Price County Lakes Project

Protecting Water Quality and Your Lake

Price County Lakeshore Property Owners Share Their Views on Water Resources and Lake Issues

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Price County Lakes Project

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Lynn Marie Zanski

BACKGROUND

In 1996, the Department of Natural Resources (DNR) released a report[1] documenting development trends around lakes in northern Wisconsin. Not surprisingly, researchers found that "since the 1960's, about two-thirds of previously undeveloped lakes 10 acres and larger have been developed." What's more, "the average number of dwellings on shorelands not in public ownership has more than doubled over the same period." The report concludes that in addition to *all* sizes of lakes being affected, the rate of shoreline development is *rapidly* accelerating.

Price County is located in north central Wisconsin and noted for its natural beauty and wealth of recreational opportunities. The county has 389 lakes and 34 percent of the land base consists of public land holdings[2]. This makes it a well-known destination for outdoor enthusiasts and people in search of lakefront property with a North Woods atmosphere. In recent years, the county has been experiencing both a boom in home construction and an increase in lakeshore property values. Between 1987 and 1997, applications for land use permits nearly doubled from 278 to 512[3], a strong measure of burgeoning development. These compelling statistics provide strong motive for taking inventory of *how* people are developing and using lakeshore properties in the county. In turn, by promoting responsible land management and a commitment to local stewardship, impacts of lakeshore development can be minimized to the greatest extent possible.

The Lakes Project was initiated in February 1997 to research how people view, value, and use water resources through dissemination of a survey. A groundwater inventory was also conducted to serve as an extension of a similar study carried out in 1994. Information gathered in this project provides a baseline from which to measure future changes in water quality and resident opinions on lake issues. The purpose of this report is to inform county officials and land managers in an effort to help direct future planning and management decisions. The primary goal underscoring this project is protecting and conserving lake ecosystems, as well as the unique character of the North Woods.

METHODOLOGY

Drinking water samples were collected and surveys administered in-person on thirteen major bodies of

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[1]Wisconsin Department of Natural Resources. 1996. *Northern Wisconsin's Lakes and Shorelands: A Report Examining a Resource Under Pressure.*

[2]*State of Wisconsin Blue Book*, 1995-1996.

[3]Price County Zoning Department.

water (*Table 1*) distributed across the county. Lakes were selected based on the number of residents present and their potential ability to participate in the study. In general, more densely populated lakes were chosen for the collection of greater numbers of surveys and samples.

Lake	Surveys Completed
Butternut	109
Soo	37
Solberg	32
Pike	29
Long	21
Wilson	17
Schnurs	14
Musser	13
Round	13
Hultman	7
Spirit	7
Turner	3
Stone	1
Total	*303*

The entire population of Butternut Lake, including several Ashland County residents, was targeted in order to draw stronger conclusions from the data. The project goal of 300 surveys and water samples was completed in August 1997.

The most significant limitation of the study is its inability to make statistically *valid* statements about individual lakes (*excepting Butternut Lake*) surveyed due to relatively small numbers of surveys collected.

The project did, however, survey 303 Price County lakeshore residents which is believed to be an accurate representation of lakeshore residents county-wide. This data provides useful information and insight into the way people feel about lakes in the county.

KEY POINTS OF THE STUDY

1. The top five activities that Price County lakeshore residents participate in are: enjoying the scenery, peace and solitude, fishing, boating, observing wildlife, and swimming.

2. Residents rank peace and tranquility, scenic qualities, ability to view wildlife, quality of lake water, and low numbers of people using the lake as the most important attributes a lake should have.

3. Forty percent of respondents maintain some level of undeveloped or natural shoreline.

4. Approximately 78 percent of respondents believe their lake already has the right amount of housing present.

5. Only 19.8 percent of those surveyed currently use some form of fertilizer and/or pesticide on their lawn or garden.

6. Forty-one percent of respondents rate the quality of their lake water as *fair*; however, when asked about any negative impacts affecting water quality, the majority of people were not aware of any problems.

