

MANAGING THE WATERS OF THE GREAT LAKES BASIN



**A REPORT TO THE GOVERNORS AND PREMIERS OF THE
GREAT LAKES STATES AND PROVINCES PREPARED BY
THE WATER RESOURCES MANAGEMENT COMMITTEE**

FEBRUARY 1987



GREAT LAKES BASIN

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Editor: Abby Feely

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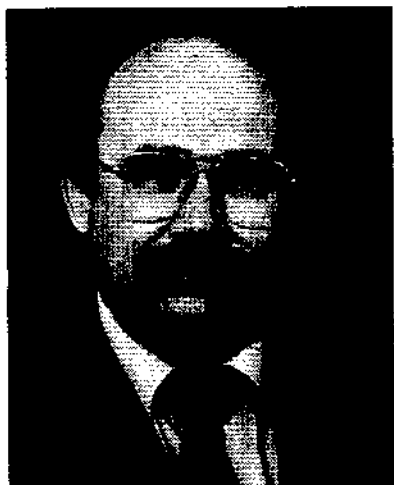
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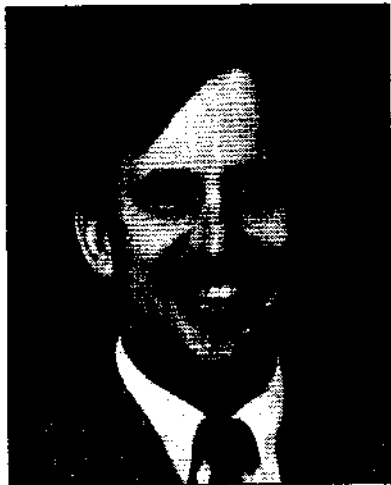
ACKNOWLEDGMENTS

The members of the Water Resources Management Committee wish to acknowledge the substantial contributions made by the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS) for their effort. Financial support for the state portions of the committee's data collection and evaluation efforts and work on development of a regional data base was provided, in part, through a NOAA grant administered by the Council of Great Lakes Governors. A joint funding agreement between the USGS and the Council, undertaken at the committee's request, made it possible for the states and provinces to avail themselves of the expertise of the USGS in water data collection, evaluation and systems development, and to expand the study effort. The Council served the committee in an oversight capacity and took the lead in its organization as called for in the Great Lakes Charter. However, members of the committee were appointed directly by the governors and premiers of the eight Great Lakes states and the two Canadian provinces. The Great Lakes Commission served as the committee's secretariat.

The committee is grateful to the following agencies for their co-operation: the International Joint Commission, the U.S. Army Corps of Engineers, NOAA's National Ocean Service Section and Environment Canada. The committee also extends its thanks to the provinces of Ontario and Quebec for their provision of the French translation of this report.



Bruce Baker



Richard S. Bartz



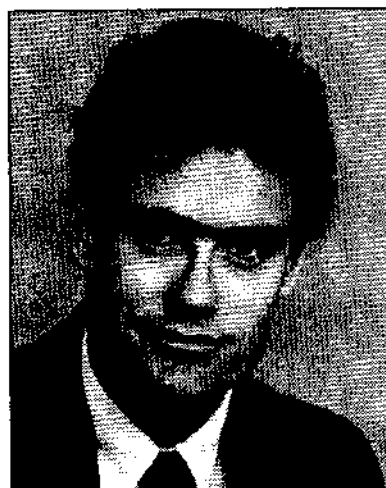
Thomas M. Bruns



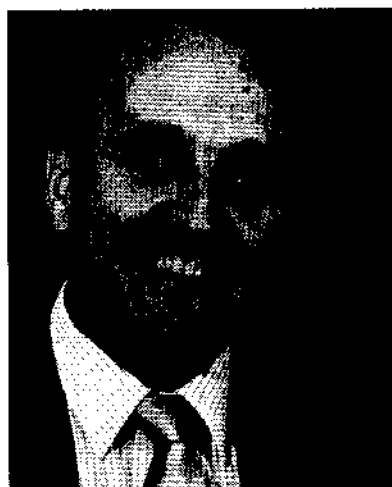
Neil R. Fulton



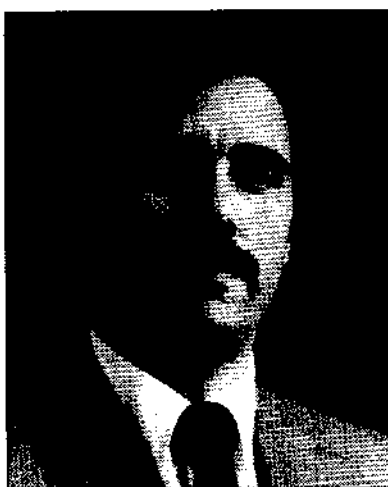
Michael R. Garrett



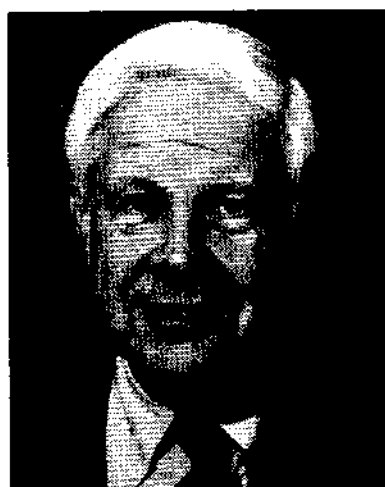
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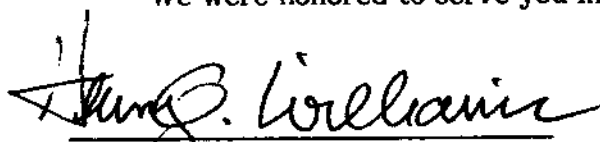
Dear Governors and Premiers:


We are pleased to provide you with the final report of the Great Lakes Water Resources Management Committee. The report contains recommendations on:

- the identification of specific common water data needs;
- a system for the collection and exchange of comparable water resources data;
- an institutional arrangement to facilitate the exchange and maintenance of information;
- a prior notice and consultation process; and
- the establishment of a Great Lakes Basin Water Resources Management Committee.

The submission of this report completes the assignment of the Water Resources Management Committee as provided for by the Charter and allows the committee to dissolve.

We were honored to serve you in this capacity.


Henry G. Williams, New York
Chairman


Bruce J. Baker, Wisconsin

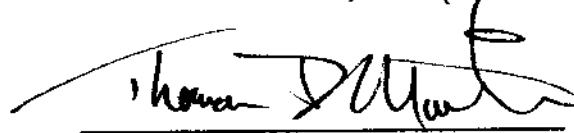

Richard S. Bartz, Ohio

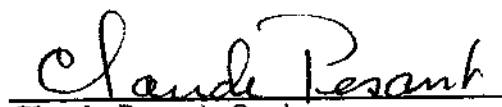

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TABLE OF CONTENTS

Executive Summary	ix
Chapter One: Water Quantity Data Collection and Management	1
Introduction	1
Objectives of a Regional Information System	2
Status of State/Provincial Data Collection Efforts	2
Legislation and Regulations Governing Data Collection	3
A Regional Water Quantity Data Collection System	7
Findings and Conclusions	8
Chapter Two: Prior Notice and Consultation Process	10
Introduction	10
Prior Notice and Consultation Process	10
Participation in the PNC Process:	
Status of State/Provincial Eligibility	13
Findings and Conclusions	17
Chapter Three: Institutional Arrangements	19
Introduction	19
Criteria	19
Findings and Conclusions	19
Chapter Four: Recommendations	21
Appendices	
Appendix A: Water Resources Management Committee	27
Appendix B: Definitions	35
Appendix C: Draft Resolution to Establish the Great Lakes Commission as the Great Lakes Basin Water-Use Data Repository for the Great Lakes States and Provinces	39
Appendix D: Draft Resolution on Initial Eligibility Criteria for Participation in the Prior Notice and Consultation Process	43
Appendix E: Draft Resolution to Establish the Great Lakes Basin Water Resources Management Committee	47
Tables	
1. Water Use Data Collection and Regulatory Programs by State and Province	14

EXECUTIVE SUMMARY

Introduction

The waters of the Great Lakes system are a dominant feature in the region. Residents within the Basin comprise one-third of the Canadian population and one-seventh that of the United States. From historical times until the present day, the lakes have been a source of sustenance and growth. However, only in recent years, when it became apparent that the enormity of the lakes was no warranty against their depletion or degradation, have the inhabitants of the Great Lakes Basin fully comprehended the aesthetic, environmental and economic significance of the resource. The most obvious use of Lakes Superior, Michigan, Huron, Erie and Ontario is as a vast reservoir of drinking water. They serve as the domestic water supply for more than 30 million of the Basin's 37 million residents. But they are also a livelihood. In 1975, economic activity associated with the lakes in the eight Basin states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin) amounted to \$155 (U.S.) billion; in the two Canadian provinces of Ontario and Quebec, \$27 (U.S.) billion in revenues is linked to the lakes.

Although the Great Lakes contain one-fifth of the world's supply of fresh surface water, only about one percent of the total volume of these remarkable ice-age remnants is renewable annually through precipitation. According to an International Joint Commission sponsored study, any intervention in water supplies thus has greater implications than absolute quantities might suggest and will be felt throughout the system.

