

**KIRBY LAKE  
BARRON COUNTY, WISCONSIN**

**WATERSHED INVENTORY FINDINGS**

**PREPARED BY  
INTERNATIONAL ENVIRONMENTAL MANAGEMENT SERVICES LIMITED  
AND  
ARON & ASSOCIATES**

**FOR THE  
KIRBY LAKE MANAGEMENT DISTRICT**

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**INTRODUCTION**

Kirby Lake, located near the City of Cumberland in Maple Plain Township, Barron County, Wisconsin, is one of a number of valuable ecological resources offering a variety of recreational and visual opportunities to the community and its visitors. Kirby Lake is an integral part of this lake-oriented community. Unfortunately, the recreational and visual value of the lake is perceived as being adversely affected by peri-urban development in the Kirby Lake watershed. Thus, there is a potential for serious water quality degradation to occur in this waterbody despite a continuing and increasing demand for high quality recreational and residential experiences in the area.

Seeking to improve the usability of Kirby Lake, and to prevent deterioration of the natural assets and recreational potential of Kirby Lake, the residents of the watershed formed the Kirby Lake Management District in the summer of 1992. Shortly thereafter, the District began a program of community involvement, education and lake management aimed at maintaining and improving the aspect of this valuable lake. This is the first of a number of proposed studies involving Kirby Lake to be conducted by various private consultants in cooperation with the Wisconsin Department of Natural Resources (DNR). This study is funded in part by the Wisconsin Department of Natural Resources through a Lake Management Planning Grant awarded to the Kirby Lake Management District under the Chapter NR 119 Lake Management Planning Grant Program.

This watershed inventory sets forth a portion of the background information needed to prepare a lake protection plan for Kirby Lake, and represents part of the on-going commitment of the Kirby Lake Management District--and the Town of Maple Plain--to sound environmental planning with respect to the Lake. This inventory was prepared during 1993/94 by a consortium comprising International Environmental Management Services Limited (IEMS Ltd) and Aron & Associates at the request of the Kirby Lake Management District. The watershed survey was conducted by IEMS Ltd staff during May 1994. Additional data were supplied from the files of the District, Wisconsin Geological and Natural History Survey, and DNR.

It is important to note that this report does not represent a comprehensive water quality management plan for Kirby Lake, but, rather, provides information that will contribute to the preparation of such a plan at a later date. A comprehensive lake

management plan for Kirby Lake will require a good deal more water quality and biological data collection and analysis than is required for a watershed inventory. Only after such a complete inventory and analysis can a comprehensive lake management plan be prepared which specifies the land use, pollution control and in-lake management techniques needed to protect or enhance lake water quality.

The scope of this report is limited to the collection of those data which delineate the watershed in which the lake is situated and describe the land uses to which the watershed is subjected. This inventory follows approximately the format adopted by the DNR for nonpoint source pollution control plans pursuant to Chapter NR 120, Wisconsin Administrative Code, insofar as the requirements of that Chapter deal with the acquisition of land use and management information. The inventory data are used in a preliminary analysis of the pollutant loadings to which the lake is exposed. The estimates generated through this analysis are examined in light of information collected by the District under the DNR Self-help Monitoring Program and may ultimately be verified using the field data to be gathered through subsequent water quality studies. These estimates provide an initial basis on which to begin to formulate a strategy to control and manage the external contaminant loads to Kirby Lake.

This inventory is comprised of six main sections: (1) a statement of planning goals and objectives, (2) a description of the lake and its watershed, (3) a statement of the current use problems identified in the watershed and the need for protection actions to be taken within the Kirby Lake watershed, (4) a statement of the actions previously taken to manage the Kirby Lake watershed, and (5) a preliminary description of some alternative means of watershed management that might be considered in a future lake protection plan. Those elements which can be incorporated into on-going public information programs being conducted by the Kirby Lake Management District are identified section (6).

#### **STATEMENT OF LAKE MANAGEMENT GOALS AND OBJECTIVES**

The lake use and management goals and objectives for Kirby Lake were developed by the Kirby Lake Management District in consultation with the Town of Maple Plain. The goals and objectives are:

- to protect and maintain public health, and promote public comfort, convenience, necessity and welfare, in concert with the natural resource, through the environmentally sound management of the vegetation, fishery and wildlife populations in and around Kirby Lake;

- to promote a quality, water-based experience for residents and visitors to Kirby Lake consistent with the policies and objectives of the Wisconsin Department of Natural Resources;

- to manage the lakes in an environmentally sound manner, pursuant to the standards and requirements set forth in Administrative Codes NR 103, Water Quality Standards for Wetlands, and NR 107, Aquatic Plant Management, to preserve and enhance its water quality and biotic communities, their habitats, and essential structure and function in the waterbody and adjacent areas;

and,

- to effectively control water quality in the Kirby Lake basin to better facilitate the conduct of water-related recreation, improve the aesthetic value of the resource to the communities, and enhance the resource value of the waterbody.

## **EXISTING CONDITIONS IN KIRBY LAKE AND ITS WATERSHED**

### **Physical Characteristics**

Watershed Characteristics: Kirby Lake is a seepage lake situated just north of the City of Cumberland in Maple Plain Township, Barron County, as shown on Map 1. The Lake lies in an hydrogeologically-complex area immediately north and west of a groundwater divide separating flows toward the Yellow River to the east, Beaver Dam Lake-Hay River to the south, and Sand Creek to the west. Groundwater flow in the area adjacent to Kirby Lake is likely to be westward toward Sand Creek.<sup>1</sup>

The direct tributary drainage area of Kirby Lake--defined as that area which drains directly to Kirby Lake without passing through any other waterbodies (principally wetlands in the case of this seepage lake) and shown as the study area on Map 2--is situated wholly within Maple Plain Township in Barron County, and is approximately 449 acres in areal extent as set forth in Table 1. Field inspections of the watershed boundary conducted by IEMS Ltd staff during May 1994 resulted in minor refinements to this boundary as initially identified from the United States Geological Survey topographic map for Cumberland, 1982. These refinements are incorporated in Map 2.

The total tributary drainage area is coincident with the direct tributary drainage area in this lake. Surface water flows through Kirby Lake parallel the groundwater flows and trend toward the west.<sup>2</sup> Numerous internally-drained wetlands also exist in this area, particularly to the north and south of Kirby Lake, some of

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<sup>1</sup> Wisconsin Geological and Natural History Survey Map No. 87-2a./2i., Atlas of Groundwater Resources and Geology of Barron County, Wisconsin, 1987.

<sup>2</sup> *ibid.*

**MAP 1: KIRBY LAKE WATERSHED LOCATION MAP.**  
**Source: Wisconsin Geological and Natural History Survey**



**MAP 2: KIRBY LAKE STUDY AREA MAP.**  
**Source: United States Geological Survey**