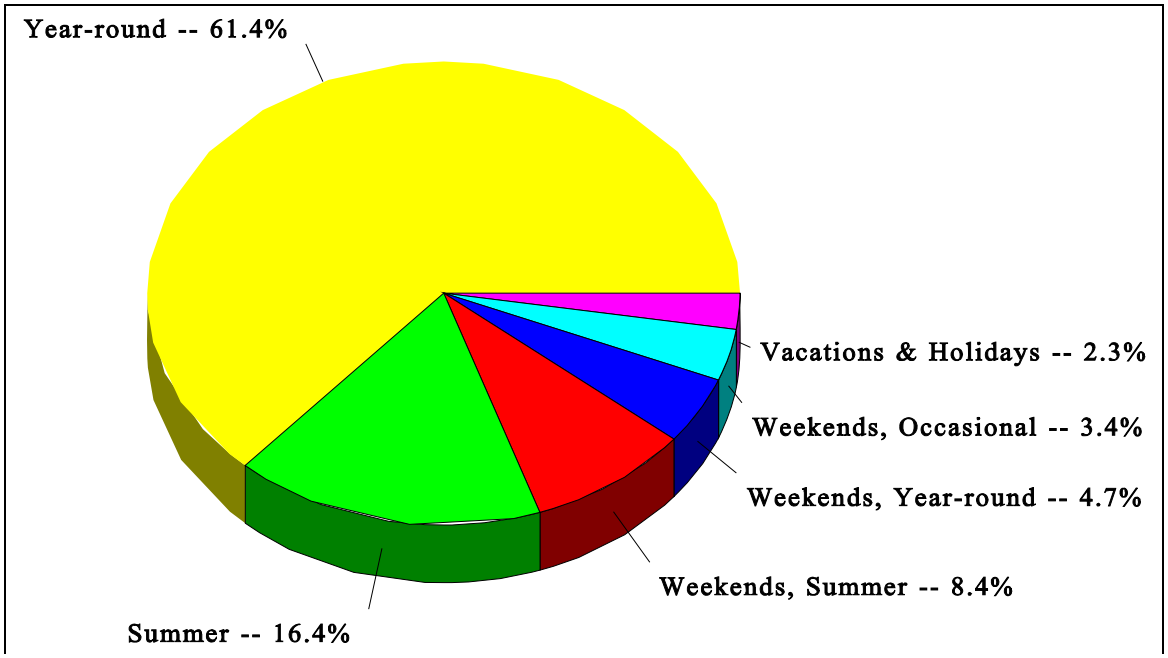
7. Although 78 percent of respondents feel that lakeshore properties should be regulated to improve or maintain the quality of water, the majority *do not* support increasing current shoreland zoning standards such as minimum setbacks, lot size and vegetation removal.

8. Increased regulation of personal water craft, or jet skis, was cited as the top change lakeshore residents would like to see happen on their lake.

FINDINGS

A Profile of Price County Lakeshore Property Owners

Of the 303 individuals interviewed, 97.7 percent own lakeshore property and 2.3 percent visit the area regularly. Over half are year-round residents and 16.4 percent are full-time residents during the summer



(*Figure 1*).

The average amount of time spent by people living on lakes in the area is 18 years and 112 people report having owned lakeshore property for over 20 years *(Table 2)*. A token feature of a population with a strong history, this finding speaks to the affinity of many residents to place.

Number of Years	Percent of Respondents
1 - 5	18.6%
6 - 10	21.6%
11 - 15	16.3%
16 - 20	15.7%
21 - 30	19.4%
31 - 40	9.3%
41 - 50	3.0%
More than 50 years	4.5%

People visit and buy property on Price County lakes for a variety of reasons. When asked to pinpoint specific attributes that are important in choosing a lakeshore property, respondents

mention peace and tranquility, a scenic view, being able to see wildlife, and good quality lake water as their top choices *(Table 3)*.

