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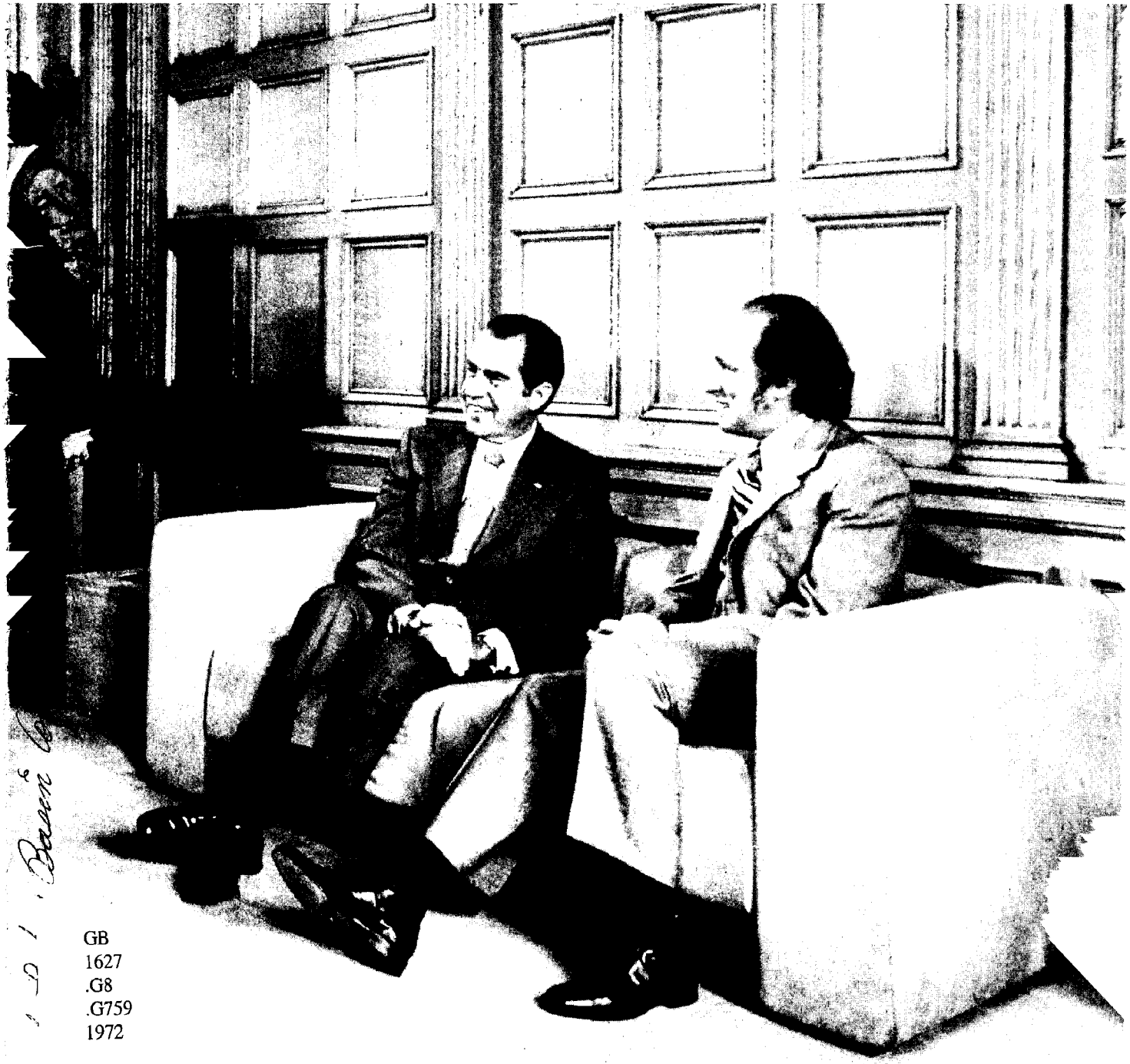
Great Lakes Basin Commission

ANNUAL REPORT

Fiscal Year Ending June 30, 1972



To the Great Lakes Basin Commission, in recognition of its contribution toward negotiation and consummation of the agreement with Canada for Water Quality in the Great Lakes —Richard M. Nixon

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To the Great Lakes Basin Residents:

Fiscal year 1972 saw some unusual accomplishments in the Great Lakes Basin. The Great Lakes Basin Commission played a major part in furthering progress towards a water quality agreement for the Great Lakes in its negotiations with Canada and encouragement from the Congress of the United States to act with expediency. Only with the cooperation of the Great Lakes States could the Great Lakes Basin Commission make such a contribution to an international agreement.

The conference of Great Lakes Governors and Premiers held in conjunction with the August 1971 quarterly Commission meeting was another major step toward the accomplishment of the water quality agreement so long anticipated. Through its new member agency, the State Department, and agreement negotiations, the Basin Commission has intensified its coordination in water and related land resource planning and hopes that Canadian planning will move on a parallel course.

The continuing active participation by Commissioners from eleven Federal agencies and eight Great Lakes States made possible intensive participation in agreement negotiations and reduced obstructions inherent in multi-level governmental coordination.

Fiscal year 1972 was an extremely successful year in the evolution and development within the Great Lakes Basin Commission. I am proud to transmit this annual report to the public through the Water Resources Council, the Congress, and President of the United States and anticipate another successful year for the Great Lakes Basin Commission.

