such failure has caused or is likely to cause impairment of beneficial use or of the area's ability to support aquatic life.

(b) "Critical Pollutants" means substances that persist at levels that, singly or in

(d) "Point Source Impact Zone" is defined as an area of water contiguous to a point source where the water quality does not comply with the General and Specific

(i) a definition and detailed description of the environmental problem in the

(vii) identification of the persons or agencies responsible for implementation of the remedial measures in question;

(viii) a process for evaluating remedial measure implementation and effectiveness;

(ix) a description of surveillance and monitoring to track the effectiveness of

ANNEX 3

CONTROL OF PHOSPHORUS

[redacted]

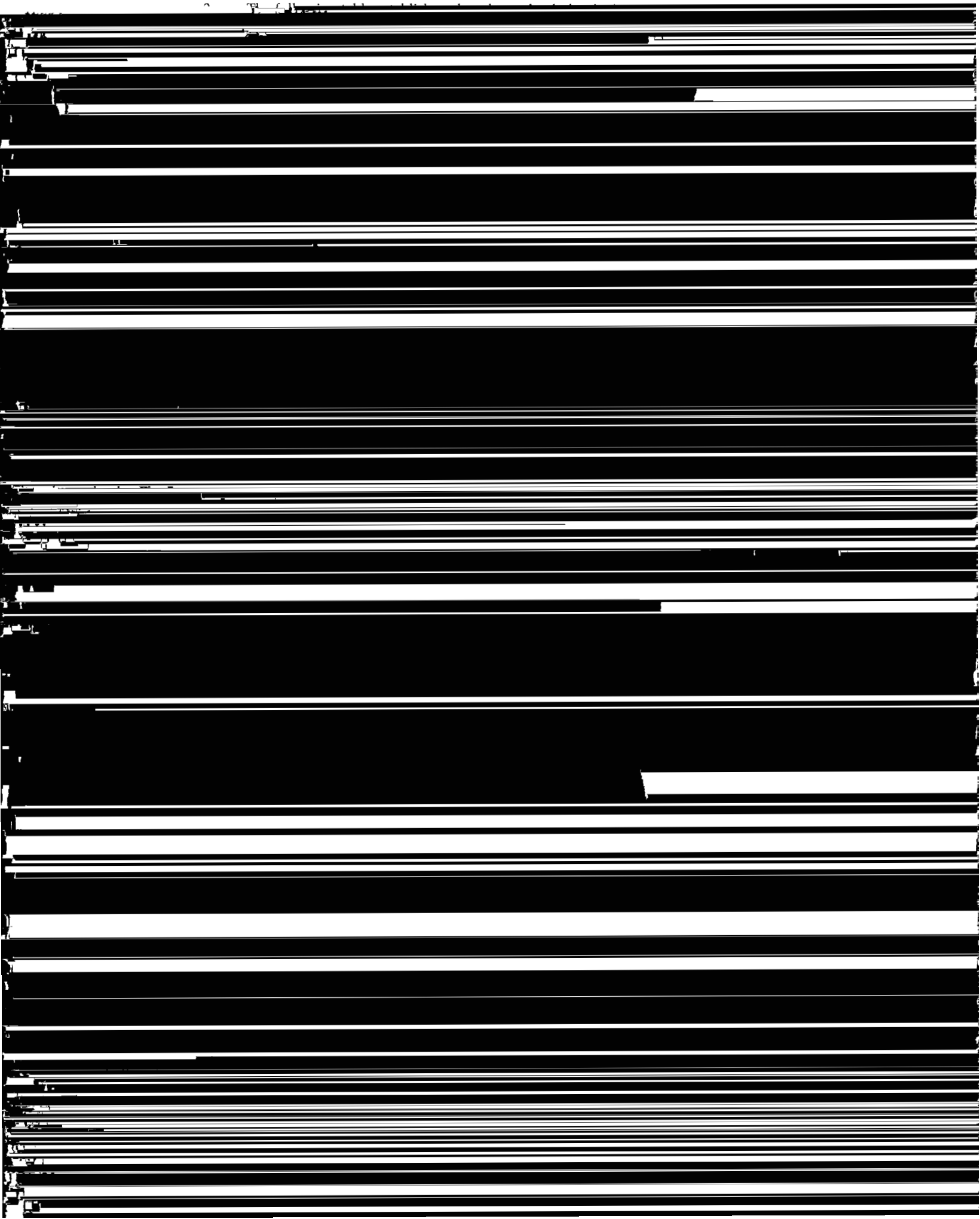


Table 1

Phosphorus

Basin	(metric tonnes per year)
Lake Superior	(See Section 3(b))
Lake Michigan	"
Main Lake Huron	"
Georgian Bay	"
North Channel	"
Saginaw Bay	440. (Note 1)
Lake Erie	11000. (Note 2)
Lake Ontario	7000. Note 2)

Note 1 *Target load designed to alleviate drinking water taste and odour problems.*

Note 2 *Target loads proposed to meet ecosystem objectives in Annex 3. The allocation of the phosphorus target loads between the two countries shall be consistent with the equal rights of both Parties in the use of their boundary waters.*

3. **Phosphorus Load Reductions**

(a) Lower Lakes:

Table 2 summarizes the estimated phosphorus loading that will be discharged to the Lower Lakes basins when all municipal waste treatment facilities over one million gallons per day achieve compliance with the one milligram per litre (1 mg/l) effluent concentration (on a monthly average basis) as required by

waste treatment facilities discharging more than one million gallons per day. The Parties further agree to maintain the present oligotrophic state of the open waters and relative algal biomass of Lakes Superior and Huron. In addition, the United States agrees to undertake efforts to achieve the substantial elimination of algal nuisance growths in Lake Michigan. Further measures will be implemented as required for Saginaw Bay, various localized nearshore problem areas and Green Bay.

(g) Table 2 presents the distribution of further reductions in phosphorus loading

[redacted]

crop rotation, strip cropping, vegetated buffer strips along stream and ditch banks, and improved fertilizer management practices.

Urban: adoption of management practices such as: erosion controls, use of natural storage capacities and street cleaning.

Level 2 nonpoint source controls include Level 1 plus:

[redacted]

ANNEX 4

DISCHARGES OF OIL AND HAZARDOUS POLLUTING SUBSTANCES FROM VESSELS

1. **Definition.** As used in this Annex:

(a) "Discharge" includes, but is not limited to, any spilling, leaking, pumping,

[redacted]

(b) "Harmful quantity of oil" means any quantity of oil that, if discharged from a

[redacted]

(iii) Each vessel shall have the capability of retaining on board oily wastes accumulated during vessel operation;

[redacted]

(b) Identification of vessels carrying cargoes of hazardous polluting substances in bulk, containers, and package form, and of all such cargoes;

(c) Identification in vessel manifests of all hazardous polluting substances;

(d) Carriage and storage arrangements of all hazardous polluting substances in packaged form using as a guide the International Maritime Dangerous Goods Code; *and*

(e) Programs to ensure that merchant vessel personnel are trained in all functions

ANNEX 5

DISCHARGES OF VESSEL WASTES

[redacted]

ANNEX 6

REVIEW OF POLLUTION FROM SHIPPING SOURCES

[redacted]

1 **Reviews.** The Canadian Coast Guard and the United States Coast Guard shall [redacted]