Table 3. Ranking of attributes and activities that can influence a respondent's decision to use a lake.

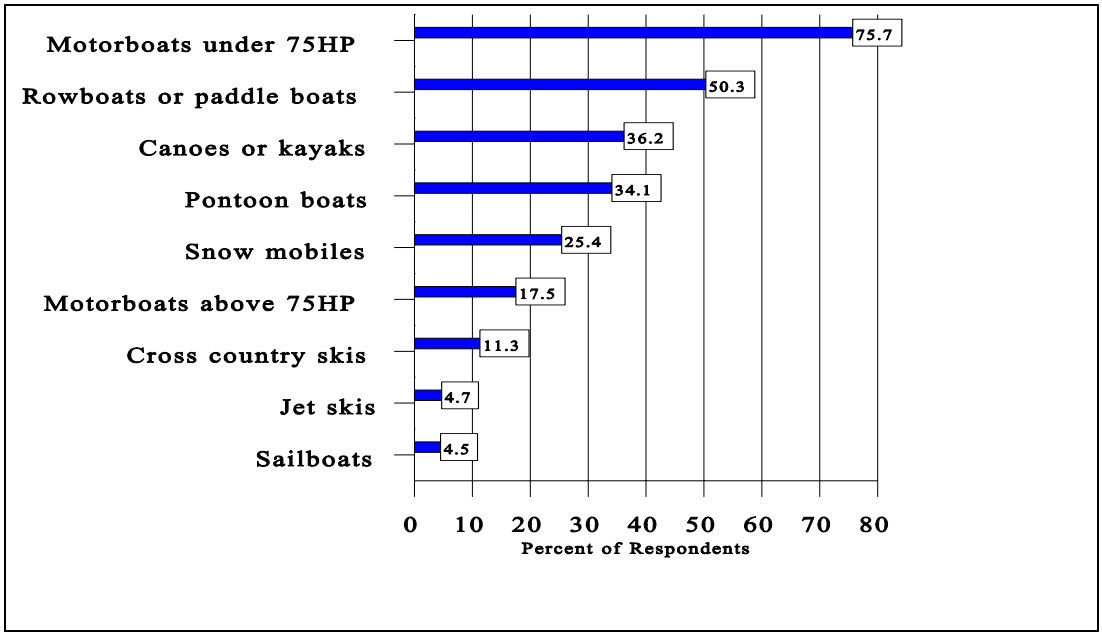
Lake Attribute or Activity	Not Important	Somewhat Important	Important	Very Important
	Percent of Respondents			
Peace and tranquility	3.5%	1.0%	14.7%	80.8%
Scenic qualities	11.4%	2.4%	17.5%	68.7%
Ability to view wildlife	34.0%	1.8%	21.3%	42.9%
Quality of lake water	41.8%	8.0%	21.1%	29.4%
Low numbers of people using the lake	42.9%	4.8%	24.5%	27.9%
Cost of property	40.7%	5.7%	25.9%	27.6%
Quality of fishing	37.5%	10.8%	24.3%	27.4%
Family tradition	59.2%	3.1%	11.2%	26.5%
Winter recreation	63.0%	9.3%	17.4%	10.3%
Summer recreation	71.0%	7.4%	14.8%	6.8%

Lake Activity	Percent of Respondents
Enjoying peace & solitude	98.0%
Enjoying the scenery	97.7%
Fishing/ice fishing	85.9%
Boating	84.9%
Observing wildlife	84.2%
Swimming	59.7%
Canoeing/kayaking	34.2%
Snowmobiling	33.6%
Waterskiing	25.6%
Hunting	21.1%
Picnicking	12.1%
Jet skiing	7.4%
Ice-skating	5.4%
Sailing	5.0%

In general, people rank enjoying peace, solitude and scenery, fishing, boating, observing wildlife, and swimming as lakeside activities they enjoy most *(Table 4)*.

