Submitted: February 6, 1979

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UNIV. of WISCONSIN
Lake Superior study

THE ROCKEFELLER FOUNDATION

GRANT EVALUATION

COVER SHEET

IDENTIFICATION:

Grant No.: RF 74099 Amount: $250,000. Program: QE Division: (NES) AS

Grant Period: 11/8/74 to 6/30/78 Earlier grants for same purpose: RF 72025 $60,000.

Recipient: University of Wisconsin Grant Classification: Natural Resource Management

Purpose: Research on the Lake Superior Region

Names of Principal Investigators (if applicable):

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PROCEDURE:

1. Date substantive report was received from grantee: 6/30/78

2. Date final accounting of the grant was received from grantee: 11/10/78

3. Write an evaluation statement of the grant on additional pages and attach them to this cover sheet. Wherever applicable, consider the following specific questions:

   *What were the contributions (knowledge generated, people trained, institutions strengthened) of greatest significance to society.
   *How do the results of the grant compare to the evaluation criteria stated at the time of the grant? Have we learned anything from the grant that would be helpful in improving program formulation?
   *What are the implications of results for future Foundation support or activity? Should there be follow-up grants or conferences?
   *Has knowledge of these contributions been made known to the public in all appropriate ways? Has imagination been exercised in this regard?
   *In what ways was the activity less than satisfactory? What mistakes are believed to have been made by the Foundation or the grantee?
   *What reports or publications exists? (by the grantee, in the press, by RF officers). A list should be appended to the evaluation statement.

SIGNATURES AND APPROVALS OF ATTACHED EVALUATION:

Prepared by: R. W. Richardson, Jr., Consultant — 4/15/80
~~Program Officer~~ — Date

Reviewed by: Gary Toenniessen — 4/23/80
Program ~~Chairman~~ Officer — Date

Approved by: Sterly Hartman — 6-23-80
Vice President — Date

CA 4 10/31/78

EVALUATION STATEMENT

This statement considers RF 72025 in the amount of $656,000 awarded to the INSTITUTE FOR ENVIRONMENTAL STUDIES at the University of Wisconsin, April 1972 for a period of three years in support of research to be carried out in cooperation with the University of Minnesota directed toward the improvement of socioeconomic conditions and environmental quality in the Lake Superior region. The funds were to be available for a three-year period beginning May 1, 1972. Also considered here is RF 74099 in the amount of $250,000 to the INSTITUTE to support further research carried on in cooperation with the Universities of Minnesota, Michigan and Toronto directed toward the improvement of socioeconomic conditions and environmental quality in the Lake Superior region. These funds were available from November 1974 with extension through June 30, 1978. Since both of these grants addressed the same principle set of problems and the Lake Superior region, they are being evaluated together.

The next several paragraphs constitute an evaluation statement of these grants over the six-year period when they were active.

This Lake Superior Program of the University of Wisconsin was designed to improve public and private capacities and capabilities for rational management of the natural resources of the Lake Superior region. At the time it was undertaken, the natural resources of the Lake Superior area were of very high quality. The region supplied water, iron, copper, paper and electricity for the rapidly growing metropolitan regions to the south in Minnesota, Wisconsin, Michigan, Illinois and Ohio. The region had been severely exploited from the mid 1800's to about 1920 when principal timber reserves were stripped and mining for copper and then iron were substantially exploited. Nevertheless, by the late '60s and early '70s the land, air and water of the area had sustained relatively minor damage from human use. The Lake itself is still considered the finest body of fresh water in the world. It is cold, infertile, oxygen-rich, and beautiful. It is within 300 miles of approximately 50 million people. Economic pressures for development of natural resources and recreational facilities is enormous and could easily lead, through emphasis on short-term goals, to unwise exploitation of mineral, forest, land,

water and air resources. In spite of the relatively low rate of progress, the Universities are bringing about major changes in management of natural resources in this area, and new understandings of the fragility and potential of the region are now widespread. The volume of Lake Superior in relation to the rate of inflow from its watershed is exceptionally large and its present waters together with any persistent chemicals that may be introduced into them will not entirely be replaced by new water for approximately 400 years. The outflow from Lake Superior moves into the other four Great Lakes and the St. Lawrence Seaway, giving them an inflow of relatively pure, clear and cold water and tending to maintain their quality.