Sincerely,

Frederick O. Rouse
Chairman

CONTENTS

Coordination 1

Great Lakes Basin Framework Study 3

Institutional Arrangements Considered 5

The Great Lakes States 6

Interstate Compact and Federal Agencies 8

Related Activities 10

Limnological Systems Analysis and
Great Lakes Environmental Planning Study 11

Grand River Study 12

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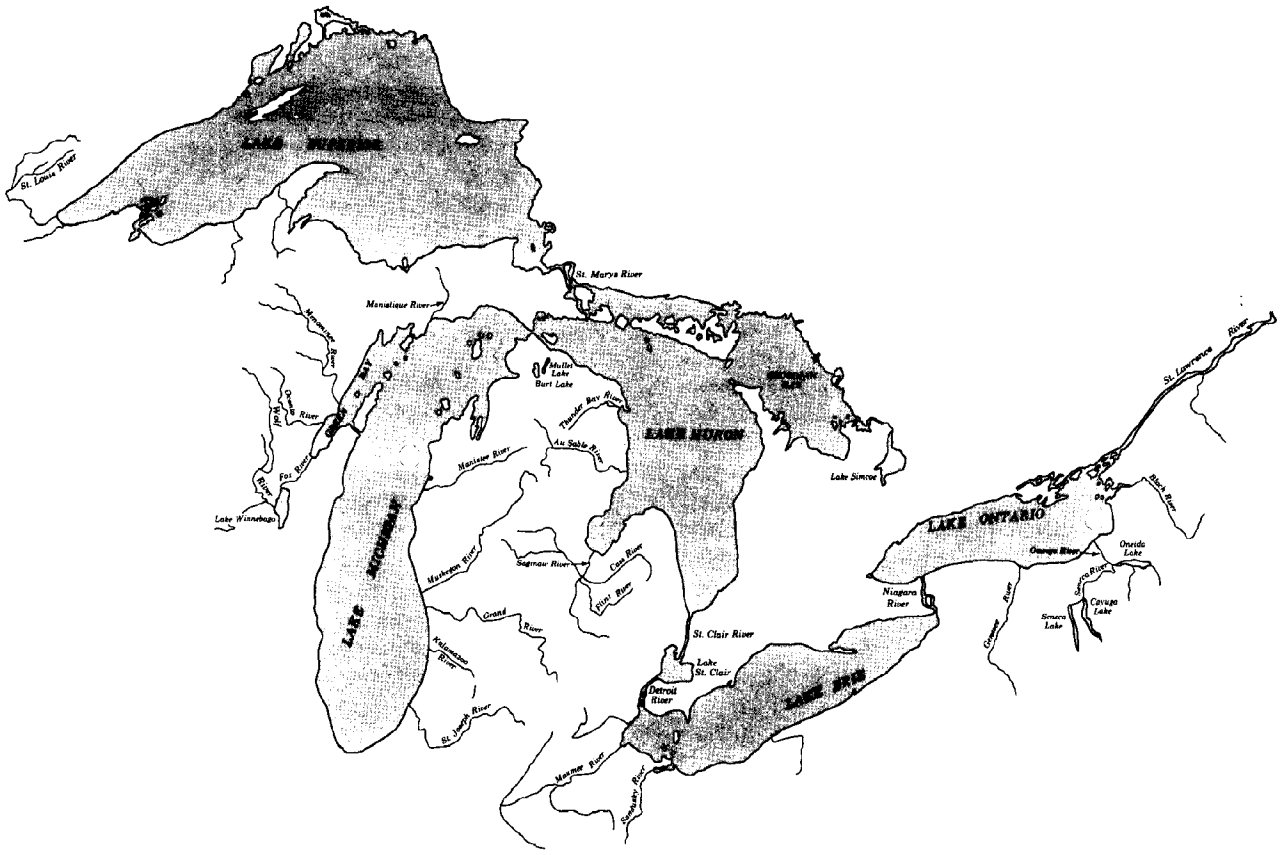

Coordination

US/CANADIAN WATER QUALITY AGREEMENT

The Great Lakes Basin Commission was represented by Chairman Frederick O. Rouse when President Nixon and Prime Minister Trudeau signed the Executive Agreement for water quality in the Great Lakes.

Mr. Rouse had participated actively on the US Negotiating Team which, working with a similar Canadian team, assisted in preparing the Agreement for signature. The Agreement marked the achievement of an effort, begun 60 years ago by the International Joint Commission, toward prevention of damaging pollution in the US/Canadian boundary waters.

Agreement Details

The US/Canadian Great Lakes Water Quality Agreement provides for action on some matters now and establishes procedures for arriving at agreement later on others. It sets a maximum allowable daily average phosphorus discharge from all large municipal waste treatment plants at one milligram per liter in Lake Erie, Lake Ontario, and the international section of the St. Lawrence River, and states that waste treatment of industrial plant discharges should be designed to achieve maximum practicable reduction of phosphorus discharges to the lower Lakes. Determination on the gross reduction of phosphorus input to Lakes Superior and Huron (including the St. Marys River) is to be accomplished within one year.

The eight annexes of the Agreement deal with specific water quality objectives; vessel design, construction, and operation; vessel wastes; studies on pollution from vessels; polluted dredged spoil; onshore/offshore facility discharges; and a joint contingency plan for oil spills, as well as phosphorus loading limitations.

One of the three references to the International Joint Commission under the two-country agreement is for the future study of pollution problems of Lake Huron and Lake Superior. It asks that the Commission determine whether or not there is water quality degradation in Lakes Superior and Huron and if so, how much, by whom, and where. The IJC in making its report on these matters is to suggest remedial measures and estimate probable costs.

In addition to the Lakes Huron and Superior reference, two other references to the International Joint Commission concern establishment of a Research Advisory Board and a study of pollution from agricultural, forestry, and other land use activities. The Research Advisory Board is to be set up under IJC to review regularly the US and Canadian Great Lakes water quality research activities in an attempt to search out

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inadequacies in scope, funding, and schedules and make recommendations for improvements. The other reference instructs the IJC to determine if the boundary waters of the Great Lakes are being polluted by surface runoff and sediment, and if so, how much, why, where, and how to correct the problem.

Progress Toward Great Lakes Water Quality

The preliminary work behind the Executive Agreement for Great Lakes water quality began in the early 1960s. By 1964 the governments of Canada and the United States had decided to use the Boundary Waters Treaty of 1909 to ask the International Joint Commission to look into certain aspects of water quality problems in the lower two Great Lakes and connecting channels. Reports from their studies in 1969 indicated that water quality problems were not receiving adequate remedial action and that drastic measures were necessary for pollution control.

In 1970, the International Joint Commission made 22 recommendations to the governments of the United State and Canada for the improvement of Great Lakes water. A Joint Working Group and ten sub-groups held many meetings and wrote reports which covered the full range of possible actions. On the basis of these reports, the ministers of the two governments agreed to negotiate an international water quality agreement for the Great Lakes. Frederick O. Rouse, Chairman, Great Lakes Basin Commission, secured the detailed participation of the eight Great Lakes States, and represented them on the US/Canadian negotiating team.

After a series of intensive meetings on an accelerated schedule, the United States and Canadian technical groups reached substantial concurrence regarding the Agreement and the contents of ten or eleven annexes. The Agreement was subject to further consideration by the negotiating teams of the two countries after the final provisions of the annexes were established by the technical committees.

The Agreement establishes a permanent office with a secretariat in the Great Lakes Basin, a Water Quality Board, and a Research Advisory Board.