Ownership of recreational equipment also provides insight to the types of activities residents like to take part in. While 75.7 percent own motorboats under 75HP, only 17.5 percent own motorboats above 75HP

and only 4.7 percent currently own jet skis *(Figure 2)*. Half of the residents own a rowboat or paddle boat typically used to take advantage of the lake's more serene qualities. Inventory of such equipment can indicate either high or low lake activity levels which potentially fuel user conflicts.



FINDINGS

Lakeshore Property Information

Accurate descriptions of lakeshore properties provide a baseline against which to measure future changes in the landscape. These descriptions also reveal how people use, manage, and care for their property.

Time Period	Percent of Homes Constructed
1900 - 1910	1.7%
1911 - 1920	1.7%
1921 - 1930	3.4%
1931 - 1940	3.5%
1941 - 1950	8.6%
1951 - 1960	13.7%
1961 - 1970	21.1%
1971 - 1980	21.3%
1981 - 1990	15.5%
1991 - 1997	9.5%

This category includes:

· Type and age of structures present and distance set back from the water

· Average number of people using the property

· Profiles of the yard and shoreline

· Parcel size *(Table 5)*

· Lake frontage *(Table 6)*

· Well and septic information

· Presence of storage tanks

Parcel Size	Percent of Respondents
Less than ¼ acre	5.8%
¼ acre - ½ acre	13.4%
½ acre - 1 acre	32.5%
More than 1 acre	48.3%

Lake Frontage	Percent of Respondents
50 feet or less	3.2%
51 - 100 feet	36.4%
101 - 150 feet	18.6%
151 - 200 feet	14.5%
More than 200 feet	25.1%

Property Structures

While most survey respondents have winterized homes and just over half own private piers, only 2.3 percent report owning a boathouse *(Table 7)*. This suggests a nominal level of development when compared to lakes in which nearly every lot has a boathouse.

Structure Type	Percent of Respondents
Winterized home	84.2%
Summer cottage	14.5%
Detached garage/shed	44.9%
Dock/pier	51.8%
Boathouse	2.3%

The majority of homes were built during the 1960's and 1970's *(Table 8)*.

Number of People	Percent of Respondents
2 or less	58.3%
3 - 5	29.0%
6 - 10	7.4%
More than 10	5.3%

To day, over half of properties are used by two people or less *(Table 9)*.

Distance of Home from Water	Percent of Respondents
Less than 75 feet	39.2%
75 feet	15.8%
More than 75 feet	44.5%

In 1967, new shoreland zoning standards established a 75 foot setback for all structures from the waterline. The fact that 44.3 percent of lakeshore homes were built prior to this time may explain why 39.2 percent report setbacks of less than 75 feet *(Table 10)*. *Table 11* on the next page shows a breakdown of existing setbacks by lake.

Table 11. Existing setbacks of lakeshore homes by lake.

Lake	Less than 75 ft.	75 ft.	More than 75 ft.	# of Respondents
	----------Percent of Respondents[4]----------			
Butternut	44.3%	15.1%	40.6%	106
Soo	39.1%	11.1%	50.2%	36
Solberg	39.9%	20.0%	39.8%	30
Pike	32.1%	21.4%	46.5%	28
Long	33.4%	28.6%	38.1%	21
Wilson	41.3%	5.9%	53.1%	17
Schnurs	35.7%	14.3%	49.8%	14
Musser	24.9%	8.3%	66.5%	12
Round	41.6%	16.7%	41.6%	12
Turner	33.3%	33.3%	33.3%	3

Yard and Shoreline Profiles

The level of lakeshore development is often evidenced by characterization of the shoreline. When asked to describe their shoreline, 162 residents indicated some undeveloped, natural vegetation.

Table 12 shows that 40.4 percent of 297 respondents report having an undeveloped or natural shoreline. Here, residents were asked to describe the state of the *majority* of their shoreline. This percentage suggests that a substantial portion of shoreland in Price County *still* maintains natural qualities.