(b) Transmit study descriptions to the International Joint Commission and other

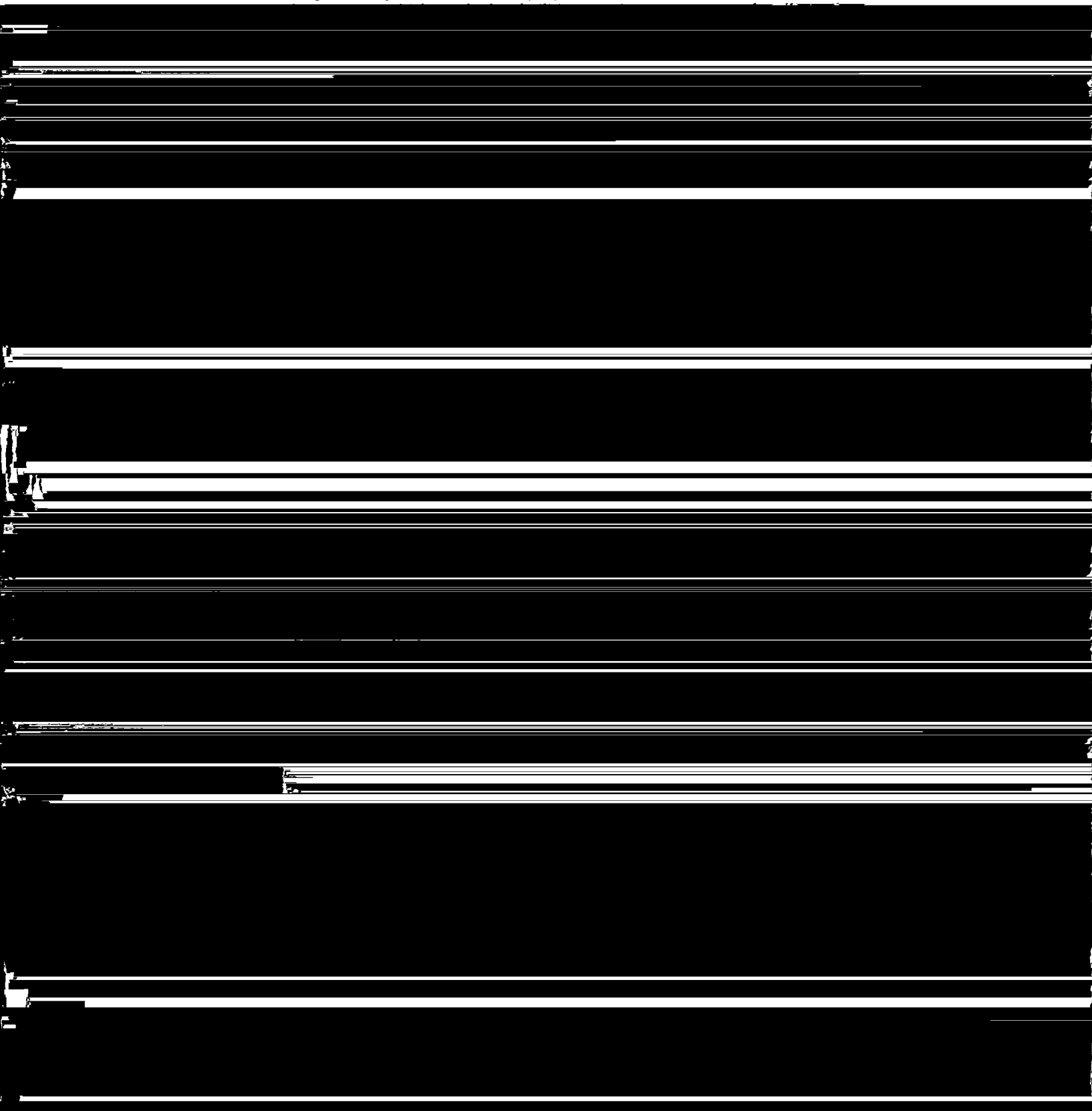
ANNEX 8

(b) Review of the operation, maintenance and inspection procedures of facilities for their adequacy to prevent the discharge of oil or hazardous polluting substances;

(c) Development and implementation of regulations and personnel training programs to ensure the safe use and handling of oil or hazardous polluting substances;

(d) Programs to ensure that at each facility plans and provisions are made and equipment provided to stop rapidly and safely, contain, and clean up discharges of oil or hazardous polluting substances; and

(e) Compatible regulations and other programs for the identification and placarding



ANNEX 9

JOINT CONTINGENCY PLAN

1. **The Plan.** *Annex one (CANUSLAK) of the Canada-United States Joint Marine Contingency Plan, as amended or reviewed, shall be maintained in force for the Great Lakes.* The Cana-

[redacted]

1. The Parties shall:

(a) Maintain a list, to be known as Appendix 1 of the Annex (hereinafter referred to as Appendix 1), of the substances know to have toxic effects on aquatic and animal life and a risk of being discharged to the Great Lakes System;

(b) Maintain a list, to be known as Appendix 2 of this Annex (hereinafter referred to as Appendix 2), of substances potentially having such effects and such a risk of discharge, and to give priority to the examination of these substances for possible transfer to Appendix 1;

(c) Ensure that these lists are continually revised in the light of growing scientific knowledge; and

(d) Develop and implement programs and measures to minimize or eliminate the risk

[redacted]

tered in a single oral dose equal to or less than 50 milligrams per kilogram of body weight; or

(iii) One-half of a test population of animals in 14 days or less when dermally exposed to an amount equal to or less that 200 milligrams per kilogram body weight for 24 hours; or

(iv) One-half of a test population of animals in 14 days or less when exposed to

APPENDIX 1

[redacted]

Acetic Acid

Acetone Cyanohydrin
Acetyl Bromide
Acetyl Chloride
Acrolein

Acrylonitrile
Aldrin
Allyl Alcohol
Allyl Chloride

Arsenic Trisulphide

Benzene
Benzoic Acid
Benzonitrile
Benzoyl Chloride

Benzyl Chloride
Beryllium Chloride
Beryllium Fluoride
Beryllium Nitrate

Cupric Chloride
Cupric Nitrate

Isoprene
Isopropanolamine

Phosphoric Acid
Phosphorous
Phosphorus Oxychloride
Phosphorus Pentasulfide
Phosphorus Trichloride
Polychlorinated Biphenyls
Potassium Arsenate
Potassium Arsenite
Potassium Bichromate
Potassium Chromate
Potassium Cyanide
Potassium Hydroxide
Potassium Permanganate
Propionic Acid
Propionic Anhydride
Pyrethrins
Quinoline
Resorcinol
Selenium Oxide
[redacted]

Trichlorophenol
Triethanolamine Dodecylbenzenesulfonate
Triethylamine
Thrimethylamine
Uranyl Acetate
Uranyl Nitrate
Vanadium Pentoxide
Vanadyl Sulfate
Vinyl Acetate
Xylene (mixed)
Xylenol
Zinc Acetate
Zinc Ammonium Chloride
Zinc Borate
Zinc Bromide
Zinc Charbonate
Zinc Chloride
Zinc Cyanide
Zinc Fluoride
Zinc Formate

[redacted]

APPENDIX 2

[redacted]

Acridine	Dinocap	Sodium
Allethrin	Dinoseb	Pentachlorophenate

ANNEX 11

SURVEILLANCE AND MONITORING

1. Surveillance and monitoring activities shall be undertaken for the following

(a) Inputs from tributaries, point source discharges, atmosphere, and connecting

(c) Joint programs for disposal of hazardous materials to ensure that these materials

such as pesticides, contaminated petroleum products, contaminated sludge and

(j) Further development and use of reproduction, physiological and biochemical

[redacted]

lishment of a data base for storage, retrieval and interpretation of the data

[redacted]

ANNEX 14

CONTAMINATED SEDIMENT

1. **Objectives.** The Parties shall, in cooperation with State and Provincial Governments, identify the nature and extent of sediment pollution of the Great Lakes System. Based on these findings, they shall develop methods to evaluate both the impact of

polluted bottom sediment at selected Areas of Concern identified pursuant to Annex 2. The design shall be based on the evaluation(s) made pursuant to sub-paragraph (i) above, the Parties shall meet by June 20, 1988 and jointly design a demonstration program and implementation schedule and report progress biennially thereafter.