In light of the contribution made by the lakes to the region's quality of life, and in the wake of United States federal and Supreme Court decisions related to interstate water transfers, the Great Lakes states and provinces have embarked upon a cooperative effort to protect and maintain the Great Lakes Basin resource—whether from external or internal pressures. The guiding framework for this effort is the Great Lakes Charter, an agreement signed February 11, 1985, by the governors and premiers of the ten Great Lakes jurisdictions. The Charter affirms that the primary responsibility for management of the Great Lakes water resource rests with the states and provinces. Its expressly stated purposes are to:

Conserve the levels and flows of the Great Lakes and their tributary waters; to protect and conserve the environmental balance of the Great Lakes ecosystem; to provide for cooperative programs and management of the water resources of the Great Lakes by the signatory States and Provinces; to make secure and protect present developments within the region; and to provide a secure foundation for future investment and development within the region.

Water Resources Management Committee

As a first step toward achieving these objectives, the Charter mandated the formation of this Water Resources Management Committee. Its members, appointed by the governors and premiers, were selected for both policy and technical management expertise related to water quantity data collection and management of the resource. The committee's charges include identifying specific common water data needs; development and design of a system for the collection and exchange of comparable water resources management data; recommending institutional arrangements to facilitate the

exchange and maintenance of such information; and development of procedures to implement the prior notice and consultation process established in the Charter. Three subcommittees were formed to assist the full committee with its work. One addressed elements comprising a regional data base; the second, institutional criteria for storing, maintaining and exchanging data. The third was a subcommittee of the whole formed to develop prior notice and consultation procedures.

Prior to initiating its effort in September, 1985, the committee conferred with representatives of the International Joint Commission, its U.S. Great Lakes Water Levels Section, the U.S. Geological Survey (USGS), the U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration's National Ocean Service Section, and Environment Canada to discuss water resources data gathering efforts that might be incorporated or adapted for use on a regional and state/provincial basis and to ensure that the regional water quantity data system proposed would complement and strengthen, where possible, existing data collection efforts. A \$200,000 grant awarded by NOAA to the Council of Great Lakes Governors was applied to research and development appertaining to state data gathering objectives. A joint funding agreement between the Council and the USGS, entered into at the committee's recommendation, enabled the committee to broaden its study effort, including research and survey work applicable to the provinces of Ontario and Quebec. The USGS expended \$189,000 on its portion of the project. (See the USGS report produced for the committee: "Water-Use Data-Collection Programs in the Great Lakes-St. Lawrence River Basin States and Provinces: A Comparison of Withdrawal-Data Programs, By Water-Use Category and By State and Province.")

This report presents the results of the committee's efforts over the past 15 months, together with its findings, conclusions and recommendations for further action. This report represents a vital first step toward the development of the comprehensive Basin water resources management program as outlined in the Great Lakes Charter.

Chapter One: Water Quantity Data Collection and Management

The committee reviewed the objectives of a water quantity data collection system for both diversions and consumptive uses, contrasting them with complementary government and agency initiatives involving development of a consistent approach to Great Lakes water data collection and Basin water management. State and provincial legislation and regulations governing data collection were outlined and the status of state/provincial data collection efforts reviewed and evaluated for consistency and gaps vis-a-vis the other states and provinces and Great Lakes Charter provisos.

The committee finds that the completeness of data collected for water-use categories varies considerably, corroborating the Charter finding that a need exists to make data available in a "uniformly accessible manner." Most jurisdictions do not collect consumptive use information, and estimate it for only one category: public-water supply.

The committee further finds that a wide variety of hardware and software is used by the states and provinces to store and process water quantity data, but that the capability exists to interface water quantity data with a centralized data base either through utilization of existing equipment, through purchase of additional equipment or through use of equipment owned by other agencies in the state or province.

Based on its observations, the committee concludes that a regional water-use data base should be organized by water-use category and aggregated by drainage basin. The

committee finds that a regional data base should set uniform trigger levels with regard to data transmitted by the states and provinces, such levels initially to be those recommended by the Great Lakes Charter. These levels may be subject to refinement following annual reviews of the data base.

Chapter Two: Prior Notice and Consultation

The committee proposes a prior notice and consultation process that establishes protocols and requirements for (i) the identification of appropriate contacts in each jurisdiction, (ii) initiating the process, (iii) participation in the process, (iv) notifying states and provinces of proposals involving water diversions and consumptive uses, (v) submitting comments or objections to such proposals, (vi) convening a consultation meeting, and (vii) notifying states and provinces of the regulatory decision made on diversion or consumptive use proposals. The process also provides for annual consultation among the states and provinces on cumulative impacts of diversions and consumptive uses.

Chapter Three: Institutional Arrangements

The committee examined five options for storage of a regional water quantity data base and finds centralization in an existing agency or organization most appropriate for storage of the regional data. It concludes that the initial function of a centralized repository site should be to develop or "write" the computer software for the Great Lakes Regional Water-Use Data Base; to write a standard set of retrieval programs; to accept, enter and distribute data; to adjust its program as data elements in the data base change; and to assist in computer program development. The states and provinces should be responsible for providing annual data to the repository. Any specific requirements of the software or hardware chosen by the agency implementing the regional data information system must be explained to the personnel furnishing the data on behalf of the states and provinces. The repository should be capable of providing data according to routine or specified intervals as requested by each state and province. The committee finds that the states and provinces should have the discretion of determining the means by which data will be supplied to the centralized facility (i.e., as hard copy, via a modem or other type of data transfer.)

Recommendations

Based on the foregoing considerations, findings and conclusions, the committee offers recommendations which it believes will effectively address future management of the Great Lakes Basin water resources.

1. Regarding collection and management of water quantity data, the committee proposes that—
 - (a) The Great Lakes Regional Water-Use Data Base be organized by water-use category and aggregated by sub-basin.
 - (b) Formation of a data base be comprised of the following elements: categories of use (public-water supply; domestic self-supplied; irrigation; industrial, commercial self-supplied, mining; agricultural (livestock); thermoelectric power; hydroelectric power; withdrawal type; geographic area (state/province and sub-Basin); annual amount; amount diverted out of

- the Basin; amount diverted into the Basin; amount consumed; predominant level of accuracy; predominant level of aggregation; number of facilities withdrawing 100,000 gallons (380,000 litres) per day or more; and total amount of water withdrawn by these facilities.
- (c) The states and provinces identify facilities withdrawing water in excess of 100,000 gallons (380,000 litres) per day average in any 30-day period, and, document the amount of water these facilities withdraw. The trigger levels may be subject to further refinement following annual reviews of the data base.
 - (d) Each jurisdiction should undertake to improve its estimating techniques, coefficients used to report water use, and methodology, especially until the data base is "driven" by reported data as opposed to estimated values.
2. Regarding implementation of a prior notice and consultation process, the committee proposes that—
- (a) The public have the opportunity to review and comment on any project application pursuant to the laws of the respective regulating state or province; that the regulating state or province should hold a public meeting to solicit public comment on applications where consultation has been requested; that consultation meetings should be open for observation by the public; and that letters of comment and objection and other documents relating to the consultation process shall be considered public documents.
 - (b) The process as set forth in Chapter Three be adopted in its entirety.
3. Regarding initial eligibility of the states and provinces to participate in the prior notice and consultation process, the committee recognizes that insufficient time has passed since the signing of the Great Lakes Charter to reasonably expect all jurisdictions to have achieved the levels of water-use data and management/regulatory capabilities required by the Charter. Until all Great Lakes states and provinces can meet Charter eligibility requirements for participation in the process, the committee proposes that—
- (a) The following states and provinces be deemed eligible to participate in the prior notice and consultation process: Illinois, Minnesota, Ontario, Quebec and Wisconsin.
 - (b) Eligible states and provinces be encouraged to include all other states in the prior notice and consultation process.
 - (c) The governors and premiers act on the draft resolution "Eligibility Criteria for Participation in the Prior Notice and Consultation Process." (See Appendix D.)
4. Regarding institutional arrangements for the collection, storage and maintenance of the data base, the committee proposes that—
- (a) The regional data base be placed with an agency or organization that shall serve as a centralized repository.
 - (b) The centralized facility be responsible for maintenance of the data base including historical data; for creation of back-ups and updates; for retrieval of the data for summaries as requested by individual states and provinces; and for provision of annual reports.
 - (c) The Great Lakes Commission be selected as the centralized repository for the regional data base, based on the committee's review and evaluation of eight agencies, in light of facility expertise, proposed system

- implementation costs and other criteria.
 - (d) An initial system start-up implementation schedule commence in January, 1987. The system should be in place within nine months of the start-up date.
 - (e) The repository location be evaluated annually subsequent to start-up of data base implementation.
- 5. Regarding implementation of the above recommendations, the committee proposes that—
 - (a) The governors and premiers create within 60 days of formal approval of this report a Great Lakes Basin Water Resources Management Committee to be comprised of a representative from each Great Lakes state and province. The Committee shall:
 - 1. Supervise the implementation of the Great Lakes Regional Water-Use Data Base;
 - 2. Receive the annual report provided by the data base repository;
 - 3. Provide recommendations to the governors and premiers concerning the eligibility of each of the states and provinces to participate in the prior notice and consultation process;
 - 4. Oversee the prior notice and consultation process;
 - 5. Work on development of a Basin Water Resources Management Program;
 - 6. Prepare and submit to the governors and premiers an annual report on water-use activities and progress toward implementation of a Basin Water Resources Management Program; and
 - 7. Identify procedures for developing the management program elements noted in the Great Lakes Charter.
 - (b) The following sequence of steps be taken to implement the Great Lakes Regional Water-Use Data Base and prior notice and consultation process:
 - 1. The governors and premiers establish the Great Lakes Basin Water Resources Management Committee by appointing members within 60 days of adoption of this report, together with the recommendations of the Water Resources Management Committee.
 - 2. The governors and premiers approve the prior notice and consultation process recommended by this committee and the draft resolution pertaining to initial eligibility to participate in the process.
 - 3. Concomitantly, the governors and premiers act on the Water Resources Management Committee draft resolution to appoint an agency to serve as the repository for the Great Lakes Regional Water-Use Data Base, such agency to be charged with implementation of the data base under the joint oversight of the Great Lakes Basin Water Resources Management Committee and the Council of Great Lakes Governors.