Shoreline	Percent of Respondents
Undeveloped/natural landscape	40.4%
Lawn	27.9%
Rock/riprap	21.5%
Masonry/concrete retaining wall	6.7%
Wood retaining wall	2.4%
Landscaped trees and shrubs	1.0%

Also using data from the latter of these two questions, *Table 13* displays a breakdown of percentages of "natural shoreline" as reported by lake.

[4]Percentages are based on the number of respondents per lake.

Lake	Percent Describing Their Shoreline as "Natural"	Number of Respondents
Butternut	43.9%	107
Soo	29.7%	37
Solberg	40.0%	30
Pike	34.5%	29
Long	60.0%	20
Wilson	11.8%	17
Schnurs	42.9%	14
Musser	46.2%	13
Round	30.8%	13
Hultman	85.7%	7
Spirit	16.7%	6
Turner	66.7%	3

In describing their yard, 83.9 percent of respondents indicate maintaining some portion of lawn. Only 30.9% have added landscap-ed trees and shrubs, and 60.1 percent have simply allowed their yards to remain in natural vegetation. Another 6.7 percent report having a sand beach on their property.

While the above percentages (*Table 13*) provide some shoreline information for each lake surveyed, it is difficult to draw substantial conclusions about the level of shoreline development around entire lakes due to the small number of surveys administered at each lake. Butternut Lake, however, does have a statistically valid sample of 109 survey respondents, almost the total population. Therefore, 43.9 percent of Butternut Lake's shoreline described as "natural" is the only statistically accurate description for an entire lake.

Well Information

Information about the location and status of wells, septic systems and fuel tanks helps to identify potential threats to ground and surface water that may occur as a result of leaks or improperly functioning

systems. Nearly every survey respondent reports maintaining a household drinking well, although only 19.2 percent have had their well tested within the past two years *(Table 14)*. Of those who did have their water tested, 93.9 percent tested for bacteria. The next most common parameter cited is nitrate, followed by lead and pesticides.

Year Well Last Tested	Percent of Respondents
1997	7.6%
1996	11.6%
1995	11.6%
1994	7.6%
1993	4.3%
1992	6.6%
Before 1992	19.1%
Never	13.9%
Don't Know	17.8%

Well Type	Percent of Respondents
Drilled	60.7%
Driven Point	24.1%
Dug	1.4%
Don't Know	13.4%

Table 15 illustrates that a majority of lakeshore residents have drilled wells. Most are protected at the surface by a sealed well cap (78.2 percent). Of the 32 respondents who reveal using bottled water on a regular basis, 68.8 percent note dissatisfaction with the taste of their water as the primary reason for doing so.

Groundwater sampling of lakeshore residences focused on levels of nitrate. Natural levels of nitrate in Wisconsin's groundwater are less than 2 parts per million (ppm). Elevated levels of this form of nitrogen are known to interfere with oxygen transport in the blood for infants and is also a concern for pregnant women. Levels between 2 ppm and 10 ppm indicate human influences are affecting groundwater quality.

Initial results from 1997 sampling of 300 lakeshore wells identify less than one percent (.7%) exceeding the federal health standard of 10 ppm for nitrate. Five samples (1.7%) fall within the human influence range of 6 to 10 ppm and another 21 samples (7.1%) fall within the human influence range between 2 and 5 ppm. The remaining 90.5 percent of samples result in values of 1 ppm or less indicating natural levels.

Septic Information

Most residents have a septic tank with a drain field (86.5 percent), while only 13.5 percent have holding tanks. The age of these systems varies, although most are between the ages of 16 and 25 years *(Table 16)*. The Department of Natural Resources suggests having a septic system pumped once every two years. Of the 229 residents who report pumping their systems, 73.8 percent follow this recommendation.

Age of Septic System	Percent of Respondents
Less than 5 years	16.6%
5 - 10	12.1%
11 - 15	11.4%
16 - 25	28.7%
More than 25 years	16.3%
Don't Know	14.9%

When asked about the distance and location of the septic system in relation to their well, the majority of respondents describe them as being level with one another and between 51 and 100 feet apart *(Tables 17 and 18)*.