Essential completion and initialing of the Agreement and annexes took place in February with final signing at the time of the President's visit to Canada in the spring.

Second Conference of Great Lakes Governors and Premiers

In August 1971 the Great Lakes Basin Commission in conjunction with its quarterly meeting on Mackinac Island, Michigan, co-hosted with the State of Michigan the Second Environmental Conference of Great Lakes Governors and Premiers. After discussing mutual problems related to the Lakes, the Governors of eight Great Lakes States, their representatives, and Premiers of the Canadian Provinces of Ontario and Quebec passed these resolutions:

Resolution 1—commending the two governments for extending the International Joint Commission (IJC) water quality surveillance responsibility to cover Lakes Huron and Superior, and urging that this objective be implemented expeditiously.

Resolution 2—supporting the establishment of a single water quality board and sub-boards, as the IJC determines, to assist in the implementation of the forthcoming agreement and be responsible for all IJC references on water quality in the Great Lakes.

Resolution 3—urging the two nations to provide the IJC with independent technical staff and resources to carry out its responsibilities effectively.

Resolution 4—recommending that the two nations strengthen the role of the IJC by authorizing its water Quality Board to monitor the effectiveness of governmental water pollution control programs, to recommend legislative and program improvements as warranted, to coordinate water quality control activities, and to direct recommendations relative to individual waste dischargers to appropriate water pollution control agencies, and to make public its findings and recommendations.

Resolution 5—acknowledging the importance of shoreland management in Great Lakes environmental quality and urging expansion and strengthening of shoreland policies and control programs.

Resolution 6—recommending that the nations expand current programs to provide finances sufficient to permit communities to construct facilities to abate water pollution from combined sewer overflows.

Resolution 7—recommending immediate no-discharge regulation of sewage from Great Lakes vessels and retention of all sewage for discharge at approved on-land treatment facilities or for approved on-board treatment.

Resolution 8—recommending accelerated cooperation among the region's States, Provinces, and local governmental units and concerned universities to ensure maximum potential of the environment for recreation.

Resolution 10—encouraging the two nations to provide funds for lamprey eel control and the accelerated research to identify and test control methods.

Resolution 11—calling upon the Administrator of EPA, Mr. William D. Ruckelshaus, to issue a regulation prohibiting all sewage discharge from vessels into Lake Superior and its embayments and that the policy apply to other areas of the Great Lakes.

Resolution 13—agreeing that the water quality objectives of the US/Canadian agreement and the shoreland management apply to Lake Michigan.

Great Lakes Basin Framework Study

Purpose of the Study

The Great Lakes Basin Framework Study, when completed, will serve as the foundation for a comprehensive coordinated joint plan (CCJP). Public Law 89-80 under which the Great Lakes Basin Commission was established states, "Each such commission ... shall prepare and keep up to date ... a comprehensive coordinated joint plan for Federal, State, interstate, local, and non-governmental development of water and related land resources . . ."

Before attempting to formulate a CCJP, it is desirable to complete a framework analysis which outlines goals and objectives, basic data, needed investigations and programs, problem areas, and possible alternative solutions to those problems.

In order to perform this vast undertaking, the small Great Lakes Basin Commission staff is enhanced by more than 450 members of work groups and 15 task forces, whose time and talents are provided by the agencies of the Great Lakes States and Federal agency members of the Basin Commission. These personnel are themselves resources on which the Basin Commission draws in order to include all practicable Great Lakes Basin expertise in the Framework Study effort.

Goals and Objectives

The Framework Study's goals and objectives are necessarily extremely broad and general, the specifics to be established following receipt of a tremendous quantity of informational input from work groups, task forces, and public opinion. The Basin Commission staff defined the goals and objectives as those environmentally, economically, socially, or politically desirable for specific geographic portions of the Great Lakes Basin. The objectives are defined as the prior steps toward achieving the goals. These are the steps which will advance the system toward the goals.

Under the guidance of the Water Resources Council and national objectives, those considered for the Great Lakes Basin Framework Study include the traditional objectives of economic development, regional development, and environmental quality.

Method

Basic data on resources of the Basin are compiled and processed by the work groups with Commission staff coordination. Projected estimates of resource availabilities related to population needs are made for the years 1980, 2000, and 2020. By studying this information, planners are able to foresee numerous alternative directions and programs which may meet needs and accommodate resource availability.

Twenty-three work groups met throughout the Great Lakes Basin to prepare reports on all aspects of the Framework Study. These will be divided into 23 appendixes to the smaller main report.

A 24th appendix on alternative frameworks will be written largely by the Great Lakes Basin Commission staff. This will follow a series of public meetings to be held throughout the Great Lakes Basin to enable Basin Commission planners to learn more of the public's opinions, preferences, and problems and to further coordination with regional and local planning.

Progress

By fiscal year-end some second and third drafts of appendixes had been written, reviewed, and modified, and editing begun by the Commission staff. Revisions of appendixes incorporated data more directly useful in plan formulation processes.

The Framework Study grew and evolved during the year. Subject areas of the Study, originally to contain 27 appendixes, were reorganized more advantageously to accommodate the presentation in only 24. Some of the appendixes were combined under single headings, such as Appendix 9, Navigation, Commercial and Recreational Boating, and Appendix 20, Laws, Policies, and Institutional Arrangements, State and Federal.

Interim Report

At the Great Lakes Basin Commission quarterly meeting in August 1971 Chairman Frederick O. Rouse announced the release of an Interim Report on the Framework Study. This report was produced in response to the expressed need for knowledge of the Study among legislators, government officials, and the general public. The Interim Report was mailed to approximately 3800 on the Basin Commission mailing list. It contained a questionnaire designed to provide planners with a first insight into public trend preferences. The response to the questionnaire indicated the need for the establishment of a more representative mailing list to be used later for the public meetings associated with Appendix 24, Alternative Frameworks.

Plan Formulation

The data collection and analyses of the work groups provides the basic information needed for the plan and program formulation activities of the Commission. Plan and Program Formulation Task Forces were established for each of the 15 river basin groups and chaired by Commission staff planners. Task force members were informed personnel from each of the Federal agencies, the eight States, regional planning commissions, metropolitan areas, and environmental groups.

Throughout the year the task forces continued review

(continued on Page 4)

Framework Study, *continued*

of the goals and objectives for the plan of study and refined the subobjectives and criteria for national income, regional development, environmental quality and well-being of the people. They reviewed available reports, identified problems, prepared alternative programs, and estimated program costs. Consequently, data analysis and plan formulation are proceeding simultaneously at year-end.