3. **Long-Term Measures.** The Parties, in cooperation with State and Provincial

ANNEX 15

AIRBORNE TOXIC SUBSTANCES

1. **Purpose.** The Parties, in cooperation with State and Provincial Governments, shall conduct research, surveillance and monitoring and implement pollution control meas-

[redacted]

(iii) develop Remedial Action Plans and Lakewide Management Plans pursuant to Annex 2.

[redacted]

shall confer on or before October 1, 1988 regarding:

ANNEX 16

POLLUTION FROM CONTAMINATED GROUNDWATER

The Parties, in cooperation with State and Provincial Governments, shall coordinate existing program to control contaminated groundwater affecting the boundary waters of the Great Lakes System. For this purpose, the Parties shall;

(i) identify existing and potential sources of contaminated groundwater affecting the Great Lakes;

(ii) map hydrogeological conditions in the vicinity of existing and potential sources of contaminated groundwater;

(iii) develop a standard approach and agreed procedures for sampling and analysis of contaminants in groundwater in order to: (1) assess and characterize the degree and extent of contamination; and (2) estimate the

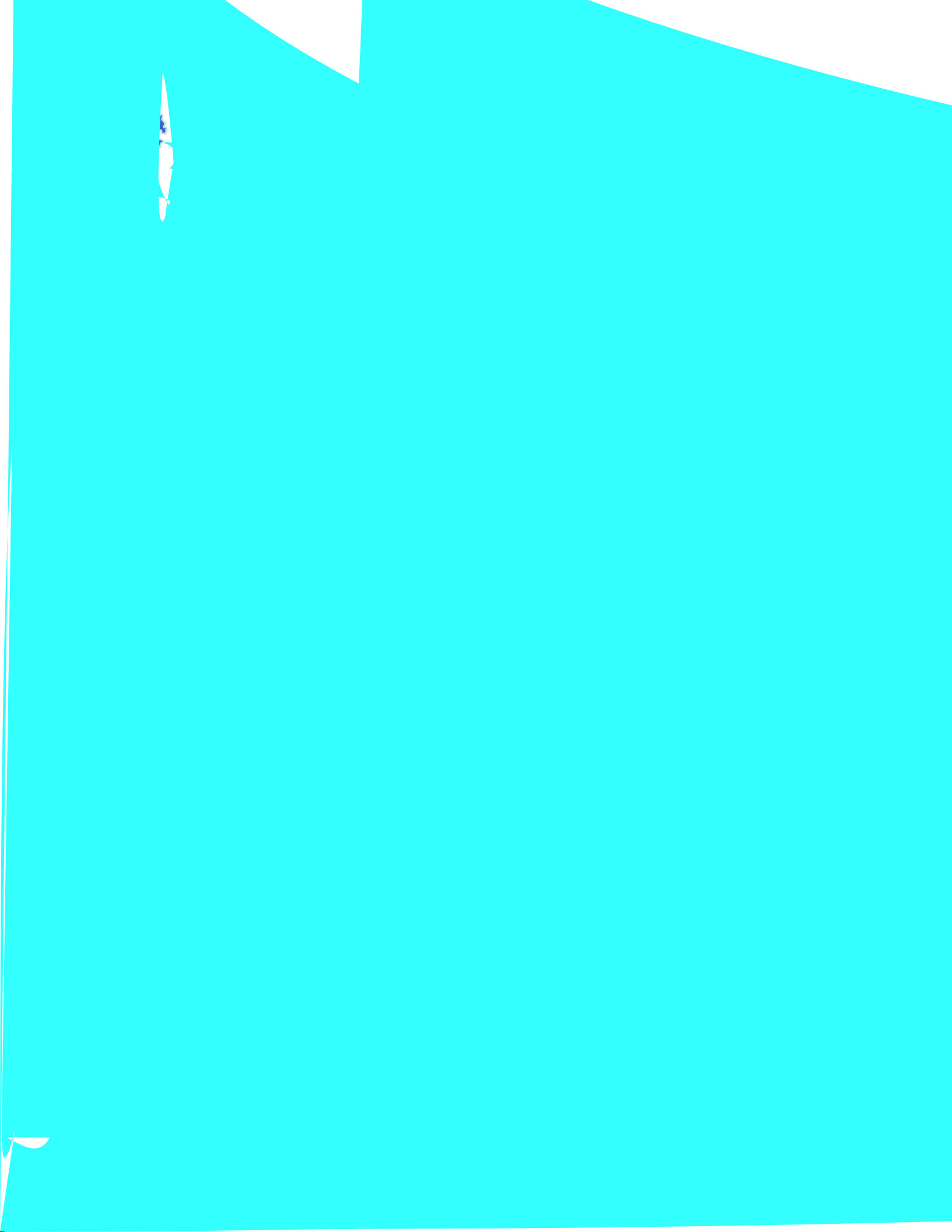
(d) determine cause-effect inter-relations of productivity and ecotoxicity, and identify

TERMS OF REFERENCE
FOR THE JOINT INSTITUTIONS
AND THE
GREAT LAKES REGIONAL OFFICE

1 Great Lakes Water Quality Board

[redacted]

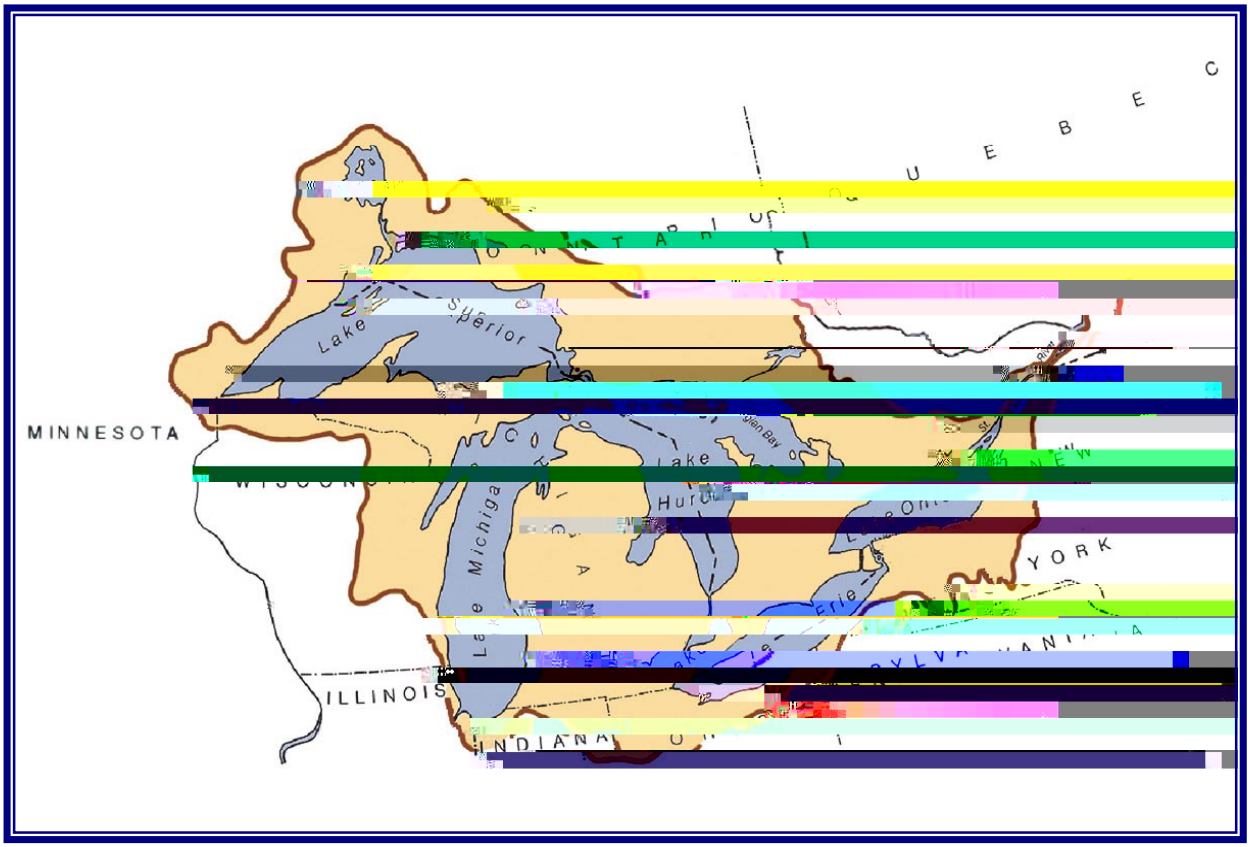
(d) The Parties, mindful of the need to staff the Great Lakes Regional Office to carry