Distance	Percent of Respondents
11 - 50 feet	24.6%
51 - 100 feet	51.1%
More than 100 feet	24.3%

Storage Tanks

Slope	Percent of Respondents
Well is uphill	17.1%
Well is downhill	16.4%
Well is level	66.5%

Of the 147 residents indicating presence of a fuel tank on their property, 92.5 percent use the tank for liquid propane. Only 6.1 percent report storing heating oil and 1.4 percent gasoline. The majority (72.1 percent) are galvanized steel and nearly half (46.5 percent) are between the ages of one and five years. The holding capacity for most tanks (72.9 percent) is between 60 and 500 gallons.

FINDINGS

Lakeshore Property Owner Opinions

Survey participants were asked for their opinions on a variety of lake topics including:

- Physical observations of their lake such as the quality of water and fishery
- Levels of regional growth and development
- Possible lake management actions
- Existing shoreland regulations
- Potential threats to water quality
- Changes they would like to see implemented on their lake

Table 19. Rating of water quality by lake.

Lake[5]	Seriously Polluted	Poor	Fair	Good	Very Good
	Percent of Respondents				
Butternut	0.0%	11.0%	40.4%	41.3%	7.3%
Soo	0.0%	5.4%	59.6%	35.1%	0.0%
Solberg	0.0%	3.1%	53.1%	40.6%	3.1%
Pike	0.0%	0.0%	17.2%	65.5%	17.2%
Long	4.8%	19.0%	52.4%	23.8%	0.0%
Wilson	0.0%	17.6%	58.8%	17.6%	5.9%
Schnurs	0.0%	0.0%	21.4%	64.3%	14.3%
Musser	15.4%	23.1%	38.5%	15.4%	7.7%
Round	0.0%	0.0%	23.1%	76.9%	0.0%
Hultman	0.0%	0.0%	0.0%	57.1%	42.9%
Spirit	0.0%	0.0%	42.9%	57.1%	0.0%
Turner	0.0%	0.0%	0.0%	33.3%	66.7%
Cumulative Totals[6]	1.7%	8.9%	41.6%	41.6%	6.6%

[5]Percentages reported per lake do not reflect a statistically valid sample size with the exception of Butternut Lake. See *Table 1* for total number of surveys administered for each lake.

[6]Cumulative totals reflect percentages based on the total number of lakeshore residents surveyed.

Physical Observations of Lakes

Opinions about water quality and fishery range across the board and are influenced by a variety of factors including actual amount of time spent fishing and individual perception of what makes a lake a "clean lake." *Tables 19* and *20* illustrate how lakeshore residents rate each lake according to these categories, as well as how lakes in Price County rate overall.

Table 20. Rating of fishery by lake.

Lake	Very Poor	Poor	Fair	Good	Very Good
	----------Percent of Respondents----------				
Butternut	4.6%	15.7%	35.2%	39.8%	4.6%
Soo	13.5%	27.0%	43.2%	16.2%	0.0%
Solberg	3.1%	28.1%	62.5%	6.3%	0.0%
Pike	3.4%	17.2%	31.0%	37.9%	10.3%
Long	9.5%	23.8%	52.4%	14.3%	0.0%
Wilson	11.8%	5.9%	58.8%	23.5%	0.0%
Schnurs	0.0%	14.3%	28.6%	57.1%	0.0%
Musser	7.7%	15.4%	38.5%	30.8%	7.7%
Round	0.0%	46.2%	15.4%	38.5%	0.0%
Hultman	0.0%	16.7%	16.7%	66.7%	0.0%
Spirit	0.0%	28.6%	42.9%	28.6%	0.0%
Turner	0.0%	0.0%	66.7%	0.0%	33.3%
Cumulative Totals	*5.6%*	*20.3%*	*40.2%*	*30.6%*	*3.3%*

Some 41.6 percent of the 303 residents surveyed view the quality of their lake water as "fair" or "good." Interestingly, of the 211 people who rated the clarity of their water as either "murky" or "cloudy" (*Table 21)*, only 31 rate the quality of lake water as "poor" or "seriously polluted." With a large percentage of lakes in northern Wisconsin being "stained" or tea-colored as a result of surrounding wetlands and decomposing vegetation, residents *do not* necessarily see this factor as negatively affecting the quality of their lake.