As plan formulation progressed, task forces received and used additional information from the functional work groups. Technical papers written by the task forces showed program details for meeting projected needs.

At the beginning of the fiscal year the commissioners requested that programs be developed to meet accelerated, limited, and normal growth projections of needs. They wanted these ranges before selecting a projection on which to base their recommendations. They also wanted greater public involvement in selection of growth range.

At year-end, the Commissioners decided to defer selecting the projections and programs to be recommended until after ascertaining public preference among the ranges of proposals under consideration. The time to prepare educational materials, conduct public meetings, and carefully consider opinions expressed at these meetings will require additional plan formulation time. The meetings have been tentatively scheduled to run through the fall of 1972.

THE FRAMEWORK STUDY–a main report and 24 appendixes

THE APPENDIXES–compilations of data on resource availability and problems –products of multi-agency cooperation

Appendix Number	Subject	Lead Agency Responsible
1	Basin Description	Great Lakes Basin Commission
2	Surface Water Hydrology	Army Corps of Engineers
3	Geology and Groundwater	USDI, Geological Survey
4	Limnology of Lakes and Embayments	Department of Commerce, NOAA
5	Mineral Resources	USDI, Bureau of Mines
6	Water Supply–Municipal, Industrial, and Rural	Environmental Protection Agency
7	Water Quality	Environmental Protection Agency
8	Fish	Michigan Department of Natural Resources
9	Navigation–Commercial and	Army Corps of Engineers
	Recreational Boating	Army Corps of Engineers and State of Michigan
10	Power	Federal Power Commission
11	Levels and Flows	Army Corps of Engineers
12	Shore Use and Erosion	Army Corps of Engineers
13	Land Use and Management	USDA, Soil Conservation and Forest Services
14	Flood Plains	Army Corps of Engineers and USDA, Soil Conservation Service
15	Irrigation	USDA, Soil Conservation Service
16	Drainage	USDA, Soil Conservation Service
17	Wildlife	USDI, Bureau of Sport Fisheries and Wildlife
18	Erosion and Sedimentation	USDA, Soil Conservation Service
19	Economic and Demographic Studies	Army Corps of Engineers
20	*Laws, Policies, and Institutional Arrangements*	
	Federal	Department of Justice
	State	Michigan
21	Outdoor Recreation	USDI, Bureau of Outdoor Recreation
22	Aesthetic and Cultural Resources	USDI, National Parks Service
23	Health Aspects	Environmental Protection Agency
24	Alternative Frameworks	Great Lakes Basin Commission

KEY: NOAA – *National Oceanic and Atmospheric Administration*
USDA – United States Department of Agriculture
USDI – United States Department of the Interior

Institutional Arrangements Considered

Under Public Law 89-80 the Commission must recommend provisions for its future functions and implementation of its plans. Numerous organizations and individuals including the National Water Commission proposed new and usually more authoritative management arrangements for water and related land resources in the Great Lakes Basin. The Basin Commission's Organizational Policy Task Force continued its two-year analysis of institutional choices by employing a consultant to consider organizational needs for the Basin and to advise the Commission of the most feasible alternatives.

A proposed Federal-State compact would give a Basinwide commission direct management powers which are now possessed by the eight Great Lakes States and numerous Federal agencies. Such powers, the consultant concluded, are improper for a Basinwide agency.

The consultant found that primary institutional needs are for integration of governmental policies. He proposed a Basinwide agency with elected members for making and monitoring Basinwide policies. The existing functional and resource management agencies would continue to deal with matters at the regional level, but each would be required to work within the policy framework established by the overall Great Lakes agency.

The consultant stated his proposal would satisfy the needs for geographic integration of governmental actions affecting the Lakes, for political coordination, for inclusion in the larger system of Basin resource decision-making organizations, for contribution of policy, planning and management direction to this integration, and for the necessary political responsiveness to the public.

The Organizational Policy Task Force under the Vice Chairman of the Commission recommended, and the Commission accepted, that no action be taken on the consultant's recommendations during this fiscal year. The Commission foresaw that completion of the Framework Study and possibly the CCJP itself might be required before management adjustments could be sufficiently identified to permit formulation of new or realignment of existing organizations.

The Great Lakes Commission requested that Great Lakes Basin Commission consider the draft of their proposed Federal-State compact. A polling of the eight Great Lakes Governors indicated they want results from the completed Framework Study to identify unresolved problems and organizational needs before they consider the proposed Federal-State compact or revisions to organizational structures.

They also recognized the vast water resource management and organizational considerations then in the US Congress and the additions to the powers of the International Joint Commission provided by the Great Lakes Water Quality Agreement.

The Great Lakes Basin Commission resolved, "the Great Lakes Basin Commission not make a detailed review of the proposed compact but continue through the Framework Study and the Comprehensive Coordinated Joint Plan to develop appropriate institutional arrangements for the management of the water and related land resources of the Great Lakes Basin and that the Great Lakes Commission be advised of this action taken by the Great Lakes Basin Commission."

Lake Superior's rocky shores offer some of the most scenic shoreline spots in the Nation.

The Great Lakes States

ILLINOIS

The State of Illinois completed projects ranging from groundwater research to fisheries management and increased erosion control. State planners and researchers produced a bulletin on digital computer techniques for groundwater resource evaluation, a review of future demands on groundwater in the northeast part of the State, and a report on research needs for waste heat transfer from large sources into the environment.

Phase II of a pilot project on artificial recharge of sandstone cores with treated sewage effluent is underway, as is computer modelling for forecasting water requirements. Studies of erosion and beach characteristics continue, as does the inventory of State drainage and levee districts.

Fisheries programs were increased with the development of a fishing program for Chicago's urban parks, an access study for ice fishermen in the Chain O' Lakes area, and lake trout stocking in Lake Michigan.

INDIANA

Indiana published predictions of needs for agricultural irrigation for the State and a report on irrigation potentials of Indiana soils. The State conducted a flood plain zoning inventory with 57 local units of government and completed three detailed flood plain mapping contracts in high-damage urban areas.

The 1974 update of the current Outdoor Recreation Plan began; legislation for the Environmental Management Board became effective; and the Little Calumet River Basin Commission began operations with State participation.

Under the flood insurance plan, Indiana assisted local governments with applications and hydrologic studies, and 20 communities became eligible. Seven flood plain information studies are underway, two completed, and two under consideration. The State issued 834 floodway and lake alteration permits and provided information to the Elkhart Basin Type IV Study during fiscal 1972.

