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### **LOCAL ECONOMIC IMPACT OF HEALTHY LAKES**

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Lake managers and shoreland volunteers who see the need for taking better care of lakes are often stymied in their efforts to bring about change. Some decision-makers in local governments who adopt comprehensive land use plans and approve permits for land use still cling to the view that protection of the environment and economic growth are incompatible. Claims are made that environmental protection causes loss of jobs. Funds are required for many improvements including adoption and enforcement of shoreland ordinances, replacement of failing wastewater treatment systems and restoration of native shoreland vegetation.

When zoning ordinances are being considered and adopted by lawmakers, short-term economic gains associated with higher dwelling density and smaller lot size often outweigh long term impact and sustainability considerations. Decision-makers must realize that lake resources are an important part of the long-term economic vitality and stability in areas, such as northern Minnesota, having many lakes. All residents and visitors lose when a lake resource is degraded. Water quality has a direct impact upon the value of shoreland property and, while lakes can be degraded over short periods of time, there are very limited public resources available for attempting to rehabilitate them. The high cost of lake restoration/rehabilitation in comparison to protection has been widely recognized.

It's not possible to accurately assign dollar values to the thrill, excitement and enjoyment that many of us have in watching a beautiful sunset on a lake, seeing watery reflections of the full moon on a still summer night, catching a fish, or hearing the distinctive, haunting calls of a distant loon. Yet, vacationers and tourists spend large sums of money while enjoying area lakes. Shoreland property owners recognize values and are willing to purchase shoreland for relatively high prices, to pay real estate taxes and, for seasonal property owners, to drive many miles to be able to reside part-time in a shoreland environment.

There is a need for new and improved economic indicators that would help lake managers, shoreland owners and decision-makers to determine the appropriate balance between use and protection. However, until that information is provided, methods are available to estimate the economic impact of water resources such as evaluating the money spent on fishing, boating, sight seeing, swimming and many other recreational activities common in shoreland areas. Hank Todd's (Director, Minnesota Office of Tourism) report, "Importance of Lakes to Minnesota's Economy," at the Minnesota Lake Management Conference in 1989 (recorded in NALMS LakeLine 10(6) Special Issue, pp 4-6, 1990 and The Minnesota Lake and Watershed Data Collection Manual (Heiskary et al. 1994) provide further information on estimating economic impacts of lakes. Both reports provide a method for estimating the many sources of income that are derived from lakes. Although Todd's report was written over a decade ago, the concepts embodied in the methodology remain sound. Updating cost figures to 2003 dollars would be desirable. While Todd's formulas may not precisely apply to lakes in other states, the use of comparable data from local governments and state agencies could be used in a similar manner to estimate economic impacts of lakes and shoreland resources in other communities.

If citizens are able to provide information on a lake's contribution to the economy, they may be more successful in convincing local officials to devote more resources to lake management and protection. While it would be of great help in preparing persuasive arguments, one doesn't need to become an economist to put together meaningful data. But where is the volunteer going to find up-to-date factual data to prepare an estimate of economic values? How does the beginner

prepare an estimate of income derived from lakes? The following is an example of what a lake association has done to estimate income from lakes in one small watershed.

### **Application for lakes in Itasca County Minnesota**

Itasca County in northern Minnesota is a very lake-rich county with about 945 lakes greater than 10 acres in size. With a total acreage on the order of 184,768 acres, lakes account for about nine per cent of the total area of the County. The total net tax on real estate for nine classes of residential property in the County for 2003 was \$18,874,924. Riparian residential properties provided 56% of that tax base. Itasca County has one primary urban center at Grand Rapids and principal industries include forestry and mining-related activities. With a population of 43,992, it is among the least densely populated areas in Minnesota. Lakes are a primary focus and draw to this area. The area is known for its high quality lakes. Based on Secchi data from over 100 volunteers in Itasca County in 2002, typical summer average transparencies range from 8 – 15 feet and many have transparencies greater than 15 feet (Klang, 2003).

In 1999 and 2000 a management plan was being drafted for 18 small lakes in the Turtle Lake Area Watershed in Minnesota's Itasca County. In addition, the Minnesota Pollution Control Agency, with the cooperation of several partners, was conducting a Lake Assessment Program study for Turtle Lake. A simple way of providing local decision-makers with an estimate of the income generated by the lakes in the watershed was needed. The Itasca County Assessor's Office provided the estimated market value and real estate property taxes for shoreland property on the ten lakes in the watershed where privately owned shoreland was found in the records. The Minnesota Department of Natural Resources Fisheries Lake Management Plans for five of the 18 named lakes in the watershed provided the surface area of fishable lakes in the watershed. Fishable lakes, i.e., those lakes that have a recognized sustainable fishery, were selected because Todd's multipliers were determined for Minnesota's fishable lakes and were adjusted for inflation during the years since Todd's report. Since shoreland prices and real estate taxes are continuing to rise, the Assessor's estimated market values and real estate taxes are typically conservative figures.

Using Todd's concepts and formulas, economic impacts were estimated, tabulated and distributed in a report to the watershed steering committee, shoreland owners, town board supervisors, county zoning administrator, and county commissioners. The report provided part of the information used in an extensive educational program that was conducted over a two-year period during which the Itasca County Zoning Ordinance was being revised and the watershed plan was being prepared and adopted. Many of the county's leaders learned more about why greater protection of water and shoreland resources through adoption and enforcement of land use controls was essential to the local economy. As a result, there was a greater awareness of the need to adopt and enforce land use regulations that were more restrictive than had been in effect in previous years.