Table 21. Characterization of water clarity during summer months.

Lake	Murky	Cloudy	Clear	Crystal Clear
	----------*Percent of Respondents*----------			
Butternut	18.5%	49.1%	32.4%	0.0%
Soo	40.5%	37.8%	21.6%	0.0%
Solberg	31.3%	50.0%	18.8%	0.0%
Pike	10.7%	21.4%	67.9%	0.0%
Long	66.7%	28.6%	4.8%	0.0%
Wilson	41.2%	41.2%	17.6%	0.0%
Schnurs	8.3%	41.7%	50.0%	0.0%
Musser	53.8%	38.5%	7.7%	0.0%
Round	16.7%	50.0%	33.3%	0.0%
Hultman	42.9%	42.9%	14.3%	0.0%
Spirit	71.4%	14.3%	0.0%	14.3%
Turner	0.0%	33.3%	66.7%	0.0%
Cumulative Totals	*29.5%*	*41.3%*	*28.9%*	*0.3%*

Observation of certain lake characteristics often influence the way a person views a body of water. For instance, people residing on lakes experiencing frequent algal blooms are more inclined to negatively rate the water quality of their lake. The same principles applies to perceptions of water quality as it is affected by aquatic vegetation growth, although increased nutrient input can result from natural causes or development pressure. Inventory of people's observations helps classify the stage of a lake's development.

Table 22. Reported presence of selected attributes by lake.

Lake	Algal blooms	Excessive lake weeds	Erosion from man-made waves	Sedimentation due to power boats	Failing septic systems
	----------Percent of Respondents----------				
Butternut	74.1%	46.8%	24.8%	19.3%	10.1%
Soo	86.5%	59.4%	37.8%	37.8%	24.3%
Solberg	87.1%	75.0%	32.3%	40.0%	20.0%
Pike	60.7%	25.0%	27.5%	21.5%	7.1%
Long	90.5%	42.8%	38.1%	28.6%	14.3%
Wilson	94.1%	94.1%	29.4%	41.1%	29.4%
Schnurs	57.2%	28.6%	21.4%	0.0%	0.0%
Musser	92.3%	84.6%	16.7%	38.5%	23.1%
Round	76.9%	30.8%	30.8%	0.0%	0.0%
Hultman	100%	85.7%	66.7%	33.4%	16.7%
Spirit	85.7%	57.1%	42.9%	28.6%	16.7%
Turner	33.3%	33.3%	66.7%	33.3%	0.0%
Cumulative Totals	*78.7%*	*53.0%*	*30.3%*	*25.8%*	*13.7%*

Only 21.6 percent report that there was some attempt at controlling aquatic plants on their lake within the last three years. Some 67.2 percent are unaware of such actions and 11.1 percent didn't know.

Regional Growth and Development

Given increasingly high rates of lakeshore development, many residents are concerned about both the ecological impact and the way development might affect their quality of life on the lake. Most respondents agree (78.7 percent) that their lake currently has a suitable amount of development, and few (6 percent) would welcome substantial increases *(Table 23)*. These findings suggest that most residents would like to see levels of development remain as they are today.

Table 23. Breakdown of resident opinions regarding lake development.