CHAPTER ONE

WATER QUANTITY DATA COLLECTION AND MANAGEMENT

Introduction

For the states and provinces to accurately project future water-use needs or forecast the consequences of diversions or cumulative consumptive uses of Great Lakes Basin water, they must have access to reliable technical information in the form of a shared data base. The Great Lakes states and provinces, because of their relative abundance of water, have not needed to develop water registration and regulating programs. Consequently, the region's knowledge of water-use patterns and trends in the Basin has been unreliable because it was predicated primarily on estimates and derived projections. Water shortages in the Sunbelt, energy development, and growing intra-Basin demands on the resource have prompted the region's states and provinces to reassess their need to conserve Great Lakes waters.

The conservation of Great Lakes Basin waters is an important component of efforts on the part of the states and provinces to support and stimulate long-term economic growth that is consistent with environmental standards. In addition to providing water for business, industry and commerce, the region must assure it maintains the resource in the interests of the region's overall health, safety and welfare. Creation of a regional data base is, therefore, essential to a unified strategy to conserve and manage the lakes in the interests of maintaining and enhancing both economic and environmental values. This report therefore represents a vital first step toward the development of the comprehensive Basin Water Resource Management Program as outlined in the Great Lakes Charter.

The Charter calls upon each state and province to collect and maintain, in comparable form, data regarding the location, type and quantities of water use, including diversion and consumptive uses, and information regarding projections of current and future needs, in the interests of achieving these objectives.

Several government and agency initiatives complement the committee's effort to create a consistent approach to Great Lakes water-use data collection and Basin water management and were taken into consideration by the committee during the course of its work.

The U.S. Geological Survey's national water-use information program, begun in 1978 to meet the nation's need for a single source of uniform information on water use, seeks to collect, store and disseminate data similar to the types of withdrawal and consumptive use data called for in the Great Lakes Charter. The USGS program is a cooperative federal-state effort, intended to encourage and assist states in developing water-use data collection and management systems that are compatible with one another and with the system and software used at the federal level. The state USGS program is known as the State Water-Use Data System or SWUDS. Participation by the states is not mandatory and has been varied.

The Great Lakes Commission, an interstate compact commission involving the eight Great Lakes states, formed a Water Data Collection Task Force in October 1985. The Task Force conducted a mail survey of existing water-use data collection and management efforts of the Basin states and provinces. Results of the survey were furnished to the committee and used as the starting point for its own evaluation of

regional data collection efforts. The survey contains basic information on the type of water-use data currently being collected by the states and provinces, and the storage and management of this data.

The **International Joint Commission**, the **U.S. Army Corps of Engineers**, the **National Oceanic and Atmospheric Administration's Water Level Section** and **Environment Canada** have conducted studies and/or collected water quantity data pertinent to the committee's work.

Objectives of a Regional Information System

The regional information system adopted by the governors and premiers will be used to determine how much water is withdrawn from the Great Lakes Basin and the purpose of the withdrawal; how much water is consumed and the purpose for which it is consumed; the return flow or how much water is returned to the lakes after use; and how much water is diverted out of the Great Lakes Basin.

The establishment of a regional water-use data base will assist management efforts by providing:

- the states and provinces, and federal and international agencies with better basic information that can be applied to development of a water budget for the Great Lakes Basin;
- a more accurate base of data on present in-basin uses from which to project future in-basin demands;
- consistent, and, to the extent possible, uniform regional water-use data so that the uses and needs of individual jurisdictions may be compared and evaluated;
- a better understanding of the extent to which the cumulative effects of small-scale diversions and consumptive uses of Great Lakes water may affect lake levels and flows;
- information on which to base regional decisions relating to diversion and consumptive uses; and
- more accurate data to be applied to future research of the relationship between levels and flows and water use in the Basin.

Status of State/Provincial Data Collection Efforts

The Water Data Collection Task Force of the Great Lakes Commission sought to determine in its October, 1985, survey the extent of water withdrawal and return flow data available in the Great Lakes states and provinces, the accessibility of such data and its comparability and compatibility. Five categories of water use were surveyed: public-water supply; rural water use; irrigated agriculture water use; self-supplied industrial water use; and water use in thermoelectric and hydroelectric power production.

The USGS, in its more extensive study, undertaken in its capacity as a cooperator with the Council of Great Lakes Governors, examined Great Lakes state and provincial data collected for nine water-use categories: public-water supply; domestic self-supplied; irrigation, thermoelectric power; hydroelectric power; sewage treatment; industrial self-supplied; commercial self-supplied; and agricultural (livestock).

Inconsistencies

A number of discrepancies occur in data collection. In the public-water supply category the primary disparity is the inclusion of self-supplied water use by Wisconsin, Ontario and Quebec. However, these discrepancies with the definition selected by the committee (See Chapter Four: Recommendations) can be corrected through screening. As regards domestic self-supplied data, Minnesota and Ohio combine domestic and agricultural uses, and Illinois combines some small community systems in this category. Ontario combines the power categories, mining and industrial uses.

Gaps

Traditionally, state and provincial water management programs have not attempted to track consumptive uses or diversions. For the latter to be determined, a site-specific data base is required, which enables a jurisdiction to discover where water used actually ends up. Therefore, data on return flows is lacking for most of the states and provinces for several water-use categories. Pennsylvania monitors consumptive use for thermoelectric users. But, in general, consumptive uses are estimated, if considered at all.

Legislation and Regulations Governing Data Collection

Authority does not exist in every instance for collection of data proposed by the Water Resources Management Committee, based on Great Lakes Charter objectives. However, in several instances, such data is collected at the initiative of a state or provincial agency or ministry.

Illinois

The Illinois Department of Transportation, Division of Water Resources (IDOT) is authorized to issue allocation permits for all diversions of Lake Michigan water regardless of the category of use. There are no users in the Illinois Lake Michigan Basin of water for hydroelectric, livestock, commercial and domestic self-supplied or mining categories.

The IDOT, which has the authority to mandate metering of water use and to require reporting from water users, collects water-use data from all parties diverting Lake Michigan water. The collection of groundwater data for the diverted Lake Michigan Basin and the approximately 75 square-mile area that is tributary to Lake Michigan is undertaken by a joint effort of IDOT and the Illinois State Water Survey (ISWS). Although the ISWS does not have a legal mandate to collect water-use data, as the state's water research agency and repository for water data it has assumed this responsibility. It gathers data through surveys of total annual water use that it distributes to public-water suppliers and self-supplied industrial users. Responses to its questionnaires are voluntary; no trigger levels are specified. Currently, groundwater pumpage in the Lake Michigan Basin is limited to self-supplied domestic and commercial water-use categories. Data is also collected by ISWS on thermoelectric and nuclear power plant water use, public-water supply and industrial self-supply that is based on metered use.

Indiana

In 1983, the Indiana General Assembly enacted the Water Resources Management Act (I.C. 13-2-6.1). The Act requires the registration of all "significant water withdrawal facilities" or those with a capability of withdrawing in a single day more than 100,000 gallons of groundwater, surface water or a combination of the two. The Act is administered by the Indiana Natural Resources Commission through the state's Department of Natural Resources. The IDNR water registration form lists fourteen water-use sub-categories that are grouped under six major use categories: public-water supply, industrial, irrigation, energy production, rural and miscellaneous uses. Facilities in existence prior to July 1, 1984, were required under the Act to register with the IDNR by January 1, 1985; newly constructed facilities are required to register within three months of their completion. In addition to initial registration, the 1983 Act requires that owners of these facilities report annual water withdrawals beginning with the 1985 calendar year. Water-use for withdrawals of less than 100,000 gallons per day is estimated for domestic self-supplied, livestock and industrial self-supplied categories based on past surveys of water use and a 1980 inventory of all water use conducted by the Governor's Water Resources Study Commission. Water-use data for public water supplies is also collected by the Public Water Supply Division of the Indiana State Board of Health. Although no agency is mandated to collect water-use information on hydroelectric power plants, Indiana has hired a consultant to provide this information.

Michigan

The Michigan Safe Drinking Water Act, administered by the Michigan Department of Public Health (MDPH), authorizes collection of data on public-water supply. Withdrawal information is collected by mandated metering. In addition, public supply operators are required to submit monthly reports to MDPH. Although collection of data for other water-use categories is not mandated, the Michigan Department of Natural Resources (MDNR) conducts periodic surveys of irrigation and thermoelectric power plant water use and stores the data as county and hydrologic basin aggregates in the National Water Use Data System of the USGS. The USGS district office in Michigan estimates the remaining categories of water use in the state every five years in conjunction with the MDNR.

Under the Great Lakes Conservation Act, Public Act 133 of 1985, the Great Lakes and Water Resources Planning Commission was created to develop a statewide water management plan for Michigan. This plan must be submitted to the Governor and the Legislature by September 30, 1987.