Summaries of the estimated economic impacts are shown in Tables 1 and 2. Surveys indicated that approximately 1/4 (77) of the 309 shoreland property owners were year around residents and 3/4 (232) were seasonal residents. The number of jobs is defined as the direct and indirect impact on employment based upon surface area of fishable lakes. Environmental protection can create jobs, including landscaping for shoreland restoration and erosion control, with equal pay to jobs that cause harm to water quality and shoreland integrity, such as, excessive vegetative clearing of shoreland and removal of desirable aquatic plants from the lakebed.

**Direct consumer purchases** identify money spent on retail and service industries associated directly with lakes (e.g. resorts, restaurants, food, bait, sports shops, apparel, vehicles, gasoline/fuel, boat sales and service, docks, cabin/home sales and services, recreational

activities and license fees). **Total gross output** combines direct and indirect impacts and **total value added** is the gross output of wages and other expenses.

In addition, the intangibles, “**consumer’s surplus**” and “**option value**” should be included in economic assessments. Based upon decades of experience of local, long-time shoreland residents and upon treasurer’s reports of lake association expenditures, these two intangibles were estimated by association leaders and used as described below.

1) **Consumer's surplus** is defined by economists as the willingness to pay an amount over and above the necessary expenditures. This was set at \$100 per year per family. Therefore, consumers surplus = \$100 per year per family X 309 families = **\$30,900 per year**.

2) **Option value** is defined as the amount that individuals are willing to pay to protect the resource for future generations and describes the protective considerations that some families feel about their favorite lake. This was set at \$125 per year per family. Therefore, option value = \$125 per year per family X 309 families = **\$38,625 per year**.

Combining direct and indirect impacts (\$4,906,296), total value added (\$2,193,712), consumer’s surplus (\$30,900), and option value (\$38,625) yields an estimated \$7,169,533 per year for the local economy in the Turtle Lake Area Watershed.

Although it was not done in this project, one way to further demonstrate the economic importance of lakes is to contrast the real estate property taxes levied on shoreland property with taxes levied on nonshoreland real estate in the same township or county.

### **Summary:**

In the year 1999, 10 northern Minnesota lakes with a combined surface area of 3,284 acres located in a 15,035 acre watershed that is 55% forested land and 45% water and marsh generated an estimated total income of \$7,169,533. Real estate taxes for shoreland properties paid to Itasca County accounted for additional income of \$333,348. Recreational use of the lakes provides the main attraction for year around residents, seasonal residents and visitors. Clean water, natural wooded shorelines, healthy fisheries, wildlife and tranquil setting are the lakes primary attributes. It seems that making an effort to protect water quality, fish and wildlife habitat and a natural shoreland would be an easy choice. If currently available science-based advice is followed, future generations will also greatly benefit from use of good management practices.

Those who do not fully appreciate the beauty and recreational use of lakes may find the substantial income from lakes to be adequate justification for keeping them in a healthy state through use of best management practices. Recognizing the amount of income from healthy lakes may lead to a greater commitment on the part of local officials in supporting efforts to take better care of precious lakes.

### **References**

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**Ten Lakes in the Turtle Lake Area Watershed  
Itasca County, Minnesota**

**Table 1: Property Value Impact**

<b>Lake</b>	<b>Surface Area*</b>	<b>Market Value***</b>	<b>Property Taxes****</b>	<b>Number of Families</b>
<b>Bello</b>	<b>492</b>	<b>2,105,200</b>	<b>18,412</b>	<b>24</b>
<b>Boggy</b>	<b>na**</b>	<b>33,700</b>	<b>470</b>	<b>1</b>
<b>Elbow</b>	<b>na</b>	<b>202,500</b>	<b>622</b>	<b>4</b>
<b>Grass</b>	<b>na</b>	<b>459,900</b>	<b>370</b>	<b>5</b>
<b>Hatch</b>	<b>243</b>	<b>1,975,500</b>	<b>22,198</b>	<b>14</b>
<b>Horseshoe</b>	<b>269</b>	<b>2,327,300</b>	<b>27,034</b>	<b>33</b>
<b>Little Ranier</b>	<b>na</b>	<b>795,800</b>	<b>1,112</b>	<b>5</b>
<b>Maple</b>	<b>228</b>	<b>591,600</b>	<b>1,136</b>	<b>2</b>
<b>Mike</b>	<b>na</b>	<b>354,400</b>	<b>1,472</b>	<b>6</b>
<b>Big Turtle</b>	<b>2,052</b>	<b>24,250,600</b>	<b>260,522</b>	<b>215</b>
<b>TOTAL</b>	<b>3,284</b>	<b>\$33,096,500</b>	<b>\$ 333,348</b>	<b>309</b>

\*Acres, From Minnesota Department of Natural Resources Area Fisheries Lake Management Plans.

\*\*na = not available from DNR reports.

\*\*\*1999 Estimated riparian value, includes public lands, Itasca County Assessor's Office

\*\*\*\*1999 Real estate property taxes, Itasca County Assessor's Office

**Table 2: Local Economic Impact**

- 1) Number of jobs: 16.5\* jobs per 1,000 acres of fishable water or  $16.5 \times 3.284 = 54$  jobs.**
- 2) Direct consumer purchases: \$916\* per acre of fishable water per year or  $\$916 \times 3,284 = \$3,008,144$  per year.**
- 3) Direct and indirect impacts on total gross output: \$1,494\* per acre of fishable water per year or  $\$1,494 \times 3,284 = \$4,906,296$  per year.**
- 4) Total value added: \$668\* per acre of fishable water per year or  $\$668 \times 3,284 = \$2,193,712$  per year.**

\*Multipliers taken from the 1994, 1<sup>st</sup> edition, Minnesota Lake and Watershed Data Collection Manual and adjusted for inflation.