The first research output of the program were the publications of McCowan and Butler, which defined the retention time of pollutants in Lake Superior established now at approximately 400 years. This means that contaminants placed in Lake Superior cannot be removed by the natural flushing capacity and flow of water from the Lake to other Lakes in the system under natural conditons under less than 400 years. It was known that the retention time in Lake Superior was very long; however, the establishment of a reliable estimate has direct effect upon legislative and regulatory efforts to manage the volume and toxicity of effluents into the Lake, improved the management of accidental discharges, increase or decrease the flow of Lake Superior water through the vast series of manmade improvements on the natural drainage system through the Great Lakes and into the St. Lawrence River.

Over the six-year period of this grant, 24 major publications and reports including a documentary movie were produced all of which in the first instance add to the public and scientific understanding of the Lake Superior region. The documentary movie entitled "Lake Superior: The Region Till Now" outlines problems and perspectives of Lake Superior particularly but included some treatment of the Great Lakes systems. This documentary, seven years after publication, continues to be the most sought after and most frequently loaned film in the entire University of Wisconsin library. 40 copies were eventually produced and are at this date continually in demand.

A number of the publications have dealt directly with federal, state and international problems concerning the maintenance of protective lake level management, shoreline erosion, recreational and second home development on the coast line, and improved equity in establishment of taxation on mineral development in the region. They have also provided guidelines for land-use planning in northern Wisconsin and northeastern Minnesota, and established rational bases for the attraction of future limited industrial development.

Perhaps the greatest long-range value of the program has been the training of more than 30 graduate students and postdocs, the majority of whom now occupy positons of leadership in state and national organizations. The attachment to this evaluation list some 25 individuals who were associated with the project and now occupy positions of importance.

to comment favorably on the impact. Part of this is obviously due to the existence of a very large number of quasi-competing political groups and agencies in the region. Part of it is also due to the inherent conflict among the people in this economically depressed region and the difficulty of their choices for future jobs and economic development as opposed to intensified efforts toward maintaining an environmentally excellent region for the purposes of promoting what is probably their one growth industry: tourism and recreation.

We have learned from this grant that much closer monitoring of the ongoing process of investigation and subtle changes in research direction would be directly helpful in insuring the attainment of specific goals. Although correspondence with the grantee was substantial and a number of visits were made to the University of Wisconsin by Foundation officers and to the New York offices by Wisconsin project leaders and principals, no visit was ever made by Foundation officers to the research area. No direct contacts were ever made with the state and federal agencies with whom the project collaborated with the exception of the University of Minnesota, the University of Michigan, and personnel from the University of Toronto. In major grants of this complexity, closer monitoring should be accomplished in the future. This might be said independent of the subject matter under study.

Knowledge of the Lake Superior study has been made known to the public through the documentary movie, through the extensive series of publications, many of which are now out of print, through lectures, seminars, conferences with public and private agencies, and it is believed that a thoroughly adequate job has been done in this regard.

The program has been influential through its cooperative activities directly to the Minnesota Land Management information System, the Great Lakes Basin Commission, the International Joint Commission on the Great Lakes, the Wisconsin Departments of Natural Resources, Administration, Transportation, Agriculture, Public Service and Health, Bureau of Planning and Budget, and the U.S. Sea Grant Program, in addition to regional commissions in Wisconsin and Minnesota concerned with social, economic and environmental problems related to the Great Lakes, and particularly Lake Superior.

The program suffered a discontinuity of leadership. The original project leader, R. J. Muckinhern, a soil scientist, resigned for reasons of health before the first year of the program was completed. The program was also tending to shift greater emphasis onto the socioeconomic problems with which Professor Muckinhern would be less familiar and capable.