Minnesota

Minnesota Statutes, Section 105.41, requires permitting of all users utilizing more than 10,000 gallons per day or 1 million gallons per year. Permit authority covers all but domestic users. Applications must be submitted for each groundwater or surface water source for which the user proposes appropriating water. Permittees are required to report water use on an annual basis. The applicant's report must furnish the total gallons withdrawn for each month. Authority to administer the law rests with the Minnesota Department of Natural Resources (MDNR). The agency automates data from annual reports for the following uses: public-water supply, irrigation (both agricultural and non-agricultural), thermoelectric power, industrial and commercial self-supplied, and mining. Water use is estimated for municipal, industrial and commercial water use that is not reported.

The MDNR stores its data with the Minnesota State Water Use Data System (MNSWUDS), developed by the MDNR in conjunction with the State Planning Agency/Land Management Information Center and the USGS, and provides annual figures to the USGS National Water Use Data System. The MNSWUDS is comprised of six separate administrative data bases, each of which contains files describing location, resource type, use type and volumes of water appropriated and discharged. Estimates of water withdrawal for domestic, livestock and hydroelectric power plants are made by the USGS. The state aggregates annual reported use information, which dates to 1980, by major use, county and watershed. The MDNR further supplements its data base by conducting surveys of specific projects or needs and by estimating non-reported water use for municipal, industrial and commercial water withdrawals.

New York

The New York State Department of Health (NYSDOH) is mandated to collect public-water supply data under Part 5 of the New York Sanitary Code and the U.S. Safe Drinking Water Act of 1974. Water data is collected for both public-water supply and commercial self-supplied enterprises, such as hotels. The state has required metering on most new or improved public water supply facilities since 1975. However, there are still some systems that are not fully metered. The NYSDOH local office records daily withdrawal data (the amount of water withdrawn and the amount used or sold) on a monthly basis; the state office records monthly data on an annual basis. The remainder of water-use categories are investigated by special projects or are estimated by various agencies, including the New York Department of Environmental Conservation and the USGS district office in New York. Under a cooperative program between the department and the USGS, water-use data compiled or estimated by the two agencies is stored in the State Water Use Data System.

Ohio

The Ohio Environmental Protection Agency (OEPA) has a legislative mandate to collect monthly, annual or tri-annual water withdrawal data for public water supplies by virtue of the federal Safe Drinking Water Act of 1974, and Sections 6109.04, 6109.12 and 6111.42 of the Ohio Revised Code. Metering is required for public-supply systems utilizing more than 1 million gallons per day (mgd) or serving more than 10,000 persons; otherwise, measurements are reported. For those systems serving in excess of 10,000 persons, monthly reports of daily values are required; smaller systems using surface water report annually. Those using groundwater, or that purchase water, report every three years. Data collected are stored on the USEPA's Model State Information System. The OEPA also collects information on commercial self-supplied facilities. The Ohio Department of Natural Resources (ODNR) estimates water use for domestic, irrigation and industrial categories based upon periodic surveys. Its authority to conduct such inventories is granted under Section 1521.03 (b) of the Ohio Revised Code. The USGS estimates water-use for livestock usage and thermoelectric power plants. There are no hydroelectric plants operating in the state's portion of the Great Lakes Basin. Estimated irrigation use is developed for ODNR by the Ohio State University—Extension Program.

Ontario

Water-use data for all categories except domestic self-supplied and agricultural can be collected by the Ontario Ministry of the Environment (OMOE). Withdrawals of water are estimated for both agricultural and livestock use categories.

The Ontario Water Resources Commission Act as amended March 29, 1961, authorized the regulation of water takings. The legislation, with subsequent amendments, is now designated as Section 20 of the Ontario Water Resources Act. Should a taking not normally require a permit but be liable in the Director's opinion to cause interference with any public or private interest in any water, it can be regulated under Section 20(4). A notice can then be issued prohibiting the taking without a permit. Permits are renewed at five- to ten-year intervals.

At present, OMOE's allocation permit files provide it with an extensive inventory of water-use sites.

Ontario, through the Lakes and Rivers Improvement Act, regulates all diversions within the province. The Act applies to all activities that alter or modify river or lake levels and flows proposed for projects by either the public or private sectors.

Pennsylvania

The Pennsylvania Department of Environmental Resources (PaDER), Bureau of Water Resources Management, State Water Plan Division, collects public-water supply data under the authority of the federal Safe Drinking Water Act and the regulations of Chapter 109 (December 8, 1984) implementing the Pennsylvania Safe Drinking Water Act, of May 1, 1984 (P.L. 206, No. 43). A water allocation permit is required initially of all suppliers withdrawing surface water. Once a permit is obtained, suppliers must respond to an annual survey conducted by PaDER.

The agency uses surveys to gather information for estimating water use in the industrial self-supplied, irrigation and mining categories. Under an agreement with the state's electric utility companies initiated in 1974, both fossil-fueled and nuclear powered plants report annually on their withdrawal and consumptive use. There is no water use for generation of electricity by hydroelectric plants in Pennsylvania's portion of the Great Lakes Basin. The USGS district office in Pennsylvania estimates water use for irrigation, agriculture and commercial categories. The information is compiled in five-year summary reports.

Quebec

Section 32 of the Quebec Environmental Quality Act requires a prior authorization for the establishment or modification of any new water intake for any purpose. This enables the Ministry of the Environment to monitor all new or increased surface or groundwater withdrawals.

The Ministry of the Environment may require from any individual, firm or municipal corporation any information needed to monitor water withdrawals. Quebec, in order to gather adequate data on water uses, has a comprehensive computer program for this purpose. The data base is divided into four categories: municipal; public and private institutions; industrial; hydroelectric and thermoelectric water uses. The ministry plans to make use of surveys to collect data for public-water supply, industrial, power plants and mining categories and will estimate water use for domestic self-supplied, irrigation and agricultural water-use categories.

Wisconsin

The State of Wisconsin has a system of water-use registration, permitting, allocation and reporting administered by the Wisconsin Department of Natural Resources (WDNR).

Various state laws govern the water-use reporting requirements of major water users.

Section 30.18, Wis. Statutes, is administered by the WDNR and requires a permit for withdrawal of any amount of water from streams for the purpose of irrigation, agriculture or maintaining or restoring the normal level of a navigable lake or flow of a navigable stream. Section 30.18 permits require monthly reporting during the six-month (April - September) irrigation season; other non-irrigation permit holders must provide monthly reports for the entire period specified in the permit. Section 30.18 also requires permit for withdrawals from streams or lakes resulting in a water loss (consumptive use or interbasin diversion) in excess of 2 million gallons per day (mgd).

Section 144.025, Wis. Statutes, requires a permit from WDNR for all persons (facilities or individuals) having the capacity to withdraw groundwater at a rate of 70 gallons per minute (gpm) or more; these persons report water use on a monthly basis. Categories of users required to have a permit under this "high capacity well" program include public, irrigation, thermoelectric, industrial, commercial, agricultural and mining. In addition, Section 144.025 requires public water suppliers (those serving 25 people or more), regardless of water source (ground or surface), to report daily water-use data once a month.

Section 144.04, Wis. Statutes, requires prior plan approval by WDNR for the construction of wastewater treatment plants, public power plants (thermoelectric and hydroelectric) and public-water utility facilities. Under Section 144.04, proposed withdrawals that will result in a water loss of 2 mgd or more must comply with the provisions of Section 144.026, Wis. Statutes, which governs water loss approvals.

A new regulation was created by 1985 Wisconsin Act 60, enacted November 13, 1985. This legislation came about as a direct result of the Great Lakes Charter. Act 60 created Section 144.026 of the Wis. Statutes and requires a registration of any facility withdrawing 100,000 gpd (70 gpm) or more in any 30-day period, and a water loss permit for any project involving a water loss of 2 mgd or more in any 30-day period. The existing regulations cited above (ss. 30.18, 144.025, and 144.04) were also amended by Act 60 to ensure consistency with the provisions of the newly created Section 144.026.

As a result of these laws and regulations, water-use data for withdrawals in excess of 100,000 gpd are regularly collected by WDNR for the categories of public-water supply, irrigation, self-supplied industrial and commercial, thermoelectric, agricultural, and mining. Hydroelectric water use is estimated from information obtained from the Wisconsin Public Service Commission. WDNR also has information obtained from USGS regarding the distribution of publicly supplied water to commercial, industrial, residential and other municipal users, as well as for below "trigger" level water use in the domestic self-supplied and agricultural water-use categories.

A Regional Water Quantity Data Collection System

The committee reviewed and evaluated recommendations for development of a regional water quantity data system made by the Water Collection Data Task Force of the Great Lakes Commission and by the USGS.

The Water Collection Data Task Force of the Great Lakes Commission noted in its final report that implementation of the USGS State Water Use Data System (SWUDS) in the Great Lakes region would be "an excellent way of facilitating water withdrawal and consumptive use data collection, research and information dissemination." System

advantages cited included consistency and compatibility of data collected and disseminated among the Great Lakes states and provinces; ease of data access as only one system has to be learned to retrieve data for the region; ability to aggregate and store the most pertinent water data, including the who, what, where, when, why and how of water withdrawal and return flow; the existence of established software that minimizes labor and costs required to establish a system; the adaptability of the software; and the capability to modify it for unique applications, including data analysis information and/or published reports. In addition, six of the states are currently using the system in some capacity. Disadvantages noted by the Task Force include the development of a funding formula for establishment of a centralized clearinghouse with adequate staffing levels and appropriate computer equipment, the difficulty of committing additional state and provincial funds to water resource programming and the fact that SWUDS does not involve the two Great Lakes provinces.