The Great Lakes Charter

Principles for the Management of Great Lakes Water Resources

February 11, 1985



La Charte des Grands Lacs

Principes de gestion des ressources en eau des Grands Lacs

11 février 1985

The Council of Great Lakes Governors is a non-profit, non-partisan partnership of Governors of the Great Lakes states—Illinois (George H. Ryan), Indiana (Frank O'Bannon), Michigan (John Engler), Minnesota (Jesse Ventura), New York (George E. Pataki), Ohio (Bob Taft), Pennsylvania (Tom Ridge), and Wisconsin (Scott McCallum). The Premiers of Ontario (Mike Harris) and Quebec (Bernard Landry) are associate members. Through the Council, the Governors collectively tackle the environmental and economic challenges facing the citizens of the region.

The Great Lakes Basin map is courtesy of the International Joint Commission.

Printed June 2001

THE GREAT LAKES CHARTER

PRINCIPLES FOR THE MANAGEMENT OF GREAT LAKES WATER RESOURCES

FINDINGS

THE GOVERNORS AND PREMIERS OF THE GREAT LAKES STATES AND PROVINCES JOINTLY FIND AND DECLARE THAT

developments within the region; and to provide a secure foundation for future investment and development within the region.

PRINCIPLES FOR THE MANAGEMENT OF GREAT LAKES WATER RESOURCES

IN ORDER TO ACHIEVE THE PURPOSES OF THIS CHARTER, THE GOVERNORS AND PREMIERS OF THE GREAT LAKES STATES AND PROVINCES AGREE TO THE FOLLOWING PRINCIPLES:

Principle I
Integrity of the Great Lakes Basin

The planning and management of the water resources of the Great Lakes Basin should recognize and be founded upon the integrity of the natural resources and ecosystem of the Great Lakes Basin. The water resources of the Basin transcend political boundaries within the Basin, and should be recognized and treated as a single hydrologic system. In managing Great Lakes Basin waters, the natural resources and ecosystem of the Basin should be considered as a unified whole.

Principle II
Cooperation Among Jurisdictions

The signatory States and Provinces recognize and commit to a spirit of cooperation among local, state, and provincial agencies, the federal governments of Canada and the United States, and the International Joint Commission in the study, monitoring, planning, and conservation of the water resources of the Great Lakes Basin.

Principle III
Protection of the Water Resources of the Great Lakes

The signatory States and Provinces agree that new or increased diversions and consumptive uses of Great Lakes Basin water resources are of serious concern. In recognition of their shared responsibility to conserve and protect the water resources of the Great Lakes Basin for the use, benefit, and enjoyment of all their citizens, the States and Provinces agree to seek (where necessary) and to implement legislation establishing programs to manage and regulate the diversion and consumptive use of Basin water resources. It is the intent of the signatory States and Provinces that diversions of Basin water resources will not be allowed if individually or cumulatively they would have any significant adverse impacts on lake levels, in-basin uses, and the Great Lakes Ecosystem.

Principle IV

Principle V
Cooperative Programs and Practices

The Governors and Premiers of the Great Lakes States and Provinces commit to pursue the development and maintenance of a common base of data and information regarding the use and management of the Basin water resources, to the establishment of a systematic arrangements for the exchange of water data and information, to the creation of a Water Resources Management Committee, to the development of a Great Lakes Water Resources Management Program, and to additional and concerted and coordinated research efforts to provide improved information for future water planning and management decisions.

IMPLEMENTATION OF PRINCIPLES

Common Base of Data

THE GREAT LAKES STATES AND PROVINCES WILL PURSUE THE DEVELOPMENT AND MAINTENANCE OF A COMMON BASE OF DATA AND INFORMATION regarding the use and management of Basin water resources and the establishment of systematic arrangements for the exchange of water data and information. The common base of data will include the following:

1. Each State and Province will collect and maintain, in comparable form, data regarding the location, type, and quantities of water use, diversion, and consumptive use, and information regarding projections of current and future needs.

2. In order to provide accurate information as a basis for future water resources planning and management, each State and Province will establish and maintain a system for the collection of data on major water uses, diversions, and consumptive uses in the Basin. The States and Provinces, in cooperation with the Federal G0rdinateISns

Consultation Procedures

THE PRINCIPLE OF PRIOR NOTICE AND CONSULTATION WILL APPLY TO ANY NEW OR INCREASED DIVERSION OR CONSUMPTIVE USE OF THE WATER RESOURCES OF THE GREAT LAKES BASIN which exceeds 5,000,000 gallons (19 million litres) per day average in any 30-day period.

The consultation process will include the following procedures:

1. The State or Province with responsibility for issuing the approval or permit, after receiving an application for such diversion or consumptive use, will notify the Offices of the Governors and Premiers of the respective Great Lakes States and Provinces, the appropriate water management agencies of the Great Lakes States and Provinces and, where appropriate, the International Joint Commission.

2. The permitting State or Province will solicit and carefully consider the comments and concerns of the other Great Lakes States and Provinces, and where applicable the International Joint Commission, prior to rendering a decision on an application.

3. Any State or Province which believes itself to be affected may file a written objection to the proposed diversion or consumptive use. Notice of such objection stating the reasons therefore will be given to the permitting State or Province and all other Great Lakes States and Provinces.

4. In the event of an objection to a proposed diversion or consumptive use, the permitting State or Province will convene a consultation process of the affected Great Lakes States and Provinces to investigate and consider the issues involved, and to seek and provide mutually agreeable recommendations to the permitting State or Province.

5. The permitting State or Province will carefully consider the concerns and objections expressed by other Great Lakes States and Provinces, and the recommendations of any consultation process convened under this Charter.

6. The permitting State or Province will have lead responsibility for resolution of water management permit issues. The permitting State or Province will notify each affected Great Lakes State or Province of its final decision to issue, issue with conditions, or deny a permit.

The prior notice and consultation process will be formally initiated following the development of procedures by the Water Resources Management Committee and approval of those procedures by the Governors and Premiers. During the interim period prior to approval of formal procedures, any State or Province may voluntarily undertake the notice and consultation procedure as it deems appropriate.