MICHIGAN

Michigan continued to increase its water management through legislative action. The fine for illegal discharge of pollutants into public waters was increased to $10,000 per day, and governmental units became subject to penalty for violations. Michigan restricted the contents of phosphorus in cleaning agents and expanded its program of ordering communities to install phosphorus removal capability at sewage treatment facilities.

Four Michigan rivers, previously for low-quality water uses, were upgraded to higher use categories.

Public hearings were held on Michigan's Shoreland Plan, which will be submitted to the Governor and State legislature for approval.

One hundred forty million dollars worth of sewage treatment works was placed under contract for 37 projects.

Under the Michigan pollution control program, industrial and commercial wastewater dischargers were assessed $714,000 surveillance fees, which will double the surveillance capability.

MINNESOTA

Minnesota's progress in comprehensive and related land resources planning during fiscal year 1972 is highlighted in a report from the Water Resources Coordinating Committee, "Minnesota Water and Related Land Resources: Policies for Planning."

The report considered policy questions on the degree of direction applicable to the State from river basin planning organizations and Federal construction agencies; flood plain management, environmental protection objectives, regional responsibility; methods of waste treatment, navigation, and reliance on Federal assistance.

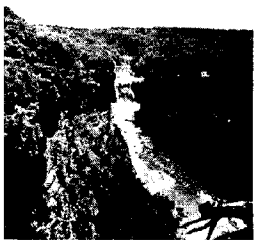
In a report, "Minnesota Water and Related Land Resources: Information Systems," the Water Resources Coordinating Committee analyzed available data and recommended the establishment of a Statewide system.

Minnesota changed its policy on alternative plans for development and management of river basins to leave choice of development schemes to the political process and recommended changes in funding policy for river basin commissions.

NEW YORK

The New York Department of Environmental Conservation was reorganized in FY 1971. Water management and planning activities were consolidated in a unit responsible for meeting Federal requirements, preparing comprehensive plans with regional water resources planning boards, and participating in Federal-State and interstate planning programs.

Despite cuts in the State planning budget, New York prepared interim basin and regional/metropolitan water quality plans. The Erie-Niagara Basin Water Resources Plan was approved, tentative plans were completed for Oswego and St. Lawrence River basins, and a water management alternative report was prepared for Black River basin.



The State authorized a November 1972 referendum on a $1.15 billion bond issue. Canaseraga Creek, Genesee basin, was the subject of a Corps of Engineers survey.

OHIO

The State of Ohio implemented more of its Northwest Ohio Water Development Plan in 1972. Six of the Plan's 37 recommended reservoirs were completed, and 24 of 62 proposed electronic stream monitors were installed. Among other items, 115 waste treatment plants were constructed or upgraded to acceptable levels in both Northwest and Northeast Ohio plans; water recreational areas were increased; 26 miles of stream improvement were under construction, and the remainder underwent environmental impact studies.

Under the Ohio Flood Plain Management program, 16 communities qualified for flood insurance. Four sites began data transmission under the Remote Stream Quality Monitoring System.

The Ohio Land Use Planning Program provided direct, long-term assistance to local governments and in-house planning for areas adjacent to State-owned lands administered by Ohio DNR. The program staff was committed to a study of the Lake Erie shoreline at year-end.

PENNSYLVANIA

Pennsylvania began a study of the groundwater geology of western Crawford County and a portion of the Conneaut Creek basin to include detailed data maps and a report on the quality and quantity of groundwater.

A study of beach erosion prevention continued at Presque Isle State Park, as well as a Level C study for the management of waste water in Erie County. Pennsylvania participated with the International Joint Commission in planning Great Lakes water quality standards.

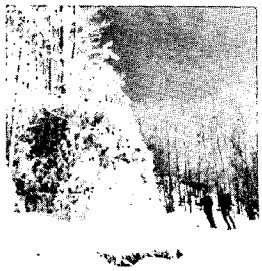
Fisheries research on commercial and sportfish stocks stressed biology and abundance, establishment and maintenance. Development of Presque Isle nursery and other spawning habitats for sport fish species continued. Construction began on a 1000-acre reservoir and waterfowl refuge in the Conneaut Creek Basin.

WISCONSIN

Wisconsin completed three major projects: establishment of goals and objectives for water resources through the year 2000, an assessment of water quality management of 29 river basins, and small-area population projections up to year 1990 for cities, villages and towns in the State.

The State initiated a comprehensive water resources plan, and is developing a plan designed to evaluate State policies as they affect water resources.

Work continued on the Wisconsin Resources Planning Data Network and on the final preparation of Basin Water Quality Management Plans. Six regional water quality management plans were completed, and coordination with regional planning commissions continued in other areas.



Interstate Compact and Federal Agencies

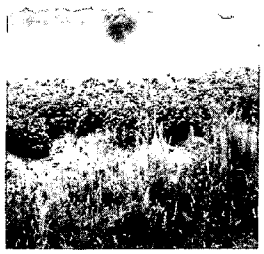
GREAT LAKES COMMISSION

The Great Lakes Commission, in its coordinating role among the eight Great Lakes States on water resources matters, strongly supported: sea lamprey control; amendments to the Federal Water Pollution Control Act; containment areas for polluted dredged materials; shoreline erosion; extension of the Great Lakes-St. Lawrence Seaway navigation season; and US-flag vessel service on the Lakes.

GLC campaigned vigorously to raise the sea lamprey control annual funding program of the Great Lakes Fishery Commission, US Section, to $1.843 million for FY 1973, to be compatible with the Canadian level. The program was designed to control lamprey in the upper Lakes and extend treatment to Lake Ontario.

In concert with others, the Great Lakes Commission analyzed Federal Water Pollution Control Act amendments, the House (HR 11896) and Senate (S.2770) bills, and made recommendations to Congressmen and House and Senate Public Works Committees members.

DEPARTMENT OF AGRICULTURE

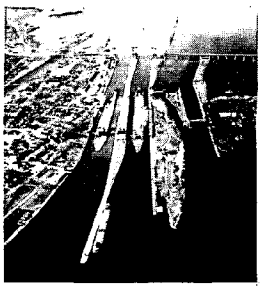


The Department of Agriculture completed its participation in the Grand River Basin and Genesee River Basin Type II Studies. In addition, the Buffalo Creek Flood Control Project in New York was completed, as were twenty-four watershed projects under Public Law 566—eighteen in Michigan, one in Indiana, four in Ohio, and one in New York.