The Water Resources Management Committee subsequently determined that while the USGS/state experience with SWUDS is applicable to the development of a regional data-base repository, it is crucial that a regional system be tailored to the specific requirements of the states and provinces as set forth by this committee. Therefore, it requested that the USGS, in addition to reporting on the degree of implementation of the SWUDS program in each state, undertake a separate data system evaluation of methods used by each state and province to collect, process and store data, contrasting the results with Charter data-gathering objectives, desired end-user products, one another, and the SWUDS requirements. Based on the results of its research, including the evaluation of state and provincial data collection programs noted in the previous chapter, the USGS then prepared a description of a customized Great Lakes Basin Regional Water-Use Data Base System. This description and the results of the USGS analysis form the basis of the committee's criteria for proposing a regional water-use data system to the governors and premiers.

Findings and Conclusions

Based on its review and evaluation of the results of both the USGS survey of state and provincial data collection efforts and the previous survey conducted by the Great Lakes Commission Water Collection Task Force, the Water Resources Management Committee finds there exists considerable variation in the completeness of data collected by the states and provinces vis-a-vis one another and Great Lakes Charter objectives, corroborating the Charter observation that a need exists to make data available in a "uniformly accessible manner."

The committee finds there is a need for the states and provinces to more effectively identify and collect consumptive use data on individual large users. However, in the near term, providing information on all water withdrawals of 100,000 gallons (380,000 litres) per day should be given priority over providing more specific information on returns. In addition, the committee finds that data should be more accurately measured to allow the states and provinces to better determine the accumulative effects of water withdrawals.

The committee finds that a wide variety of hardware and software is used by the respective states and provinces to collect water quantity data, but that the capability exists to interface water quantity data either through utilization of existing equipment, through purchase of additional equipment, and/or through use of equipment owned by other agencies to which each of the states and provinces has access.

Based on its observations and the recommendations of its data base subcommittee, the Water Resources Management Committee concludes that the initial Great Lakes Basin regional water-use data base should be organized by water-use category and aggregated by drainage basin.

As regards legislation and regulations governing data collection, the committee finds that the authority exists in many instances to collect data that is not currently reported, while it will be necessary for some states and provinces to implement water-use data collection legislation and/or regulations.

CHAPTER TWO

PRIOR NOTICE AND CONSULTATION PROCESS

Introduction

In its review of a prior notice and consultation process (PNC), the committee relied on the procedures outlined in the Charter as a foundation, expanding them where necessary to develop a workable, consistent process. The consultation process is intended as a mechanism for fulfilling the determination of the states and provinces to approve or regulate major new or increased diversions or consumptive uses of Great Lakes Basin water resources only after seeking consent and concurrence of all the affected Great Lakes states and provinces. The process is advisory only; it establishes a channel for formal expression of concerns regarding diversions, while respecting the legal jurisdictions of the states and provinces over regulatory matters within their boundaries. As noted in the Charter, prior notice and consultation procedures "are meant to promote regional unity and the exchange of information, not to frustrate the carefully considered efforts of the states and provinces to safeguard the welfare of their citizens."

The PNC process as outlined here reflects the spirit of the Charter. It also recognizes that the authors of the Charter intended to use the right of participation in the PNC process to create an incentive for the Great Lakes states and provinces: (1) 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 (2) 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. Thus, the right of a state or province to participate in the PNC process is dependent upon its ability to satisfy these two criteria. However, the process as outlined here allows the regulating state or province to invite those states or provinces not meeting the requirements described above to participate.

Prior Notice and Consultation Process

I. Identification of Appropriate Water Management Agencies:

- o Each state/province shall identify, within 60 days following approval of the prior notification and consultation process by the governors and premiers, the water management agency or agencies in the state/province that are to receive notification.
- o A master mailing list shall be compiled and maintained by the executive director of the Council of Great Lakes Governors and shall include addresses for the offices of the governors and premiers and/or their designated representatives, and the appropriate water management agency or agencies as specified by each state and province.

II. Requirements Concerning Initiation of Prior Notice and Consultation Process:

- o The process of prior notice and consultation must be initiated by any state/province having management or regulatory authority over any phase of projects involving a new or increased diversion or consumptive use of the water resources of the Great Lakes Basin that exceeds an average of 5,000,000 gallons (19 million litres) per day in any 30-day period.

- o Where a state/province does not have management or regulatory authority over a project, it should initiate the PNC process to the fullest extent practicable.
- o Any state/province may, at its discretion, initiate the PNC process for projects involving a new or increased diversion or consumptive use less than the amount noted above.
- o The state/province having management or regulatory authority over a project involving a new or increased diversion or consumptive use of the water resources of the Great Lakes Basin that exceeds an average of 5,000,000 gallons (19 million litres) per day in any 30-day period shall notify the International Joint Commission if boundary waters are affected.

III. Eligibility Requirements for Participation in the Prior Notice and Consultation Process:

- o The right to participate as an objecting or commenting state/province in a PNC process is contingent upon a state/province providing information on water withdrawals in excess of 100,000 gallons (380,000 litres) per day average in any 30-day period to a "common base of data" and documenting that it has the authority to manage and regulate all new or increased water withdrawals involving a total diversion or consumptive use of Great Lakes Basin water resources in excess of an average of 2,000,000 gallons (7,600,000 litres) per day in any 30-day period.
- o The governors and premiers or their designees will acknowledge the eligibility of states and provinces meeting the requirements listed above. A list of eligible states and provinces shall be maintained by the executive director of the Council of Great Lakes Governors. Changes in the list of eligible states/provinces shall be approved by the governors and premiers or their designees. Determinations regarding the eligibility of a state or province shall be made as expeditiously as possible following notice by the governor or premier of that state/province that the jurisdiction has complied with the eligibility criteria.
- o A state/province in which the project is located may, at its discretion, invite states/provinces not meeting the eligibility requirements listed above to participate in the prior notice and consultation process.

IV. Procedure for Notification of States and Provinces:

- o At the appropriate point in each state/provincial regulatory process, but before a decision has been made, a notice will be drafted and mailed to the list developed under Section III, as provided by the executive director of the Council. States/provinces are encouraged to provide such notification as early as is practicable in the regulating process.
- o The notice should include, at a minimum:
 1. A copy, or a summary where appropriate, of the regulatory filing.
 2. The location of the proposed surface intake or well and source of the proposed water supply (Great Lakes/St. Lawrence River, tributary, groundwater).
 3. The size of the project, and description of use (including whether a seasonal or continual use).

4. The method of determining the amount of the diversion or consumptive use.
 5. A description of any mitigation measures or conservation practices that the applicant proposes to follow.
 6. An indication of whether the application involves the state/province or proponent selling water for use out of the Basin.
 7. A summary statement that describes the overall environmental, economic and hydrologic consequences of the proposed project.
- o Each state or province is responsible for providing notice to the appropriate agencies and interested groups in their state or province.

V. Comments/Objections:

- o Comments and objections submitted by a state/province shall come from the governors or premiers or their designated representatives. Each state or province is responsible for receiving and forwarding comments and objections received from appropriate agencies and other interested parties in their state or province.
- o Comments and objections shall be submitted within 45 calendar days of the date of notice.
- o Any objections submitted by a state/province should contain factual reasons for objections (i.e., hydrologic/economic/environmental impacts).
- o Comments or objections should be sent to each governor's or premier's office and designated representative with a copy to the regulating agency that issued the notice.
- o The regulating state/province shall carefully consider the comments and objections received, respond to any objections, and shall make reasonable effort to provide any additional information requested by a state/province.
- o Letter(s) of comment or objection must indicate whether a consultation meeting is being requested.
- o If a consultation meeting is requested, it must come from the governor's or premier's office or designated representative.

VI. Consultation Meeting:

- o The regulating state/province will convene a consultation meeting when a letter of objection or comment requesting a consultation meeting is received from a governor or premier or designated representative.
- o The regulating state/province will provide at least 30 days notice of the consultation meeting to the governors or premiers, or other designated representatives.
- o The regulating state/province will keep a record of the consultation meeting.

- o The regulating state/province shall describe the proposed project, including a discussion of expected benefits and any impacts, positive or negative, to the Great Lakes Basin.
- o Consultation meetings should be viewed as a process of communication between state and provincial representatives, but should be open for observation by the public.

VII. Notice of Decision:

- o The regulating state/province will circulate for review a draft decision memorandum that shall include findings of fact and the proposed decision by the regulating state of its intent to deny the application, approve it or approve it with conditions.
- o States/provinces may submit comments on the draft decision memorandum back to the regulating state/province within 30 days, with copies to be provided to the other participating states/provinces.
- o A final notice of decision shall be distributed by the regulating state/province within 15 days of regulation issuance/denial.
- o Each state or province is responsible for providing notice of draft decisions and decisions to the appropriate agencies and interested parties in their state or province.

VIII. Annual Consultation on Cumulative Impacts of Diversions and Consumptive Uses:

- o Each state/province shall prepare an annual report summarizing the total amount of diversions and consumptive uses, and the amount of diversions and consumptive uses approved during that reporting year.
- o An annual meeting to assess the cumulative impacts of these diversions and consumptive uses shall be held at the call of any state/province.
- o The executive director of the Council shall provide to the governors and premiers an annual status report on the eligibility of state/provinces to participate in the PNC process, such eligibility to be determined in accordance with the Charter and Section III of this prior notice and consultation document.
- o Each state or province is responsible for providing the annual report to the appropriate agencies and interested parties in their state or province.