Leadership was taken over by Dr. Elizabeth David, an economist whose specialization was public finance, fiscal policy and natural resources economics. A further change in project leadership occurred in 1974 when Dr. David accompanied her husband on an assignment to Kenya. Project leadership was assumed by Dr. James C. Knox, Director of the Center for Geographic Analysis at the University of Wisconsin but a participant of the

This grant was made at a time when the Institute of Environmental studies at the University of Wisconsin was in its formative stage. It is now widely acknowledged that the Rockefeller grants were critical in establishing this Institute as one of the premier centers of environmental research and education in America and it continues to receive state and federal funding at a remarkably high level considering strictures of the economy and the relatively lesser importance being given in 1980 to environmental concerns. This continuing support is conservatively estimated as over 2 million dollars to date.

Project evaluation was to be based upon the success of the cooperative efforts between the University of Wisconsin, Minnesota, Toronto and Michigan in coordinating their research and training on regional problems of common interest. The project has fully met this criteria. Secondly, evaluation of research was to be based on its usefulness to state planning and environmental protection agencies and other private and public groups interested in solving conflicts which have arisen over natural resource development. There are both positive and negative comments to be made here. Insofar as the project's impact on major industrial developments in the region, taconite mining and processing, electric power generation in Thunder Bay, nickel mining and smelting, and increased petroleum products tanker traffic on Lake Superior, the most that can be said is that the project has been directly successful in developing the bases for a more equitable tax structure on mining activities. This work continues and has placed both Wisconsin and Minnesota in more reasonable bargaining positions with industrial development in the area. Important new insights have been gained with regard to recreational planning and second home development in the region. However, the project does not have the impact anticipated on regional planning at the microlevel and continued close interaction with regional government.

Two of the inherent weaknesses in the region which have contributed to less than outstanding accomplishments as originally anticipated in these grants are the following:

First, the very large number of official agencies (approximately 80) most of a political nature, often with conflicting interests regarding resources and environment and overlapping jurisdictions to some extent with whom the universities had to work. This was known at the outset but not realized in its full degree of complexity.

Second, the conflicts which are general throughout the region between further economic development and employment as opposed to enhanced management of this fragile ecological region have tended to slow the adoption of recommendations, plans and systems for environmental improvement.

The third criteria for evaluation was to have been based on the value of research in assuring environmentally sound strategies compatible with socioeconomic goals of the region. Although the output of publications, seminars, conferences and contacts related to this subject are extensive, it is difficult

Lake Superior program from its inception. These changes in leadership caused changes in relative emphasis of the project on natural resource management, socioeconomic considerations, degree of contact with political agencies involved in the area and decreased emphasis on a series of interim target objectives.

Nevertheless, the program demonstrated a number of strengths which in addition to the substantive published outcome of the project have encouraged and attracted outside support. There was a continuity of line staff in the project from beginning to end. The interuniversity collaboration, the University of Wisconsin with Minnesota, Toronto, Michigan and with state colleges both within Minnesota and Wisconsin, was highly effective and continues to this date. The work conducted by the program on shoreline delineation and lake level research has been of direct and critical assistance to the Internatinal Joint Commission, the Great Lakes Levels Board, and the State of Wisconsin Planning Commission.

The linkages established by this program with departments of environmental resources, state planning, and with legislative committees where staff members were invited to testify on matters concerning mining taxes, economic development, conservation, public utility problems, etc., have been vitally important to continued decision making processes.

Two principal recommendations emerge from this evaluation. The first is that grants of this magnitude and complexity be monitored much more closely by Foundatin officers. Further, in view of changes in directorship of the program, detailed consideration should be given to the constancy of efforts toward original goals unless these are shown to be unrealistic or unobtainable. The second recommendation concerns the production and publication of a major volume which synthesizes all of the disciplinary information on specific projects into a coherent statement to be directed mainly to the informed public and agencies and political bodies operating in the region.