Activities begun in FY 1972 were the Chicago Metropolitan (Type IV) Study; Upper Peninsula, Michigan, and Maumee Valley, Resource Conservation and Development (RC and D) Studies.

Five Type IV studies continued: Southeast Wisconsin River Survey; Southeast Michigan Water Resources Study; Elkhart-Kankakee Basin Study, Western New York Basins; and Eastern New York Basins. Six ongoing resource conservation and development projects were the Onanegozie, Lumberjack, Pic-Rou-Ta, Northwest Michigan, Penn Soil and Seneca Trail. PL 566 watershed projects continuing through fiscal 1972 were—seven in Michigan, three in New York, six in Ohio, and two in Wisconsin.

ARMY CORPS OF ENGINEERS

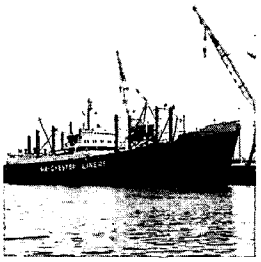


For an International Joint Commission study, the Corps investigated water level fluctuations in the Lakes to determine their best regulation for navigation, power development, local flood control, and reduction of damages to shore properties.

To extend the Great Lakes navigation season through winter, the Corps is chairing the 3-year navigation season extension demonstration program to test an ice formation reporting system, control of ice force on structures, ice suppression, ice effects on ships, winter navigation aids, environmental effects, insurance rates, and base conditions.

The Corps conducted regional wastewater management studies for Detroit, Chicago, and Cleveland-Akron. They continued chairing the Southeast Michigan and Grand River comprehensive studies on water supply, pollution abatement, navigation, flood control, hydroelectric power, and related resource development and control.

DEPARTMENT OF COMMERCE



Lake Survey Center of the National Oceanographic and Atmospheric Administration, US Department of Commerce, supported the work of the Great Lakes Basin Framework Study with compilation of data for Appendix 4, Limnology of Lakes and Embayments. The Commerce Department provided basic data forecasts and studies for planners' use in developing comprehensive plans.

As a member of the Great Lakes Levels Working Committee, Lake Survey Center prepared data and studied regulation of water levels for the Great Lakes Water Levels Board to report to the International Joint Commission. Continuing the support of previous years, the Department of Commerce through NOAA's Lake Survey Center provided technical advice to the Great Lakes Basin Commission and the International Joint Commission.

ENVIRONMENTAL PROTECTION AGENCY

The EPA assisted with coordination of water quality management planning. It established planning guidelines and monitored compliance by State and local agencies. The regional administrator of EPA certified water quality management plans and determined conformance of proposed projects with them.

The EPA provided partial funding for the Water Quality Management Study, Phase I, Southeast Michigan, and reviewed, evaluated and assessed environmental considerations.

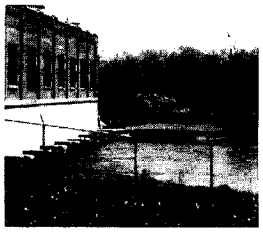
The EPA assisted in the preparation of other agencies' water quality basin plans and metropolitan-regional including Framework Study Appendixes on Water Quality, Water Supply, and Health Aspects.

EPA participated on the steering committees of wastewater management alternatives studies of the Corps of Engineers and reviewed power plant licensing applications for Federal Power Commission projects, as well as coordinating water quality aspects.

FEDERAL POWER COMMISSION

For the Great Lakes Basin Framework Study, Appendix 10, Power, the Federal Power Commission (FPC) analyzed existing and future power situations in the Great Lakes Basin (1980, 2000, and 2020). It assessed the capacity, energy, and water required to fill needs for the normal growth trends and discussed environmental factors.

The FPC outlined power needs for plan formulation frameworks of the Basin Commission. It developed projected power requirements and economic sources to fill power needs of increasing populations, consistent with optimum use of resources, environmental aims, and associated water needs. Assessments were also made for the accelerated and limited growth frameworks for each of the five Lake basins and the entire Great Lakes Basin.



DEPARTMENT OF THE INTERIOR

Under USDI auspices, Bureau of Sport Fisheries and Wildlife (BSF&W), Bureau of Mines, Geological Survey, and Bureau of Outdoor Recreation (BOR) all contributed to Great Lakes Basin studies. BSF&W was involved with effects on wildlife in the Great Lakes Water Levels Study. This Bureau also studied effects of Great Lakes navigation season extension on estuarine environments and fish and wildlife.

USDI contributors to the Great Lakes Basin Framework Study were: Bureau of Mines, Mineral Resources Appendix; Geological Survey, Geology and Groundwater Appendix; Fish and Wildlife Service, Wildlife Appendix; BOR, Recreation Appendix; National Park Service, Aesthetic and Cultural Appendix.

A National Recreation Area study on the Lake Erie shoreline south of Detroit, Michigan, was performed by BOR, as was the Wild and Scenic River Study of the Maumee River.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

The Department of Housing and Urban Development (HUD) supported complementary relationships among State, metropolitan, and local planning activities. A pilot study of this relationship was made with the cooperation of the Southeastern Wisconsin Regional Planning Commission. The Department fostered development and implementation of both framework and Level B studies within the Great Lakes Basin.

The stress of HUD planning activity is toward a comprehensive program that will deal with use and development and related land resources as a primary means of achieving beneficial growth patterns.

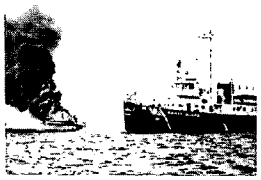
DEPARTMENT OF STATE

By Executive Order the Department of State became the eleventh Federal agency member of the Great Lakes Basin Commission. The addition of the State Department resulted from the Chairman's participation on the US negotiation team for consummating the Great Lakes Water Quality Agreement. Chairman Frederick O. Rouse secured direct representation from each of the Great Lakes States in all stages of preparation of position papers and the actual negotiations.

DEPARTMENT OF JUSTICE

During fiscal year 1972, the Justice Department completed the Federal volume of Appendix 20, Laws, Policies, and Institutional Arrangements of the Great Lakes Basin Framework Study.

DEPARTMENT OF TRANSPORTATION



The Department of Transportation is heavily involved in the Great Lakes in aiding the movement of a record 53 million tons of cargo through the St. Lawrence Seaway during 1971. The 1972 season will be another record year.