Participation in the PNC Process: Status of State/Provincial Eligibility

The Great Lakes Charter observes that "...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."

The states of Illinois, Indiana, Minnesota, and Wisconsin, the commonwealth of Pennsylvania, and the provinces of Ontario and Quebec currently meet Charter eligibility requirements with respect to registration. Illinois, Minnesota, Ontario, Quebec and Wisconsin also comply fully with Charter eligibility requirements for ability to manage and regulate total water withdrawals or consumptive uses. Ohio has the ability to regulate diversions but not consumptive uses and Pennsylvania has the ability to permit for public-water suppliers from surface water sources only. A "report card" indicating the status of state and provincial eligibility to participate in the PNC process as set forth in the Charter is provided in Table 1, "Water-Use Data Collection and Regulatory Programs," followed by a synopsis of state and provincial diversion legislation.

Table 1
Water-Use Data Collection and Regulatory Programs

	Ability to Register 100,000+ Gallons Withdrawal (380,000 litres) per day	Ability to Manage or Regulate Diversions or Consumptive Uses Over 2,000,000 gallons (7,600,000 litres) per day
Illinois	Yes	Yes
Indiana	Yes	No ¹
Michigan	No	No
Minnesota	Yes	Yes ²
New York	No	No ²
Ohio	No	No ²
Ontario	Yes	Yes ³
Pennsylvania	Yes	No ³
Quebec	Yes	Yes
Wisconsin	Yes	Yes

¹ Authorized to regulate direct withdrawals of surface water from Lake MI

² Authorized to regulate diversions but not consumptive uses

³ Authorized to regulate for public water suppliers from surface sources only.

State-by-State Synopsis

Illinois

With the passage of Public Act 84-993 on September 26, 1985, Illinois amended its

Level of Lake Michigan Act to establish a consumptive use permit program within the state Department of Transportation's Division of Water Resources. The Act requires that Illinois' citizens or agencies desirous of diverting water from Lake Michigan for in-state use obtain allocation permits from the IDOT. Under the most recent amendment, new or increased consumptive uses of Lake Michigan water in excess of an average of 2,000,000 gallons per day in any 30-day period are subject to permitting. A consumptive use is defined as "that amount of water withdrawn or withheld from the Lake Michigan watershed and assumed to be lost or otherwise not returned to Lake Michigan or to any other waterway due to evaporation, incorporation into products, or other processes." The definition is based on language in the Great Lakes Charter.

Indiana

The state's 1983 Water Resource Management Act (I.C. 13-2-6.1) requires facilities having a withdrawal capability equal to or in excess of 100,000 gallons per day to register with the state's Department of Natural Resources. Registrants are required to submit an annual report of water use. The statute does not presently include provisions for a permitting system, although it does require basin studies that would evaluate sources of excess water and the need for interbasin transfers.

A 1984 amendment to I.C. 13-2-1 (Water Rights: Surface Water) falls into the category of water embargoes. The statute states: "There shall be no diversion of water from that part of the Great Lakes drainage basin within this State for use in a state outside the basin, unless the diversion is approved by the governor of each Great Lakes State."

Michigan

Michigan's Great Lakes Preservation Act (Public Law 130) became effective August 2, 1985. The Act places an embargo on any new out-of-basin diversions until one year after the Great Lakes and Water Resources Planning Commission submits a comprehensive state water plan to the governor and the Michigan Legislature. The Commission was itself created under the "Great Lakes Conservation Act" (Public Act 133), and has two years to complete its task. The Great Lakes and Water Resources Planning Commission is charged with compiling all available information on existing consumptive use, water diversion and conservation practices in the state. The Commission is to analyze and project future water requirements for the state.

Minnesota

Under its existing statewide water-use management program, Minnesota requires permits for water withdrawals in excess of 10,000 gallons per day or 1,000,000 gallons per year. Water withdrawn and lost "for immediate further use in the area," whether as a result of a diversion or consumptive use, is subject to this permitting legislation. Estimates of water withdrawn in Minnesota are based on annual reports submitted by permit holders.

Diversions of water from the state for use in other states or regions of the United States or Canada are discouraged under the "Appropriation and Use of Waters" statute. Authorization of such a diversion is contingent on approval by the state Legislature and on a determination by the commissioner of the Department of Natural Resources that the water remaining in the state after the proposed diversion has been initiated is adequate to meet the state's water resource needs during the specified life of the project.

New York

In 1984, New York enacted the Water Resources Strategy Act (Environmental Conservation Law Section 15-29) which provides the foundation and rationale for data base development. At this time, New York regulates some domestic water diversions but its water management program falls short of a comprehensive regulatory package. In the past, the unavailability of sufficient water-use data has hampered passage of water diversion legislation. This problem is addressed in legislation enacted July 19 (Chapter 377 of the Laws of 1985). The legislation authorizes and directs the state's Department of Environmental Conservation (DEC) to pursue the development and maintenance of a common data base regarding the use and management of the Great Lakes Basin water resources and to pursue and cooperate in the establishment of systematic arrangements for the exchange of water data and information among the signatories to the Great Lakes Charter. The DEC is authorized to develop a water resources management program for its portion of the Great Lakes Basin. Legislation passed in 1985, Chapter 356 of the Laws of 1985, regulates transport of fresh water out of the state. The legislation requires permits for water transport in excess of 10,000 gallons per day whether the use is for drinking water, or industrial or commercial use. The permit is required for certain water takings out of state (DEC Environmental Conservation Law Section 15-1505).

Ohio

Ohio's water diversion legislation, SB 360, enacted July 13, 1984, establishes a permitting program for diversions in excess of 100,000 gallons per day. Diversions proposed from either Lake Erie or the Ohio River drainage Basin are subject to permitting. (As noted in Table 1, the legislation does not address consumptive water uses.) The Act further provides for creation within the Ohio Department of Natural Resources of the Ohio Water Advisory Council. The Council is charged with reviewing and making recommendations on water management policy, legislation and long-term water management plans and programs.

Ontario

Ontario's Ministry of the Environment, under the Ontario Water Resources Act, is the major legislative authority for water supply. Under Section 20 of the Act, a permit is required of all persons, municipalities and industries for any withdrawal of water greater than 50,000 litres per day. Exemptions on withdrawals are given for domestic purposes, firefighting and the watering of home gardens, lawns, livestock and poultry.

As noted in Chapter One, the Ontario Ministry of Natural Resources regulates all diversions within the province through the Lakes and Rivers Improvement Act.

Pennsylvania

Pennsylvania, at present, has no comprehensive legal or institutional approach to water allocations, most of which are governed by "common law" cases dealing with riparian rights and groundwater withdrawals. Pennsylvania's 1939 Water Rights Act, developed during a time of apparent water abundance, regulates surface water withdrawals by public-water supply agencies only. The largest consumptive uses, including manufacturing and power takings, are not subject to regulation.

Quebec

Quebec's legislation provides the basic regulatory authority required to implement a water quantity management policy. The Ministry of the Environment is authorized to monitor all new or increased surface or groundwater withdrawals subject to additional reporting requirements. The Watercourses Act requires a permit from the Quebec Cabinet for the construction of dams or dikes on public or private watercourses and for the construction of any structure whatsoever on public watercourses. Any river diversion or major public or private undertaking (withdrawal) is subject by law to the Environment Quality Act and its regulations. The Ministry of the Environment is empowered by law to require from any individual, firm, or municipal corporation any information needed to monitor water withdrawals.

Wisconsin

Wisconsin's water diversion legislation (1985 Wisconsin Act 60), signed into law November 13, 1985, coordinates the standards recommended in the Great Lakes Charter with existing water-use registration and permitting programs administered by the state Department of Natural Resources. Known as the "Wisconsin Water Resources Conservation and Management Act", the legislation extends the application of withdrawal standards to cover all state surface and groundwaters, that is the water resources of the Upper Mississippi River Basin as well as those of the Great Lakes Basin.

All withdrawals in excess of 100,000 gallons per day in any 30-day period are subject to registration. Withdrawals that result in an interbasin diversion or consumptive use exceeding 2,000,000 gallons per day in any 30-day period are subject to permitting. If the department receives an application that, if approved, will result in a new water loss to the Great Lakes Basin averaging more than 5 million gallons per day in any 30-day period, or an increase in an existing withdrawal results in a water loss averaging 5 million gallons per day in any 30-day period above the applicant's authorized base level of water loss, the department is required to notify the governor or premier and the agency responsible for water resources management in each state and province of the Great Lakes region and, if stipulated under the Boundary Waters Treaty of 1909, the International Joint Commission.

Where proposed withdrawals will result in a diversion from the Great Lakes Basin, WDNR criteria used in granting permits include determinations that the state or province to which the water is diverted has developed and is implementing a plan for the management and conservation of its own water resources and that further development of its water resources is impractical.

Findings and Conclusions

The committee concludes that the PNC process is not intended to infringe upon a particular state or provincial regulatory process or to supplant the decision-making authority of the regulating state or province. It must be pointed out that including the process within a regulatory procedure may take up to 120 days. In jurisdictions where regulating review procedures are not run concurrently, this may lengthen the process. However, the committee finds this additional delay is necessary to allow adequate consideration of any large-scale diversion or consumptive use proposal by those states or provinces which may be affected.