Basin Water Resources Management Program

IN ORDER TO GUIDE THE FUTURE DEVELOPMENT, MANAGEMENT, AND CONSERVATION OF THE WATER RESOURCES OF THE GREAT LAKES BASIN, THE SIGNATORY STATES AND PROVINCES COMMIT TO THE DEVELOPMENT OF A COOPERATIVE WATER RESOURCES MANAGEMENT PROGRAM FOR THE GREAT LAKES BASIN.

Such a program should include consideration of the following elements:

1. An inventory of the Basin's surface and groundwater resources;

2. An identification and assessment of existing and future demands for diversions, into as well as out of the Basin, withdrawals, and consumptive uses for municipal, domestic, agricultural, manufacturing, mining, navigation, power production, recreation, fish and wildlife, and other uses and ecological considerations;

3. The development of cooperative policies and practices to minimize the consumptive use of the Basin's water resources; and

4. Recommended policies to guide the coordinated conservation, development, protection, use, and management of the water resources of the Great Lakes Basin.

Research Program

THE GREAT LAKES STATES AND PROVINCES RECOGNIZE THE NEED FOR AND SUPPORT ADDITIONAL RESEARCH in the area of flows and lake levels required to protect fisheries and wildlife, a balanced aquatic environment, navigation, important recreational uses, and the assimilative capacity of the Great Lakes system. Through appropriate state, provincial, federal and international agencies and other institutions, the Great Lakes States and Provinces will encourage coordinated and concerted research efforts in these areas, in order to provide improved information for future water planning and management decisions.

PROGRESS TOWARD IMPLEMENTATION

THE GOVERNORS AND PREMIERS OF THE GREAT LAKES STATES AND PROVINCES COMMIT TO THE COORDINATED IMPLEMENTATION OF THIS CHARTER. To this end, the Governors and Premiers shall, no less than once per year, review progress toward implementation of this Charter and advise one another on actions taken to carry out the principles of the Charter together with recommendations for further action or improvements to the management of the Great Lakes Basin water resources.

The signatory States and Provinces consider each of the principles and implementing provisions of this Charter to be material and interdependent. The rights of each State and Province under this Charter are mutually dependent upon the good faith performance by each State and Province of its commitments RESEARCH H

collection and regulatory programs; and where necessary, the enactment of water withdrawal registration and diversion and consumptive use management and regulatory programs pursuant to the provisions of the Charter.

3. To assist in the ongoing collection of Great Lakes water use data and information, and in the development of the Basin Water Resources Management Program, States and Provinces will pursue the enactment of legislation where it is needed for the purpose of gathering accurate and comparable information on any new or increased withdrawal of Great Lakes Basin water resources in excess of 100,000 gallons (380,000 litres) per day average in any 30-day period.

4. The prior notice and consultation process will be formally initiated following the development of procedures by the Water Resources Management Committee and approval of those procedures by the Governors and Premiers. Any State or Province may voluntarily undertake additional notice and consultation procedures as it deems appropriate. However, the right of any individual State or Province to participate in the prior notice and consultation process, either before or after approval of formal procedures by the Governors and Premiers, is contingent upon its ability to provide accurate and comparable information on water withdrawals in excess of 100,000 gallons (380,000 litres) per day average in any 30-day period and its authority to manage and regulate water withdrawals involving a total diversion or consumptive use of Great Lakes Basin water resources in excess of 2,000,000 gallons (7,600,000 litres) per day average in any 30-day period.

5. Development of the Basin Water Resources Management Program will commence upon receipt

Interbasin diversion means a transfer of water from the Great Lakes Basin into another watershed.

Great Lakes Basin means the watershed of the Great Lakes and the St. Lawrence River upstream from Trois Rivieres, Quebec.

Great Lakes Basin water resources means the Great Lakes and all streams, rivers, lakes, connecting channels, and other bodies of water, including tributary groundwater, within the Great Lakes Basin.

Great Lakes Basin Ecosystem means the interacting components of air, land, water, and living organisms, including humankind, within the Great Lakes Basin.

Great Lakes States and Provinces means the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, and Wisconsin, the Commonwealth of Pennsylvania, and the Provinces of Ontario and Quebec.

Great Lakes Region

The Great Lakes Charter Annex

A Supplementary Agreement to
The Great Lakes Charter

June 18, 2001

Annexe à la Charte des Grands Lacs

Entente additionnelle à la

THE GREAT LAKES CHARTER ANNEX

A SUPPLEMENTARY AGREEMENT TO THE GREAT LAKES CHARTER

June 18, 2001

F

Premiers recognize that the Canadian Provinces are not subject to, or bound by, the WRDA, nor are the Governors statutorily bound by comments from the Premiers on projects subject to the WRDA.

DIRECTIVE #5

Develop a decision support system that ensures the best available information.

The Governors and Premiers call for the design of an information gathering system to be developed by the States and Provinces, with support from appropriate federal government agencies, to implement the Charter, this Annex, and any new agreement(s). This design will include an assessment of available information and existing systems, a complete update of data on existing water uses, an identification of needs, provisions for a better understanding of the role of groundwater, and a plan to implement the ongoing support system.

