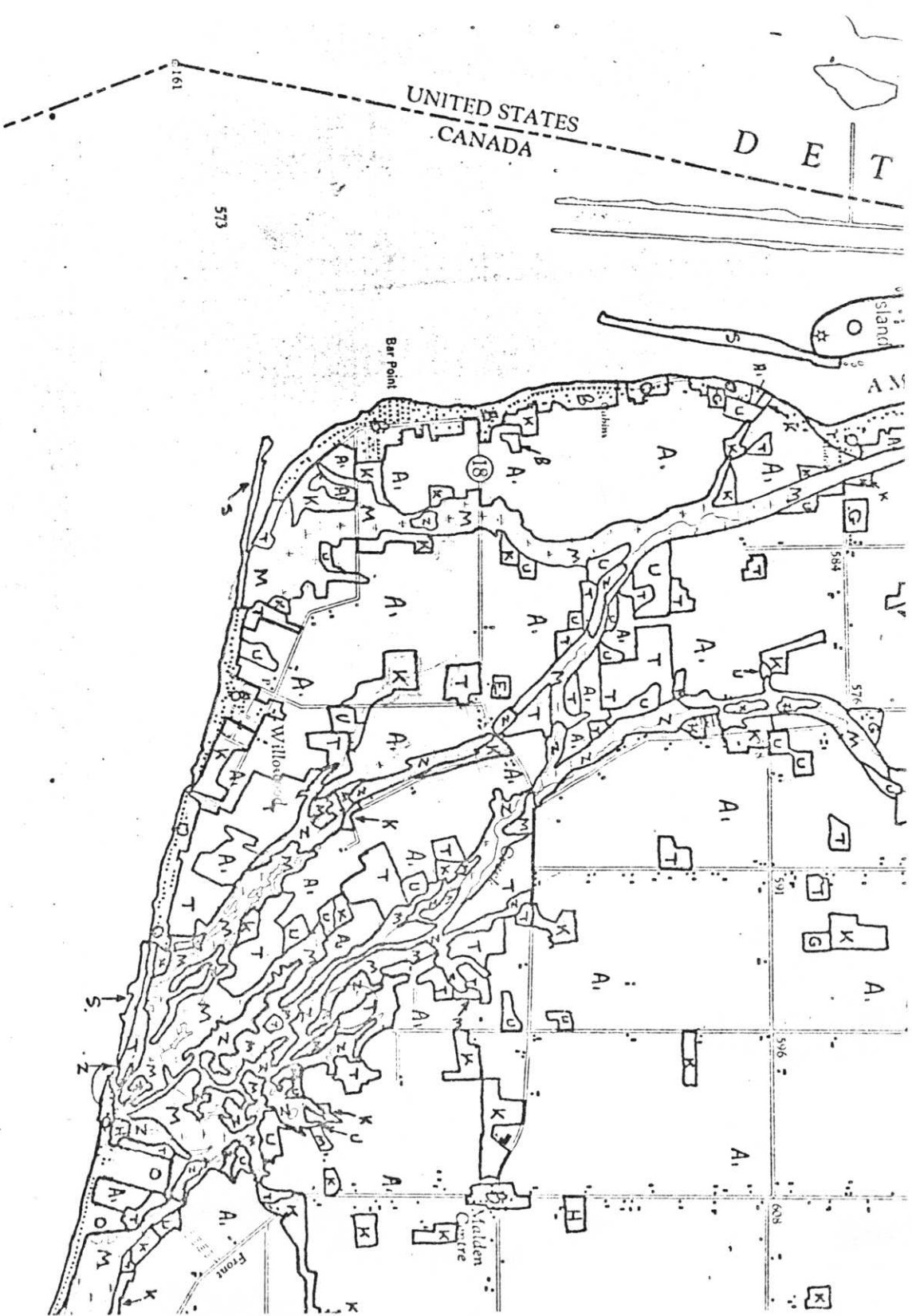


REMOTE SENSING IN CANADA



MAPPING LAND USE IN THE GREAT LAKES BASIN

AN EVALUATION OF CONVENTIONAL AND REMOTE SENSING TECHNIQUES
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INTERNATIONAL JOINT COMMISSION

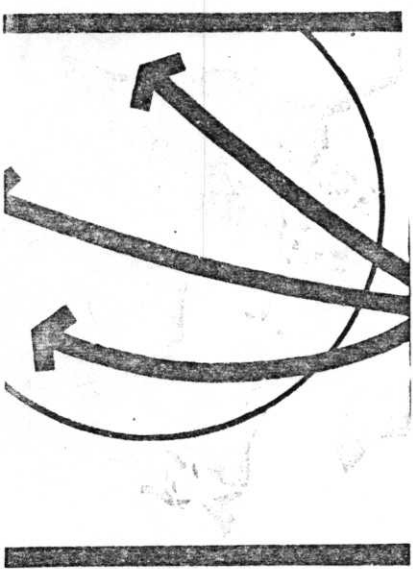


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The Governments of Canada and the United States of America, pursuant to Article IX of the Boundary Waters Treaty of 1909, requested the International Joint Commission to conduct a study of pollution of the boundary waters of the Great Lakes System from agricultural, forestry and other land use activities, in the light of the provision of Article IV of the Treaty which provides that the boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health and property on the other side, and in the light also of the Great Lakes Water Quality Agreement signed on April 15, 1972.