The public has the opportunity to review and comment on any project application pursuant to the laws of the respective regulating states or provinces. Where a consultation is requested, the committee urges that the regulating state or province hold a public meeting to solicit public comment on the application. Consultation meetings should be viewed as a process of communication between state and provincial representatives, but should be open for observation by the public. Letters of comment and objection and other documents relating to the consultation process should be considered public documents. In addition, each state or province is free to pursue any public participation process it feels is appropriate.

CHAPTER THREE

INSTITUTIONAL ARRANGEMENTS

Introduction

In examining systematic arrangements for the exchange of water data and information, the Water Resources Management Committee considered five options for creating a regional data base:

1. Lateral exchange of data.
2. Centralization in an existing state agency or provincial ministry.
3. Centralization in an existing federal agency or agencies (i.e., one in Canada and one in the U.S.).
4. Centralization in an existing organization (for example, the International Joint Commission).
5. Centralization in a facility to be founded, funded and developed specifically for the purpose of housing the regional data base.

Criteria

The committee applied four major criteria to its review of these options: (1) the ability to have a system on line as soon as possible; (2) ease of data access for all states and provinces; (3) experience of the facility operators with water-use data compilation; and (4) existing capability(ies) involved with establishment of the system (availability and type of computers, storage capacity, existence of established software, availability of trained staff, capability of modifying the system for unique application, etc.)

Although under the first option, each state and province could provide the other jurisdictions with a disc containing its yearly data, centralization in terms of a data repository is clearly more appropriate to a regional data base, both in terms of collecting comparable and consistent data and storage, maintenance and ease of access. The administrative problems resulting from the need for "rotating" the system from state to province and province to state under the second option make it too unwieldy for similar reasons. The considerable time and expense that would be associated with founding a new facility as outlined in the fifth option makes it infeasible.

Findings and Conclusions

The committee has determined that centralization in an existing agency or organization would be most conducive to development, storage and maintenance of a regional data base.

It finds that the initial function of a centralized repository site should be to develop or "write" the software used to computerize the data base as designed. The repository should further suggest any computer language or data base management system and the hardware to be used. Any specific requirements of the software and hardware chosen should be explained by the repository staff to the personnel furnishing the data on behalf of the states and provinces. The responsibility of designing and distributing coding sheets and data base documentation should rest with the repository, in consultation with the Great Lakes Basin Water Resources Management Committee. (See page 22, Recommendation V. and Appendix E "Draft Resolution to Establish The Great Lakes Basin Water Resources Management Committee.") The repository should be responsible

for ensuring that the data is entered and stored. The repository should be capable of providing data according to routine or specified intervals as requested by each state and province; however, the obligation of supplying annual data each year should rest with the states and provinces.

The committee finds that the obligations of the facility selected to store the data should include: maintenance of the data base, including historical data; creation of back-ups and updates; and retrieval of the data for summaries and reports as requested by the states and provinces, or by addresses contained in any approved master mailing list. The states and provinces should have the discretion of determining the means by which data will be supplied to the repository (i.e., as hard copy, via a modem, or other type of data transfer.) Based on its findings, the committee directed the USGS project coordinator to contact 34 organizations for the purpose of ascertaining their ability and/or willingness to serve as the repository for the regional water-use data base. The eight agencies responding were asked to supply cost figures detailing the expense involved in providing these services and to note whether expenses constitute recurring costs or one-time costs of establishing a regional data base. In addition, the committee asked the USGS to prepare and submit its cost estimates for establishment of a customized Great Lakes aggregated water-use data base utilizing the same criteria. The committee's final recommendations regarding selection of a facility to implement a regional data system are contained in Chapter Four.

The committee finds that, given the complexity of the tasks to be implemented, it is expedient that an oversight group be created to ensure committee objectives are met and that work proceeds on remaining Great Lakes Charter objectives. A recommendation to this effect is also included in Chapter Four.

CHAPTER FOUR

RECOMMENDATIONS

The Water Resources Management Committee submits the following recommendations for Great Lakes Basin water resources data management and a prior notice and consultation process to the governors and premiers of the Great Lakes states and provinces:

- I. Regarding collection and management of water quantity data, the committee proposes that—
 - o The Great Lakes Regional Water-Use Data Base (GLRWDB) be organized by water-use category and aggregated by sub-basin.
 - o Trigger levels should be subject to further refinement following annual reviews of the GLRWDB.
 - o Each jurisdiction should undertake to improve its estimating techniques, coefficients used to report water use, and methodology, especially until the data base is "driven" by reported data as opposed to estimated values.
 - o Each jurisdiction should undertake to develop and implement such legislation and regulations as are necessary to allow for collection and reporting of data required by the Great Lakes Charter.
 - o The GLRWDB be comprised of the following elements:

1. Categories of Use

Public-water supply—Water withdrawn for all uses by public and private water suppliers and delivered to users that do not supply their own water. (Water suppliers provide water for a variety of uses such as residential, commercial, industrial and public water use.)

Domestic self-supplied—Water used for normal household purposes. Also referred to as residential water use, this category includes water used for drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns.

Irrigation—Water artificially applied on lands to assist in the growing of crops and pastures or in the maintenance of recreational lands, such as parks and golf courses.

Industrial, Commercial Self-supplied, Mining—Industrial water includes water used in the manufacture of metals, chemicals, paper and allied products. Commercial self-supplied refers to water used by motels, hotels, restaurants, office buildings and institutions, both civilian and military. Mining water use includes water used in the extraction or washing of minerals; solids, such as coal and ores; and liquids, such as crude petroleum and natural gas. Water used in quarrying and milling is also included in the mining category.

Agricultural (livestock)—Water used by cattle, sheep, goats, hogs and poultry.

Thermoelectric Power—Water used by plants fueled by nuclear power generation and by fossil fuels such as coal, oil or natural gas.

Hydroelectric Power—Water used to drive turbines that generate electric power. This category includes both "instream use" where water is used on a once-through basis and "offstream use" where water is recycled through pumped-storage systems. Neither use is considered a consumptive use.

2. Withdrawal Type

Great Lakes Surface water—Great Lakes and their connecting channels (the St. Clair River, the Detroit River, the Niagara River, St. Mary's River) and the St. Lawrence River.

Other Surface Waters—Tributary streams, lakes, ponds, and reservoirs within the Great Lakes Basin.

Groundwater—Generally all subsurface water as distinct from surface water.

3. Geographic Area

Sub-basins—Lakes Superior, Michigan, Huron, Erie, Ontario and the St. Lawrence River each comprise a sub-basin.

State or Province—Each jurisdiction constitutes a geographic area. The states include Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Wisconsin and the commonwealth of Pennsylvania. The provinces include Ontario and Quebec.

4. Annual Amount

This will be collected in terms of the year in which the data was measured and in volume in million gallons per day and million litres per day. The latter is the average for the reporting year (divide total amount by 365 days).

5. Amount Diverted

A transfer of water from the Great Lakes Basin into another watershed or from the watershed of one of the Great Lakes into that of another.

6. Amount of Water Diverted into the Basin (In mgd), By Category Or By Channel (Aqueduct), Manmade Canal, Etc.

7. Amount Consumed

Water that has evaporated, transpired, been incorporated into products, applied to crops, consumed by man or livestock or which is otherwise removed and not returned to the Great Lakes Basin. (Also referred to as water consumption and water consumed).

8. Predominant Level of Accuracy

Measured.

Partially measured—More than 50 percent of the water is measured.

Calculated or estimated—Includes water from a sample, or a coefficient tied to a known characteristic.

9. Predominant Level of Aggregation

More than 50 percent of the water is from a site-specific or an aggregated source.

10. Number of Facilities Withdrawing 100,000 Gallons per Day (gpd) or More

11. Total Amount of Water Withdrawn by the Facilities in Number 10 (in mgd)

- II. Regarding implementation of a prior notice and consultation process, the committee proposes that—
 - o The regulating state or province hold a public meeting to solicit comment on applications where consultation has been requested; consultation meetings be open for observation by the public; and letters of comment and objection and other documents relating to the consultation process be considered public documents.
 - o The process as set forth in Chapter Two be adopted in its entirety.
- III. The committee believes it is critical to the success of the PNC process that all of the states and provinces have an opportunity to participate in the process. The committee further recognizes that the strength of the Charter's mandate is drawn from the unity of the Great Lakes states and provinces, and that from this unity a consensus is forged to manage the Great Lakes Basin water resources. Therefore, regarding initial eligibility of the Great Lakes states and provinces to participate in the prior notice and consultation process, the committee proposes that—
 - o The governors and premiers recognize the eligibility of the following states and provinces to participate in the prior notice and consultation process: Illinois, Minnesota, Ontario, Quebec and Wisconsin.
 - o All states and provinces meeting the Great Lakes Charter eligibility criteria for participation in the prior notice and consultation process be encouraged to include all other Great Lakes states and provinces in the process.
 - o The governors and premiers act on the draft resolution "Initial Eligibility Criteria for Participation in the Prior Notice and Consultation Process." (See Appendix D.)
- IV. Regarding institutional arrangements for the collection, storage and maintenance of the data base, the committee proposes that—
 - o The regional data base be placed with an agency or organization that shall serve as a centralized repository for the GLRWDB.
 - o The centralized facility be responsible for maintenance of the data base, including historical data; for creation of back-ups and updates; for retrieval of the data for summaries as requested by the individual states and provinces; and for provision of annual reports.