The entire project has been less than satisfactory in one particularly crucial area. Although there is a very valuable and concise summary document, it does not synthesize the many lessons learned and does not integrate the many pieces of research information which were gained and relate these directly to the problems of rational resource management in this very large Lake Superior area. Preliminary to this evaluation, meetings were held at the University of Wisconsin, and this major shortcoming was discussed. It was generally agreed that there is a need for such an integrating, synthesizing document. Whether it will be done at this stage is matter of conjecture, however.

A full list of publications and reports is appended to this evaluation.

(Signed) R. W. Richardson

R. W. Richardson, Consultant

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4/15/80

APPENDIX A

PRESENT EMPLOYMENT OF LAKE SUPERIOR PROGRAM STAFF
(pertinent examples)

John Baldwin - Ph.D. - Asst. Prof., Trinity College.

Will Bateson, Ph.D., Director of a national environmental planning program in Kathmandu (Nepal).

Barb Bedford, M.S., working on Ph.D. in Land Resources, UW, Madison, doing research on environmental impacts of large coal-fired power plants; consultant. (608) 263-6928

Cathy Callaghan, M.S., Works for U.S. - E.P.A. on water quality assessments in Southwestern United States (586½ Calino Del Monte Sol Santa Fe, N.M. - last address)

Eric Graf, M.S., Works as assistant to the Secretary, Wis. Dept. of Agriculture. (608) 266-7179

Michael McNamara, M.S., Works as Assistant to the Chairman, Wis. Public Service Commission. (608)266-1241.

Kathy Peroff, Ph.D., Asst. Prof., Political Science, Univ. of Maryland. (301) 454-2247.

Lowndes Stephens, Ph.D., Asst. Prof., Department of Journalism, Univ. of North Dakota, Grand Forks, North Dakota 58201.

Peter Van Demark, M.S., Working on Ph.D. in Land Resources, UW-Madison doing research on automated cartography and geographical information systems for the Wisconsin Office of State Planning and Energy. (608) 262-1904.

Bruce Weber, Ph.D., Asst. Prof. of Extension, University of Oregon.

John Braden, M.S., doing research on Rockefeller Foundation project studying economic potential of oil and gas exploration in the Great Lakes basin.

Kenneth Bro, M.S., Marine Advisor for Sea Grant College Program, Lake Superior region.

Tom Fahey, M.S., Weather forecaster and climatologist, Northwest Orient Airlines, Minneapolis.

Charlie Mahaffey, Ph.D., Asst. Prof. Augustana College, Rock Island, Illinois.

David Thomas, M.S., M.A., Economic planning analyst for the Wisconsin Office of State Planning and Energy and the Wisconsin Coastal Management Program.

Pat Bartlein, M.S., Working on Ph.D. in Geography, UW-Madison, doing research on climatic effects on net basin supplies of the Great Lakes and on climatic effects on streamflow in the Upper Midwest.

Bill Gates, Instructor in Department of Landscape Architecture, doing research on a hybrid geographical information system for application in the State of Wisconsin.

Caryl Terrell, M.S., Planning analyst for Wisconsin Office of State Planning and Energy, with chief responsibilities for coastal zone management and administering the Wis. Environmental Policy Act.

John Rogers, M.S., Water quality planner for Wisconsin Dept. of Natural Resources.

Vijay Deshphande, Ph.D., formerly chief planner for state economic development policies, Wisconsin Office of State Planning and Energy; now assistant to the federal Chairman, Upper Great Lakes Regional Commission, Washington, D.C.

William Bernhagen, Director, Energy, Extension Services, Univ. of Wisconsin Extension.

Stefanie Carpenter, M.S., editor, U.S., - E.P.A. Power Plant Monitoring project.

Kent Butler, Ph.D., Research analyst for Wisconsin Coastal Management program. Assist. Prof. Community & Regional Plan, Univ. of Texas, Austin, Texas, (Starts in Fall semester)

Monroe Rosner, Ph.D., Project Associate, Agricultural Economics, Univ. of Wisconsin, Madison.

Thomas Heller, Lawyer, Stanford Univ. Law School, Professor.

Earl Epstein, Ph.D. University of Maine, Orono Maine, Professor & member of National Academy of Sciences research panel.