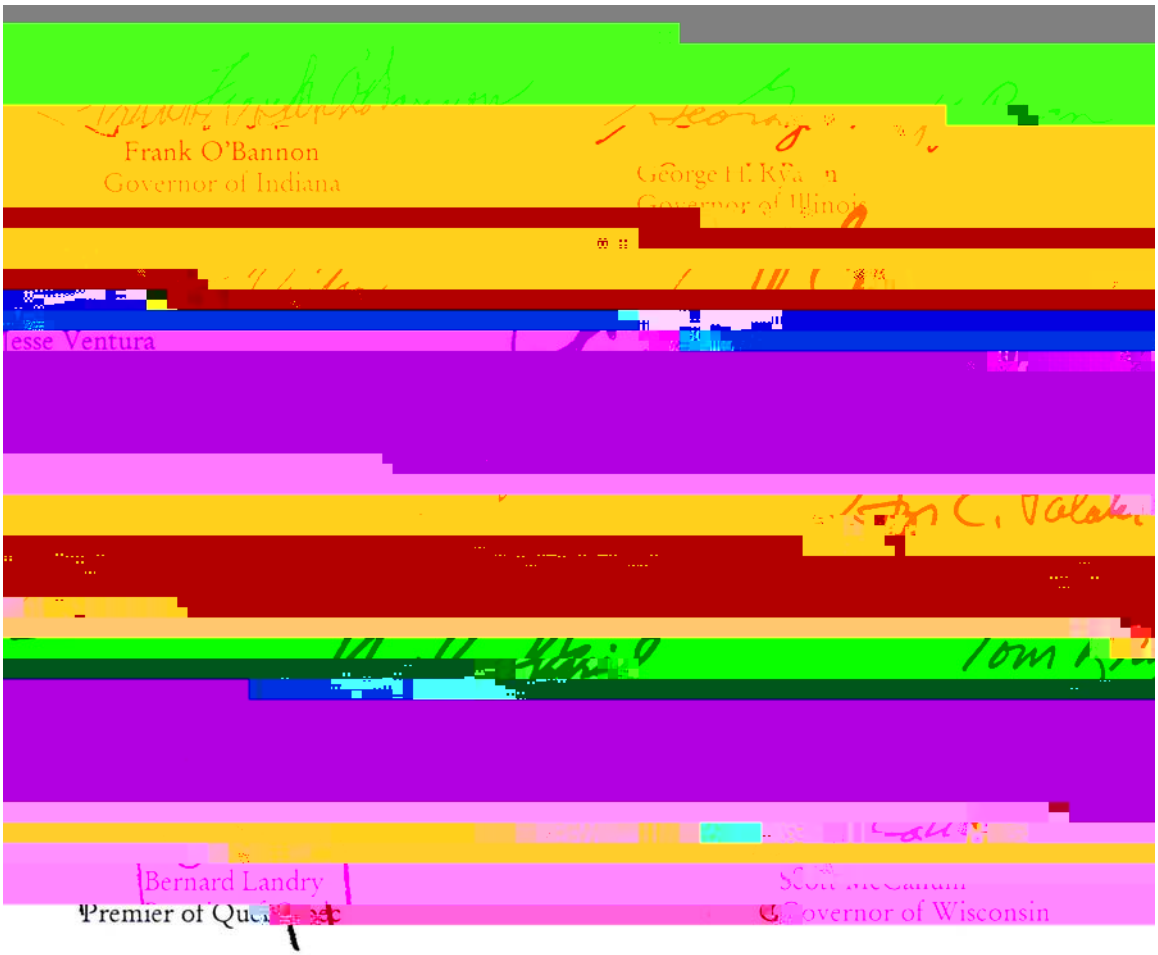
DIRECTIVE #6

Further commitments.

The Governors and Premiers of the Great Lakes States and Provinces further commit to coordinate the implementation and monitoring of the Charter and this Annex; seek and implement, where necessary,

and Water-Dependent Natural Resources of the Basin, resulting from associated conservation measures, enhancement or restoration measures which include, but are not limited to, such practices as mitigating adverse effects of existing water withdrawals, restoring environmentally sensitive areas or implementing conservation measures in areas or facilities that are not part of the specific proposal undertaken by or on behalf of the withdrawer.

Signed and entered into the 18th day of June 2001.



Even though there has been significant progress in restoring and improving the health of the Basin Ecosystem, the Waters and Water Dependent Natural Resources of the Basin remain at risk;

In light of possible variations in climate conditions and the potential cumulative effects of demands that may be placed on the Waters of the Basin, the States and Provinces must act to ensure the protection and conservation of the Waters and Water Dependent Natural Resources of the Basin for future generations;

Where there are th

CHAPTER 1
GENERAL PROVISIONS

ARTICLE 100
OBJECTIVES

1. The objectives of this Agreement are:
   a. To act together to protect, conserve and restore the Waters of the Great Lakes—St. Lawrence River Basin because current lack of scientific certainty should not be used as a reason for postponing measures to protect the Basin Ecosystem;
   b. To facilitate collaborative approaches to Water management across the Basin to protect, conserve, restore, improve and efficiently and effectively manage the Waters and Water Dependent Natural Resources of the Basin;
   c. To promote co-operation among the Parties by providing common and regional mechanisms to evaluate Proposals to Withdraw Water;
   d. To create a co-operative arrangement regarding Water management that provides tools for shared future challenges;
   e. To retain State and Provincial authority within the Basin under appropriate arrangements for intergovernmental cooperation and consultation;
   f. To facilitate the exchange of data, strengthen the scientific information upon which decisions are made, and engage in

ARTICLE 103
GENERAL DEFINITIONS

In this Agreement,

"Adaptive Management" means a Water resources management system that provides a systematic process for evaluating, monitoring and learning from the outcomes of operational programs and adjustment of policies, plans and programs based on experience and the evolution of scientific knowledge concerning Water resources and Water Dependent Natural Resources.

"**Agreement**" means this Agreement.

"**Applicant**" means a Person who is required to submit a Proposal that is subject to management and regulation under this Agreement. "**Application**" has a corresponding meaning.

"**Basin**" or "**Great Lakes—St. Lawrence River Basin**" means the watershed of the Great Lakes and the St. Lawrence River upstream from Trois-Rivières, Québec within the jurisdiction of the Parties.

"Basin Ecosystem" or "**Great Lakes—St. Lawrence River Basin Ecosystem**" means the interacting components of air, land, Water and living organisms, including humankind, within the Basin.

"**Community within a Straddling County**" means any incorporated city, town or the equivalent thereof, that is located outside the Basin but wholly within a County that lies partly within the Basin and that is not a Straddling Community.

"**Compact**" means the Great Lakes—St. Lawrence River Basin Water Resources Compact.

"**Consumptive Use**" means that portion of Water Withdrawn or withheld from the Basin that is lost or otherwise not returned to the Basin due to evaporation, incorporation into Products, or other processes.

"County" means the largest territorial division for local government in a State. In Québec, County means a regional county municipality (municipalité régionale de comté - MRC). The County boundaries shall be defined as those boundaries that exist as of the signing date of this Agreement.

"**Cumulative Impacts**" mean the impact on the Great Lakes—St. Lawrence River Basin Ecosystem that results from incremental effects of all aspects of a Withdrawal, Diversion or Consumptive Use in addition to other past, present, and reasonably foreseeable future Withdrawals, Diversions and Consumptive Uses regardless of who undertakes the other Withdrawals, Diversions and Consumptive Uses. Cumulative Impacts can result from

individually minor but collectively significant Withdrawals, Diversions and Consumptive Uses taking place over a period of time.

“**Diversion**” means a transfer of Water from the Basin into another watershed, or from the watershed of one of the Great Lakes into that of another by any means of transfer, including but not limited to a

"**Straddling Community**" means any incorporated city, town or the equivalent thereof, that is either wholly within any County that lies partly or completely within the Basin or

transferred shall be used solely for Public Water Supply Purposes within the Straddling Community, and:

a. All Water Withdrawn from the Basin shall be returned, either naturally or after use, to the Source Watershed less an allowance for Consumptive Use. No surface water or grou Tater orom

i. The Proposal shall be subject to management and regulation by the

scientifically based evidence that the

it may not be approved under the laws of the Originating Party if that Party has implemented more restrictive Measures.

3. When fully implemented, this Agreement shall lead to Water Withdrawal management systems that are consistent in their fundamentals within the Basin.

ARTICLE 203
THE DECISION-MAKING STANDARD FOR MANAGEMENT OF WITHDRAWALS AND CONSUMPTIVE USES

ARTICLE 204
PROPOSALS SUBJECT TO REGIONAL REVIEW

1. Regional Review as outlined in Chapter 5 applies to a Proposal for any Exception requiring Regional Review under Article 201.
2. The Proposal may be approved by the Originating Party thereafter only if it meets the Exception Standard.

ARTICLE 205
PROPOSALS SUBJECT TO PRIOR NOTICE

1. The Originating Party shall provide all Parties with detailed and timely notice and an opportunity to comment within 90 days on any Proposal for a New or Increased Consumptive Use of 5 million gallons per day (19 million litres per day) or greater average in any 90-day period. Comments shall address whether or not the Proposal is consistent with the Standard established under Article 203. The Originating Party shall provide a response to any such comment received from another Party.
2. A Party may provide notice, an opportunity to comment and a response to comments even if this is not required under paragraph 1 of this Article. Any provision of such notice and opportunity to comment shall be undertaken only after consulting the Applicant.