- o The Great Lakes Commission be selected as the centralized regional data base repository, based on the committee's review and evaluation of eight agencies, according to criteria that include facility expertise and track record, ability to begin implementing the system in January of 1987, institutional contacts, existing computer capability and trained staff, ease of data entry, retrieval and manipulation to satisfy state/provincial demands, experience with water-use data compilation, security of the data, and cost of system start-up and maintenance.
- o The GLRWDB system implementation schedule commence in January, 1987. The system should be in place within nine months of the start-up date.
- o The repository location be evaluated annually subsequent to start-up of data base implementation.

V. Regarding implementation of the above recommendations, the committee proposes that—

- o The governors and premiers create an oversight group to be known as the Great Lakes Basin Water Resources Management Committee. The purpose of the committee will be to:
 - a. Supervise the implementation of the Great Lakes Regional Water-Use Data Base;
 - b. Receive the annual report on water use compiled by the Great Lakes water-use data repository;
 - c. Provide recommendations to the governors and premiers each January first on eligibility of each state and province to participate in the prior notice and consultation process;
 - d. Oversee the prior notice and consultation process;
 - e. Work on development of a Basin Water Resources Management Program;
 - f. Prepare and submit to the governors and premiers each June 30th an annual report on water-use activities and progress toward the development of the Basin Water Resources Management Program; and
 - g. Identify procedures for developing the management program elements for the Basin Water Resources Management Program as referred to in the Charter.
- o The sequence of steps taken to implement the Great Lakes Regional Water-Use Data Base and prior notice and consultation process are as follows:
 - a. The governors and premiers accept the recommendations of the Water Resources Management Committee;
 - b. The governors and premiers establish the Great Lakes Basin Water Resources Management Committee by appointing members within 60 days of the adoption of this report;
 - c. The governors and premiers approve the prior notice and consultation process recommended by the committee and the resolution pertaining to initial eligibility to participate in the process; and
 - d. Concomitantly, the governors and premiers act on the Water Resources Management Committee resolution to appoint an agency to serve as the repository for the Great Lakes Regional Water-Use Data Base, such agency to be charged with implementation of the data base under the joint oversight of the Great Lakes Basin Water Resources Management Committee and the Council of Great Lake Governors.

APPENDIX A
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WATER RESOURCES MANAGEMENT COMMITTEE

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APPENDIX B

DEFINITIONS

DEFINITIONS

Withdrawal	the removal or taking of water from surface or groundwater. ¹
Consumptive Use	that portion of water withdrawn or withheld from the Great Lakes Basin and assumed to be lost or otherwise not returned to the Great Lakes Basin due to evaporation, incorporation into products or other processes. ¹
Diversion	a transfer of water from the Great Lakes Basin into another watershed or from the watershed of one of the Great Lakes into that of another. ¹
Interbasin Diversion	a transfer of water from the Great Lakes Basin into another watershed. ¹
Intrabasin Diversion	a transfer of water from the watershed of one of the Great Lakes into that of another. ²
Great Lakes Basin	the watershed of the Great Lakes and the St. Lawrence River upstream from Trois Rivieres, Quebec. ¹
Great Lakes Basin Water Resource	the Great Lakes and all streams, rivers, lakes connecting channels, and other bodies of water, including tributary groundwater, within the Great Lakes Basin. ¹
Great Lakes Basin Ecosystem	the interacting components of air, land, water and living organisms, including humankind, within the Great Lakes Basin. ¹
Great Lakes States and Provinces	the States of Illinois, Indiana, Michigan, Minnesota, New York, Ohio, and Wisconsin, the Commonwealth of Pennsylvania, and the Provinces of Ontario and Quebec. ¹
Great Lakes Sub-basin	Lakes Superior, Michigan, Huron, Erie, Ontario and the St. Lawrence River each comprise a sub-basin. ²
Great Lakes Region	the geographic region comprised of the Great Lakes States and Provinces. ¹

¹ Definitions included in the Great Lakes Charter and retained in this report.

² Definitions that were not included in the Great Lakes Charter and added for the purpose of clarity.

APPENDIX C

**DRAFT RESOLUTION TO ESTABLISH THE GREAT LAKES COMMISSION
AS THE GREAT LAKES WATER-USE DATA REPOSITORY**

RESOLUTION

ESTABLISHMENT OF THE GREAT LAKES COMMISSION AS THE GREAT LAKES REGIONAL WATER-USE DATA BASE REPOSITORY

WHEREAS, the Water Resources Management Committee has recommended the establishment of a centralized data base to facilitate the comprehensive and coordinated effort by the Great Lakes states and provinces to manage the Great Lakes Basin; and

WHEREAS, the Great Lakes Commission has the ability to begin implementing the data base immediately in a consistent format and at a centralized facility; and

WHEREAS, the Great Lakes Commission has experience in water-use data collection; and

WHEREAS, the Great Lakes Commission has the ability to maintain a secure repository;

NOW, THEREFORE, THE GOVERNORS AND PREMIERS OF THE GREAT LAKES
RESOLVE:

1. To designate the Great Lakes Commission as the repository for the Great Lakes Regional Water-Use Data Base with the understanding that the Great Lakes Commission will begin implementing the data base upon adoption of the resolution, such implementation to proceed in accordance with data base categories and objectives recommended by the Water Resources Management Committee.
2. Implementation of the Great Lakes Regional Water-Use Data Base shall proceed in consultation with the Great Lakes Basin Water Resources Management Committee, and under the oversight of the Council of Great Lakes Governors.

APPENDIX D

**DRAFT RESOLUTION ON INITIAL ELIGIBILITY CRITERIA FOR
PARTICIPATION IN THE PRIOR NOTICE AND CONSULTATION PROCESS**

RESOLUTION

INITIAL ELIGIBILITY CRITERIA FOR PARTICIPATION IN THE PRIOR NOTICE AND CONSULTATION PROCESS

WHEREAS, it is critical to the success of the prior notice and consultation process that all of the states and provinces have an opportunity to participate; and

WHEREAS, directed and purposeful management of the Great Lakes Basin is dependent on the establishment of systematic arrangements for the exchange of water quantity data provided on a continuing basis and the gathering by the states and provinces of accurate and comparable information; and

WHEREAS, 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; and

WHEREAS, except for a diversion that has been previously authorized, the Water Resources Development Act of 1986 (PL 99-662) requires the consent of each of the governors of the eight Great Lakes states prior to the authorization of any new interbasin diversion; and

WHEREAS, the rights of each state and province under the Great Lakes Charter are mutually dependent upon the good-faith performance by each state and province of its commitments and obligations under the Charter;

NOW, THEREFORE, THE GREAT LAKES GOVERNORS AND PREMIERS RESOLVE:

1. That the following states and provinces fully comply with the Great Lakes Charter eligibility criteria for participation in the prior notice and consultation process: Illinois, Minnesota, Ontario, Quebec and Wisconsin.
2. That all states and provinces meeting Great Lakes Charter eligibility criteria for participation in the prior notice and consultation process be encouraged to include all other Great Lakes states in the process.
3. That the governors of the Great Lakes states utilize the prior notice and consultation process for the purpose of implementation of Section 1109, PL 99-662.
4. States not initially eligible to participate in the prior notice and consultation process are urged to continue their good faith participation under the Charter.

APPENDIX E

**DRAFT RESOLUTION TO ESTABLISH
THE GREAT LAKES BASIN WATER RESOURCES MANAGEMENT COMMITTEE**

RESOLUTION

ESTABLISHMENT OF A GREAT LAKES BASIN WATER RESOURCES MANAGEMENT COMMITTEE

WHEREAS, the Great Lakes Charter established a framework for management of the Great Lakes Basin and specified the establishment of a Water Resources Management Committee to more fully develop a consistent and unified approach to comprehensive water resources management in the Great Lakes Basin; and

WHEREAS, the Water Resources Management Committee has completed its charge as set forth in the Charter; and

WHEREAS, there is a recognized need to provide continued oversight to review and monitor water-use data collection and management within the Great Lakes Basin;

NOW, THEREFORE, THE GREAT LAKES GOVERNORS AND PREMIERS RESOLVE:

1. To establish the Great Lakes Basin Water Resources Management Committee to be comprised of a representative from each Great Lakes state and province. The Committee will be created within 60 days of formal approval of this report by the Great Lakes governors and premiers and shall proceed under the oversight of the Council of Great Lakes Governors.
2. To charge the Committee with the following responsibilities:
 - (a) Review and monitoring of water-use data collection procedures of the states and provinces for consistency and completeness according to criteria specified by the Water Resources Management Committee;
 - (b) Receipt of the annual report on water use provided by the Great Lakes Water Use Data Repository;
 - (c) Preparation of an annual report on water-use activities and progress toward the development of a Basin Water Resources Management Program to be submitted to the governors and premiers each June 30th;
 - (d) Providing recommendations to the governors and premiers concerning the eligibility of each of the states and provinces to participate in the prior notice and consultation process, such status report to be provided each January first;
 - (e) Oversight of the prior notice and consultation process adopted by the governors and premiers;
 - (f) Work on development of a Basin Water Resources Management Program to protect and conserve the environmental and economic balance of the Great Lakes Basin ecosystem and to provide improved information for future water planning and management decisions as called for in the Great Lakes Charter. The Committee shall coordinate its activities with other water management activities proceeding in the region.
 - (g) Identification of procedures for developing the management program elements for the Basin Water Resources Management Program as referenced in the Charter.