Studies requested by the International Joint Commission on water quality in the lower Great Lakes, completed and submitted in 1969, demonstrated that diffuse land drainage sources of pollutants were not only significant but also difficult to measure. The acceleration of tertiary treatment at point sources will magnify the relative importance of land drainage sources of many pollutants, and it calls for a much better definition of the impact of land use activities, practices and programs on water quality in the Great Lakes. This is the charge from IJC to the Land Drainage Reference Group and it is the general objective of the Study Plan. Also, it is clear to the Reference Group that, of the many and varied activities developing from the Canada-United States Agreement on Water Quality in the Great Lakes, the study on Great Lakes pollution from land use activities is but one component of an overall strategy. Therefore, a Study Plan was developed recognizing the other activities and following a general review of ongoing programs relevant to the charge of the Reference Group.

Because of the complexity of the problem and the necessity to understand behaviour of pollutants from upstream fields to boundary waters, much of the effort will have to be applied to selected study watersheds. Because of this need to extrapolate, as well as for basic needs, a land use inventory is required. Trends in land use patterns and practices also will be essential.

* Parts of the Introduction taken from reports prepared by the Land Drainage Reference Group.

The Study Plan emphasizes four main tasks:

- Task A.** *To assess problems, management programs and research and to attempt to set priorities in relation to the best information now available on the effects of land use activities on water quality in boundary waters of the Great Lakes, to be completed in 1973.*
- Task B.** *Inventory of land use and land use practices, with emphasis on certain trends and projections to 1980 and, if possible, to 2020. Present land use report to be completed in early 1974, report on trends to be completed early in 1975.*
- Task C.** *Intensive studies of a small number of representative watersheds, selected and conducted to permit some extrapolation of data to the entire Great Lakes basin and to relate contamination of water quality, which may be found at river mouths on the Great Lakes, to specific land uses and practices. Preparation activities in 1973, intensive surveys in 1974 and 1975.*
- Task D.** *Diagnosis of degree of impairment of water quality in the Great Lakes, including assessment of concentrations of contaminants. This will be largely available from ongoing monitoring programs, supplemented by some special surveys.*

The Study will require three years of intensive surveys, with much of the fourth year devoted largely to preparation of the final report, to be presented in 1976.

The estimated cost of the Study is \$8,872,000. In addition, available estimates of the cost of ongoing studies relevant to the task of the Reference Group through the study period (1973 to the end of 1976) total \$6,866,000.

The Reference Group met on a number of occasions since December last year. For purposes of reviewing pertinent ongoing studies, to attempt to integrate activities and examine needs and sources of funds for additional studies, the Canadian Section met additional times.

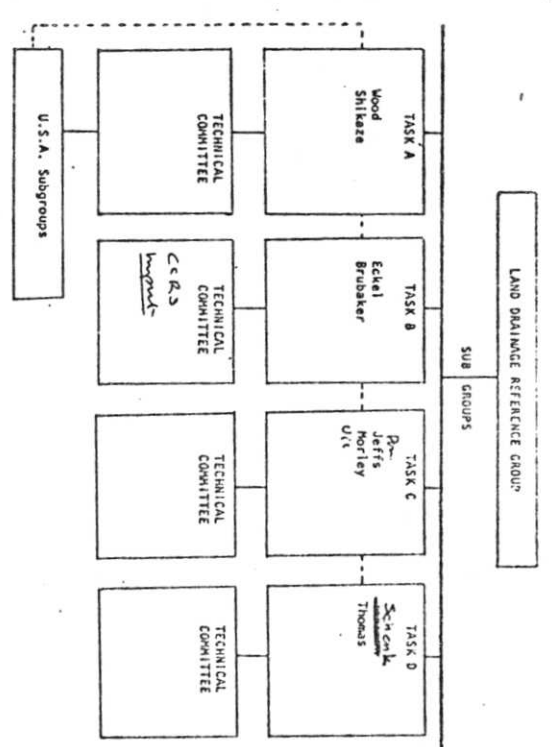
The Canada Centre for Remote Sensing was requested by the Canadian Chairman of the Land Drainage Reference Group, Dr. M. Johnson, and the Chairman of the Task B group, Mr. Lloyd Eckel, to participate in the US-Canada meeting in Rochester, N.Y., July 12, 13, 1973. This was mainly to assist in evaluating the results of the LARS pilot project based on automated computer interpretation of satellite imagery and to assist in the discussion of alternate methods. Mr. Lloyd Eckel in his letter of July 16, 1973 asked the participation of CCRS Applications Division staff members in this TASK B TECHNICAL COMMITTEE. The objective: To evaluate possible methods of land use mapping suggested by different sources and to make recommendations for the selection of the most appropriate one for Canada. Reporting by Mid-August, 1973.

OBJECTIVES

TASK B: Inventory of land use and land use practices, with emphasis on certain trends and projections to 1980 and, if possible, to 2020. Present land use report to be completed in early 1974, report on trends to be completed early in 1975.

The objectives of this report are:

- (1) To discuss and evaluate presently existing land use information sources and their suitability for accomplishing TASK B goals.
- (2) To bring together the results obtained earlier by specialists advising the Chairman of TASK B (from Bangay, Jenns, Zsilinszky, Thie, Hardy, LARS).
- (3) To discuss methods to acquire data needed for TASK B, i.e.: classification system, levels of detail, data presentation, accuracy, cost, speed, operational aspects, timing.



PROPOSED SCHEDULE OF ACTIVITIES - LAND DRAINAGE REFERENCE STUDY (Calendar Years)