The Coast Guard responded to 578 oil spills, handled 4,947 rescue cases, saved 320 lives and $8,378,000 in property, and maintained 3,100 navigation aids. DOT participated in the Great Lakes Water Quality Agreement and the year-round navigation program, undertaking studies for developing new concepts, such as improved wintertime aids to navigation and laser navigation systems, ice breaking and providing 13 Coast Guard vessels.

DOT is vitally concerned with the environmental aspects of the Great Lakes and impacts of air, noise, oil, and water pollution. Proposed legislation on port safety and water pollution control will further increase DOT's activities in the Great Lakes.

Related Activities

PUBLIC INFORMATION OFFICE

The Chairman of the Great Lakes Basin Commission instituted improved public information capability in October 1971 within the Basin Commission offices. The Public Information Office formally began the internal management of the Commission's monthly newsletter, the *Communicator,* at that time. Previously, public information work was performed by an agency independent of the Commission.

In February and May of 1972 the Public Information Office disseminated GLBC information to wire services, major television and radio networks, and three hundred local press and media throughout the Great Lakes Basin. In addition, the Public Information Office provided media and press interface for meetings involving the Great Lakes Basin Commission.

The Public Information Office was assigned editing and printing procurement of the Great Lakes Basin Framework Study Report and Appendixes (27 volumes). In the fall of 1972, the Public Information Office, having assisted the professional planning staff to write supportive educational materials, will disseminate more than 9,000 educational packets concerning possible future Great Lakes developments. The Public Information Officer and a professional planner will coordinate 15 Great Lakes Basin Framework Study public meetings on alternative frameworks to be held with the assistance of States, regional, and local co-sponsors in the Great Lakes Basin.

GREAT LAKES BASIN LIBRARY

The Library was established in 1968 to meet the needs of the Commissioners, their staffs, the GLBC staff, the Work Groups, Task Forces and other planners. It contains reference materials on the Great Lakes Basin and States: reports on water and land aspects of resource management; legislative and planning reports; framework and river basin studies; and similar literature. All references are indexed by subject, author, and title.

The Library has been a selective Federal Government Depository Library for most of the year and thus is able to promptly receive desired government documents without effort or cost.

Many valuable resource materials are produced by Federal, State, regional, and metropolitan planning organizations and the Library encourages the donation of these otherwise difficult to obtain materials for the enhancement of coordinated planning by the Commission staff.

LSA/GLEPS

Limnological Systems Analysis

The nature of the Great Lakes Basin with its large Lake reservoirs into which numerous short connecting rivers flow requires a limnological systems analysis for evaluation of the cumulative effects on the Lakes of alternative management decisions and strategies on each of the contributing river basins.

To accomplish this, a tool will have to be developed which does not now exist. The most logical method of accomplishing this would be the development of suitable mathematical models. The levels at which this can be achieved are to be determined for practicable purposes under the preliminary model now being designed under contract to the Commission by Hydroscience, Inc.

The main modelling effort will be developed on whatever level the Commission decides to proceed with. When this modelling effort is completed, the various elements of the CCJP can be adequately integrated and their beneficial and adverse effects competently and quantitatively estimated. A large portion of the effects, both negative and positive, of activities upon the individual streams within the Basin will be reflected in the cumulative effects within the Lakes themselves. Consequently, in order to complete adequately the CCJP, a device such as a mathematical model of each of the Great Lakes and the Great Lakes System is mandatory.

Work by both the Commission staff and the contractor refined and formalized the analyses of Lake-related problems in the Great Lakes, data on model availability, and relevance of potential modelling efforts to the needs of Great Lakes Basin Commission member agencies.

The contractor found that the modelling efforts on the Great Lakes until now have been relatively minimal except in the water balance or hydrologic sense. Circulation and mixing patterns are fairly well defined also. Part of the LSA study assessed the usefulness of various models on the Great Lakes in existence elsewhere that can be adapted for use on the Great Lakes. Only two models approach the "good" level, water balance, and circulation and mixing. The poorest areas are in the biological and energy balance (including ice) fields. The circulation and mixing modelling has been done primarily by universities. The water balance model is the work of the Corps of Engineers, as modified recently by the National Oceanic and Atmospheric Administration of the Department of Commerce.

Work has essentially been completed on the demonstration model, the results from which were utilized to illustrate the utility of a systematic, rational approach to predicting the effects on the Great Lakes of contemplated resource management strategies in the tributary areas and on the Lakes themselves. Coordination among the four funding agencies (Corps of Engineers, Environmental Protection Agency, Great Lakes Basin Commission, Upper Great Lakes Regional Commission) was excellent.

Great Lakes Environmental Planning Study

After 18 months of intensive work the contractor recommended a moderate level of development of computer programs for the Great Lakes and various smaller areas. Assisting in these efforts were the Commission staff, its Plan and Program Formulation Committee, and the Board of Advisors for the Limnological Systems Analysis program.

The contractor proposed chemical, biomass, and eutrophication models for all the Great Lakes, with greater detail for Lake Erie, a food chain model for Lake Ontario, dissolved oxygen models for Lake Erie and Green Bay, and bacterial models for southern Lake Michigan and Green Bay. The three-year, two-million dollar modelling work would be an integral part of a four-year comprehensive planning study costing four million dollars known as the Great Lakes Environmental Planning Study (GLEPS). It would be the second stage in the Great Lakes Basin Commission's efforts to prepare a comprehensive, coordinated, joint plan (CCJP) for the Great Lakes Basin. GLEPS is a broad-based auxiliary comprehensive planning aid for management of the five Great Lakes. Using the Great Lakes Basin Framework Study as a base, GLEPS will be proposed to the Water Resources Council as a vehicle for focussing goals and objectives.

Not a research study, GLEPS is designed to take results of research and utilize them in formal plans to provide a rational framework for future research, monitoring, and surveillance and actions upon the Great Lakes. GLEPS will complement present research.

GLEPS will provide an integrated framework for water quality efforts of Federal, State, and local agencies and for the activities of the newly-formed Great Lakes Water Quality Board established under Executive Agreement signed by President Nixon and Prime Minister Trudeau of Canada by

- focussing on goals and objectives for the Lakes
- identifying Lake-based water resource problems
- describing needed regional and integrated comprehensive programs of research, data collection, and management.