ARTICLE 206
MANAGEMENT AND REGULATION OF NEW OR INCREASED WITHDRAWALS AND CONSUMPTIVE USES

1. Each Party shall establish a program for the management and regulation of New or Increased Withdrawals and Consumptive Uses by adopting and implementing Measures consistent with the Standard. Each Party, through a considered process, shall set and may modify threshold levels for the regulation of New or Increased Withdrawals in order to assure an effective and efficient Water management program that will ensure that uses overall are reasonable, that Withdrawals overall will not result in significant impacts to the Waters and Water Dependent Natural Resources of the Basin, determined on the basis of significant impacts to the physical, chemical and biological integrity of Source Watersheds, and that other objectives of the Agreement are achieved. Each Party may determine the scope and thresholds of its program, including which New or Increased Withdrawals and Consumptive Uses will be subject to the program.
2. In the event that a Party has not established threshold levels in accordance with paragraph 1 on or before 10 years after paragraphs 1 and 2 of Article 200 come into force, it shall apply a threshold level for management and regulation of all New or Increased Withdrawals of 100,000 gallons per day (379,000 litres per day) or greater average in any 90 day period.
3. The Parties intend programs for New or Increased Withdrawals and Consumptive Uses to evolve as may be necessary to protect Basin Waters. The Regional Body shall periodically assess the Water management programs of the Parties. Such assessments may produce recommendations for the strengthening of the programs including, without limitation, establishing lower thresholds for management and regulation in

accordance with the Standard. The Parties may, by unanimous consent, collectively adopt such thresholds or revisions to their programs.

ARTICLE 207
APPLICABILITY

Determining New or Increased Diversions, Consumptive Uses or Withdrawals

1. To establish a baseline for determining a New or Increased Diversion, Consumptive Use or Withdrawal, each Party shall develop either or both of the following lists for their jurisdiction:
   a. A list of existing Water Withdrawal approvals as of the date this Article comes into force;
   b. A list of the capacity of existing systems as of the date this Article comes into force. The capacity of the existing systems should be presented in terms of Withdrawal capacity, treatment capacity, distribution capacity, or

Transmission in Water Lines
7. Transm

prohibited from using any term of this Agreement, including Article 201, to seek New or Increased Withdrawals, Consumptive Uses or Diversions of Basin Water.

13. With the exception of Paragraph 14 of this Article, Articles 200, 201, 202, 203, 204, 205, 206, 207 (Paragraphs 1, 2, 3, 5 and 9 only), 208 and 210 of this Agreement all relate to current, New or Increased W

b. Give substantive consideration to climate change or other significant threats to Basin W

4. The first report shall be provided by each jurisdiction one year from the date that this Article comes into force and thereafter every 5 years.
5. The Regional Body shall forward each report to all members and shall give the members at least 30 days to consider it.
6. Following that period, the Regional Body shall consider the reports submitted by each Party.
7. The Regional Body shall issue a Declaration of Finding on whether the programs in place in each Party:
    a. Meet or exceed the provisions of this Agreement;
    b. Do not meet the provisio

ARTICLE 302
SCIENCE

1. The Parties commit to provide leadership for the development of a collaborative strategy with other regional partners to strengthen the scientific basis for sound Water management decision making under this Agreement.
2. The strategy

3. Beginning five years after Article 200, paragraphs 1 and 2 come into force (Prohibition of Diversions and Management of Exceptions), and every five years thereafter, the Regional Body shall review and modify as appropriate the Basin-wide objectives and the Parties shall have regard for any such modifications in implementing their programs. This assessment shall be based on examining new technologies, new patterns of Water use, new resource demands and threats, and the Cumulative Impact assessment under Article 209.
4. Within two years after Article 200, paragraphs 1 and 2 come into force (Prohibition of Diversions and Management of Exceptions), the Parties commit to promote Environmentally Sound and Economically Feasible Water Conservation Measures such as:
    a. Measures that promote efficient use of Water;
    b. Identification and sharing of best management practices and state of the art conservation and efficiency technologies;
    c. Application of sound planning principles;
    d. Demand-side and supply-side Measures or incentives; and,
    e. Development, transfer and application of science and research.
5. Each Party shall implement, in accordance with paragraph 2 above a voluntary or mandatory Water conservation program for all, including existing, Basin Water users. Conservation programs need to adjust to new demands and the potential impacts of cumulative effects and climate change.

CHAPTER 4
GREAT LAKES—ST. LAWRENCE RIVER WATER RESOURCES REGIONAL BODY

ARTICLE 400
FUNCTIONS OF THE REGIONAL BODY

1. The Regional Body is composed of the Governor or Premier of each of the Parties, or a person designated by each of them.
2. The Regional Body is established to undertake the following duties and responsibilities:
    a. Ensure, in accordance with this Agreement, a formalized process with respect to Proposals that require Regional Review and thereby provide an opportunity to address concerns within the Basin;
    b. Declare whether or not a Proposal subject to Regional Review meets the Exception Standard;
    c. Declare whether a Party's Water management programs meet the provisions of this Agreement;
    d. Facilitate the development of consensus and the resolution of disputes on matters arising under this Agreement;
    e. Monitor and report on the implementation of this Agreement by the Parties, including: data collection; the implementation of each Party's program to manage

and regulate Withdrawals, Consumptive

d. Declarations of Finding;
e. Materials in respect of dispute resolution;
f. Water management program reports;
g. Cumulative Impact Assessments;
h. The science strategy developed under Article 302;
i. Reports on Water conservation and efficiency programs; and,
j. Amendments to the Agreement agreed to by the Parties.

9. Public access to documents is recognized to be subject to confidentiality obligations set out in this Agreement.
10. To the greatest extent possible, the Regional Body shall conduct public participation and Regional Review concurrently and jointly with similar processes under the Compact and in the Originating Party's jurisdiction.
11. The Parties recognize the importance and necessity of public pa

ARTICLE 501
NOTICE FROM ORIGINATING PARTY TO THE REGIONAL BODY AND THE PUBLIC

1. The Originating Party shall determine if an Application is subject to Regional

Measures to Settle Disputes

2. If the dispute is not resolved informally, the Chair shall initiate the most appropriate measures to resolve the dispute. These measures may include:
   a. The appointment of a panel to hear the Parties to the dispute;
   b. Consultation with experts;
   c. Establishment of a working or fact-finding group; or,
   d. The use of dispute resolution mechanisms such as conciliation or mediation.
3. After resolution is attempted by one of the means suggested in paragraph 2, recommendations shall be made in accordance with directions given by the Chair at the time the mean was adopted. The disputing Parties shall consider the recommendations and exercise their best efforts to settle their dispute.

Reference Tw Tw8dolve the d

ARTICLE 701
RELATIONSHIP TO AGREEMENTS CONCLUDED BY CANADA OR THE UNITED STATES OF AMERICA

1. Nothing in this Agreement is intended to provide nor shall be construed to provide, directly or indirectly, to any Person any right, claim or remedy under any treaty or international agreement nor is it intended to derogate any right, claim, or remedy that already exists under any treaty or international agreement.
2. Nothing in this Agreement is intended to affect the application of the Boundary Waters Treaty of 1909 whose requirements continue to apply in addition to the requirements of this Agreement.

ARTICLE 702
RELATIONSHIP TO FIRST NATIONS AND TRIBES

1. Nothing in this Agreement is intended to abrogate or derogate from treaty rights or rights held by any Tribe recognized by the federal government of the United States based upon its status as a Tribe recognized by the federal government of the United States.
2. Nothing in this Agreement is intended to abrogate or derogate from the protection provided for the existing aboriginal or treaty rights of aboriginal peoples in Ontario and Québec as recognized and affirmed by section 35 of the Constitution Act, 1982.

ARTICLE 703
RELATIONSHIP TO OTHER AGREEMENTS AMONG THE PARTIES

1. The Parties assert that by this Agreement they are fulfilling their existing commitments with respect to each other under the Great Lakes Charter and the Great Lakes Charter Annex.
2. The obligations of this Agreement shall be co-ordinated with any obligations set out in other environmental and conservation agreements between or among the Parties.