Hundreds of independent and essentially unrelated studies have been made on the Great Lakes and a great deal of pertinent data has been acquired on a frag-

Great Lakes Environmental Planning Study, *continued*

mented basis by a number of agencies over a long period of time. The proposed GLEPS would permit:

- immediate systematization of the vast amount of data and analyses pertaining to portions of the Great Lakes environment
- identification of gaps in basic environmental data, and determination of data collection, analyses, and correlations of needs
- coordination of fragmented ongoing and proposed systems analyses simulations for portions of the Great Lakes environment
- exploration of effects of conditions and alternatives through concurrent consideration of interrelationships among physical, chemical, and biological Lakes factors
- recommendations for action programs on development, operation, and management of the Great Lakes.

GLEPS will address two problem categories, the evaluation of alternative management and policy strategies on approaching specific Lake problems, such as environmental impacts, and effects on physical, chemical, and biological aspects of the Lakes of resource management strategies now considered for tributary drainage areas to the Lakes. Subsystem models developed under GLEPS would be structured to facilitate use by the Commission's member agencies.

Chairman Rouse is scheduled to describe GLEPS to the Water Resources Council of Representatives in mid-July 1972.

Coordination with Grand River Study

Two resolutions concerning the Grand River Study were passed in February 1972 by the Great Lakes Basin Commission at its quarterly meeting at the Campus Inn in Ann Arbor, Michigan. One of the two resolutions on the Study, pertaining to the river located in southwestern Michigan, asked that the Grand River Basin Coordination Committee furnish the Commission comments on public responses to this study prior to the Great Lakes Basin Commission's review of the report. The other resolution asked that an ad hoc review committee of the Great Lakes Basin Commission be constituted with the State of Michigan as chairman, and with representative members from the Federal Departments of Agriculture, Army, and Interior, and the Federal Environmental Protection Agency. The Commission's Executive Director was named secretary of the Committee and the Executive Secretary of the Grand River Watershed Council, observer.

The previous year's public meetings on the proposed Type II study plan for the Grand River Basin brought vigorous protest from members of environmental groups, in particular the Grand River Basin Protective Association, Jackson Complex. The Protective Association opposed implementation of the Study as proposed in the Coordinating Committee's report because it advocated the use of structural remedies such as dams and related reservoirs. As a consequence, a further study of alternative solutions to the River's problems was recommended. More than $30,000 was expended for further studies. These funds had to be obtained by the Chairman of the Grand River Basin Coordinating Committee from the Army Corps of Engineers' Washington headquarters.

The new plan of the Coordinating Committee provides green space in valley preserves and has measures for preventing encroachment on the flood plains. At the end of the fiscal year the report was still under revision. After a 45-day agency review, the new report will be released to the public and transmitted to the Great Lakes Basin Commission. The Grand River Watershed Council's public information program will assist public understanding of the report's implications through a series of public meetings and further analyses of the report. The public will then have ample time to carefully consider the new report and make its views known to the Coordinating Committee.

Financial Report

BALANCE SHEET – GENERAL FUND

June 30, 1972

Assets		
Cash		$242,932
Grants receivable:		
United States Government	$ 35,000	
State of Wisconsin	35,000	
	70,000	
Less allowances	5,000	65,000
Due from Upper Great Lakes Regional Commission		10,125
Advances and deposits		7,461
Prepaid expenses		2,268
		$327,786
Liabilities and Reserves		
Accounts payable		$ 10,996
Accrued payroll		10,258
Retirement plan payments withheld and accrued		2,060
Income taxes withheld		2,123
Total Liabilities		25,437
Reserve for encumbrances		29,626
Reserve for cost of publishing framework study		180,000
Reserve for accrued annual leave		23,000
Reserve for future appropriations		69,723
		$327,786

BALANCE SHEET PLANT AND EQUIPMENT FUND

June 30, 1972

Assets	
Furniture and equipment	$ 26,770
Library books	14,513
	$ 41,283
Source of Funds	
Appropriations for unrestricted General Fund revenues	$ 41,283

RESERVE FOR FUTURE APPROPRIATIONS GENERAL FUND

Balance at July 1, 1971		$153,995
Revenues:		
Grants from United States government agency	$205,000	
Grants from State governments	180,000	
Grants from United States government agencies - restricted to pay cost of publishing framework study	180,000	565,000
		718,995
Expenditures:		
Salaries and wages	252,370	
Payroll taxes	6,998	
Retirement annuities and disability insurance	16,159	
Hospitalization insurance	10,521	
Annual report	7,111	
Public education	6,000	
Accounting and legal	2,650	
Contractual services	24,879	
Equipment rental	14,803	
Insurance	617	
Meetings and conferences	2,970	
Printing and reproduction	25,369	
Repairs and maintenance	1,695	
Rent	26,457	
Supplies and postage	8,910	
Telephone and telegraph	8,013	
Travel	23,956	
Library books	1,707	
Furniture and equipment	4,873	
Miscellaneous	214	446,272
		272,723
Amounts transferred to reserves:		
Reserve for accrued annual leave	23,000	
Reserve for cost of publishing framework study	180,000	203,000
BALANCE AT JUNE 30, 1972		$ 69,723

Great Lakes Basin Commission
3475 Plymouth Road
P. O. Box 999
Ann Arbor, Michigan 48106

We have examined the financial statements of the General Fund and the Plant and Equipment Fund of the Great Lakes Basin Commission for the year ended June 30, 1972. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying balance sheets and statement of reserve for future appropriations present fairly the financial position of the General Fund and the Plant and Equipment Fund of the Great Lakes Basin Commission at June 30, 1972, and transactions affecting the reserve for future appropriations for the year then ended in conformity with generally accepted accounting principles applied on a basis consistent with the preceding year.

Linscheid and Austin
Certified Public Accountants

November 22, 1972

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BASIN COMMISSION
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ANN ARBOR, MICH. 48106

OFFICIAL BUSINESS

FREDERICK O. ROUSE
CHAIRMAN

Postage and Fees Paid
Great Lakes Basin Commission

The Membership

Frederick O. Rouse
Chairman

The States
State of Illinois
Natural Resources Development Board
State of Indiana
Department of Natural Resources
State of Michigan
Department of Natural Resources
State of Minnesota
State Planning Agency
State of New York
Department of Environmental Conservation
State of Ohio
Department of Natural Resources
Commonwealth of Pennsylvania
Department of Environmental Resources
State of Wisconsin
Department of Natural Resources

Federal Agencies and Interstate Compact
Department of Agriculture
Department of the Army
Department of Commerce
Department of Health, Education, & Welfare
Department of Housing & Urban Development
Department of the Interior
Department of Justice
Department of State
Department of Transportation
Environmental Protection Agency
Federal Power Commission
Great Lakes Commission