ARTICLE 704
CONFIDENTIALITY

1.

ARTICLE 706
AMENDMENTS

1. The Parties may agree in writing to amend this Agreement.
2. An amendment to this Agreement requires the consent of all Parties to the Agreement.
3. When so agreed, and approved in accordance with the applicable legal procedures of each Party, an amendment shall constitute an integral part of this Agreement from the date of its entry into force.

ARTICLE 707
WITHDRAWAL AND TERMINATION PROCEDURE

1. Twelve months after it gives written notice to all other PaCC188 Tm(C)Tj12 0 aTj12 0 0 12 4632.5243T

2. 60 days after the last Party has notified the others that it has completed the Measures necessary to implement the following parts of this Agreement:
    a. Article 200, paragraphs 1 and 2 (Prohibition of Diversions and Management and Regulation of Exceptions);
    b. Article 201 (Exceptions to Prohibition of Diversions);
    c. Article 203 (The Standard for management of Withdrawals and Consumptive Uses);
    d. Article 204 (Proposals Subject to Regional Review);
    e. Article 207 (Applicability);
    f. Article 209 (Amendments to the Standard and Exception Standard and Periodic Assessment of Cumulative Impacts);
    g. Article 210 (Judicial Review);
    h. Article 300 (Water Management Program Review);
    i. Article 304, except for paragraph 1 (Implementation of Water Conservation Programs of the Parties); and,
    j. Chapter 5 (Regional Review).
3. 5 years after the date paragraph 2 of this Article comes into force or 60 days after the last Party has notified the others that it has completed the Measure necessary to implement it, whichever is first:
    a. Article 200, paragraph 3 (Management of Withdrawals and Consumptive Uses);
    b. Article 205 (Proposals Subject to Prior Notice);
    c. Article 206 (Management and Regulation of New or Increased Withdrawals and Consumptive Uses); and,
    d. Article 301 (Information).
4. Except as otherwise set out in this Agreement, 60 days following the date that the last Party has notified the others that it has completed the necessary legal procedures, any remaining parts of this Agreement shall come into force.
5. The terms, agreements, and review processes contained in the Great Lakes Charter of 1985 (“Charter”) shall remain in full force and effect unless and until the Parties to the Charter certify in writing that it has been replaced by the terms of this Agreement. Until th

Signed this 13th day of December, 2005.

Governor of Illinois	Governor of Indiana
Governor of Michigan	Governor of Minnesota
Governor of New York	Governor of Ohio
Premier of Ontario	Governor of Pennsylvania
Premier of Québec	Governor of Wisconsin

An organism, species, or community whose characteristics show the presence of specific en

EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for long-term remedial action under Superfund. A site must be on the NPL to receive money from the Trust Fund for remedial action. This list is based primarily on the score a site receives from the Hazard Ranking System. EPA updates the NPL at least once a year.

Waters sufficiently deep and wide for navigation by all or by specified sizes of vessels. Maintenance of navigation is a Federal responsibility carried out by the Army Corps of Engineers.

A compound containing nitrogen and oxygen that can exist in the atmosphere or in water and that can have harmful effects on humans and animals at high concentrations.

Pollution sources that are diffuse and do not have a single point of origin or are not introduced into a receiving stream from a specific outlet. The

A stationary facility from which pollutants are discharged or emitted. Also, any single identifiable source of pollution (e.g., a pipe, ditch, ship, ore pit, factory smokestack).

Any substance introduced into the environment that adversely affects the usefulness of a resource.

Measures taken to reduce the generation of a substance that could be harmful to living organisms if released to the environment. Pollution prevention can be achieved in many ways.

Any individual or company, including owners, operators, transporters, or generators, potentially responsible for, or contributing to, the contamination problems at a Superfund site. Whenever possible, EPA requires PRPs, through administrative and legal actions, to clean up hazardous waste sites that they may have created.

Any organism that lives by capturing and feeding on another animal.

Processes used to reduce, eliminate, or alter pollutants from nonresidential sources before they are discharged into publicly owned sewage treatment systems.

This treatment consists of the first steps in wastewater treatment during which screens and sedimentation tanks are used to remove most materials that float or will settle. Primary treatment results in the removal of about 30 percent of carbonaceous biochemical oxygen demand from domestic sewage.

A waste treatment facility owned by a State, unit of local government, or Indian tribe.

A public document that explains which cleanup alternative(s) will be used at Superfund National Priorities List sites.

Environmental plans aimed at restoring all beneficial uses to Great Lakes Areas of Concern.

The remixing of sediment particles and pollutants back into the water by storms, currents, organisms, and human activities, such as dredging.

The time it takes for the volume of water in a lake to exit through its outlet (i.e., total volume/outlet flow = retention time).

qualitative and quantitative evaluation to define the hazards posed to human health and/or the environment.

That part of precipitation, snow melt, or irrigation water that drains off land into surface water. It can carry sediments and pollutants into the receiving waters.

The second step in most waste treatment systems in which bacteria consume the organic parts of the waste. It is accomplished by bringing together waste, bacteria, and oxygen in trickling filters or in the activated sludge process. This removes floating and settleable solids and about 90 percent of the oxygen-demanding substances and suspended solids. Disinfection is the final stage of secondary treatment. (See primary, tertiary waste treatment.)

Soil, sand, and minerals eroded from land by water or air. Sediments settle to the bottom of surface water.

The waste and wastewater discharged into sewers from homes and industry.

A channel or conduit that carries wastewater and stormwater runoff from its source to a treatment plant or receiving stream. Sanitary sewers carry household, industrial, and commercial waste; storm sewers carry runoff from rain or snow; and combined sewers carry both.

The tendency in deep water bodies for distinct layers of water to form as a result of vertical change in temperature and, therefore, in the density of water. During stratification, dissolved oxygen, nutrients, and other parameters of water chemistry do not mix well between layers, establishing chemical as well as thermal gradients.

The program under the legislative authority of CERCLA and SARA that carries out EPA's solid waste emergency and long-term remedial activities. These activities include establishing a National Priorities List of the nation's most hazardous inactive waste sites and conducting remedial actions. Sites are cleaned up by potentially responsible parties whenever this can be arranged.

All water open to the atmosphere (e.g., rivers, lakes, reservoirs, streams, impoundments, seas, estuaries) and all springs, wells, or other collectors that are directly influenced by surface water.

A type of wetland that is dominated by woody vegetation and that does not accumulate appreciable peat deposits. Swamps may be freshwater or saltwater and tidal or nontidal. (See wetland.)

A substance that can cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological or reproductive malfunctions, or physical deformities in any organism or its offspring. The quantities and length of exposure necessary to cause these effects can vary widely.

Stormwater from city streets and adjacent domestic or commercial properties that may pickup terrestrial contamination and carry pollutants of various kinds into sewer systems and/or receiving waters.

The change of a substance from a liquid to a gas.

A substance that evaporates readily.

A facility containing a series of tanks, screens, filters, and other processes by which pollutants are removed from water.

The spent or used water from individual homes, a community, a farm, or an industry that often contains dissolved or suspended matter.

The land area that drains into a river, stream, or lake.

The level of groundwater.

State-adopted and EPA-approved standards for water bodies. Standards are developed considering the uses of the water body and the water quality criteria that must be met to protect the designated uses.

An area that is regularly saturated by surface water or groundwater and is characterized by a prevalence of vegetation that is adapted for life in saturated soil conditions (e.g., swamps, bogs, fens, marshes, and estuaries).

An area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

Microscopic aquatic animals.