Lake	This lake could accommodate more development.		This lake has the right amount of development.		This lake is overdeveloped.	
	Agree	*Disagree*	*Agree*	*Disagree*	*Agree*	*Disagree*
	----------Percent of Respondents----------					
Butternut	8.3%	91.7%	82.4%	17.6%	14.7%	85.4%
Soo	0.0%	100.0%	70.3%	29.7%	32.4%	67.6%
Solberg	3.1%	96.9%	68.8%	31.3%	28.1%	71.9%
Pike	6.9%	93.1%	79.3%	20.7%	75.9%	24.1%
Long	0.0%	100.0%	85.0%	15.0%	85.7%	14.3%
Wilson	0.0%	100.0%	82.4%	17.6%	17.6%	82.4%
Schnurs	21.4%	78.6%	69.2%	30.8%	28.6%	71.4%
Musser	23.1%	76.9%	69.2%	30.8%	30.8%	69.2%
Round	0.0%	100.0%	92.3%	7.7%	16.7%	83.3%
Hultman	0.0%	100.0%	85.7%	14.3%	50.0%	50.0%
Spirit	0.0%	100.0%	71.4%	28.6%	42.9%	57.1%
Turner	0.0%	100.0%	100.0%	0.0%	33.3%	66.7%
Cumulative Totals	*6.0%*	*94.0%*	*78.7%*	*21.3%*	*22.6%*	*77.5%*

Today the most commonly cited concerns about growth and

development include: establishment of lakeside condominiums, increased presence of high-powered water craft, and reduced peace and quiet that occurs as a result. The good news, however, is that when asked to rate "peace and tranquility" on their lake, only 5 percent report their lake as being "over-used." Nearly half (47.5 percent) feel their lake to be only "moderately used" at this time *(Table 24).* The 47.5 percent suggests there is still time to install controls to help guide future development and lake use.

Table 24. Rating of peace and tranquility on each lake as measured by awareness of other people.

Lake	Unusable	Over-used	Occasionally over-used	Moderately used	Few disturbances
	----------*Percent of Respondents*----------				
Butternut	0.0%	5.5%	19.3%	46.8%	28.4%
Soo	0.0%	8.1%	21.6%	51.4%	18.9%
Solberg	0.0%	9.4%	43.8%	34.4%	12.5%
Pike	0.0%	0.0%	34.5%	41.4%	24.1%
Long	0.0%	0.0%	23.8%	52.4%	23.8%
Wilson	0.0%	0.0%	23.5%	70.6%	5.9%
Schnurs	0.0%	14.3%	28.6%	35.7%	21.4%
Musser	0.0%	0.0%	7.7%	61.5%	30.8%
Round	0.0%	0.0%	7.7%	69.2%	23.1%
Hultman	0.0%	14.3%	28.6%	28.6%	28.6%
Spirit	0.0%	0.0%	42.9%	28.6%	28.6%
Turner	0.0%	0.0%	33.3%	66.7%	0.0%
Cumulative Totals	*0.0%*	*5.0%*	*24.8%*	*47.5%*	*22.8%*

Table 25. Rating of "change in quality of experience" since first coming to the lake.

Lake	Considerably degraded	Degraded	Remained about the same	Improved	Considerably improved
	----------Percent of Respondents----------				
Butternut	0.9%	17.4%	56.9%	23.9%	0.9%
Soo	2.7%	54.1%	35.1%	8.1%	0.0%
Solberg	3.1%	46.9%	34.4%	15.6%	0.0%
Pike	0.0%	24.1%	48.3%	24.1%	3.4%
Long	4.8%	33.3%	52.4%	9.5%	0.0%
Wilson	0.0%	58.8%	35.3%	5.9%	0.0%
Schnurs	0.0%	28.6%	64.3%	7.1%	0.0%
Musser	0.0%	46.2%	38.5%	7.7%	7.7%
Round	0.0%	7.7%	76.9%	15.4%	0.0%
Hultman	0.0%	42.9%	14.3%	42.9%	0.0%
Spirit	14.3%	14.3%	57.1%	14.3%	0.0%
Turner	0.0%	0.0%	100.0%	0.0%	0.0%
Cumulative Totals	*1.7%*	*31.0%*	*49.2%*	*17.2%*	*1.0%*

Although 47.5 percent of lakeshore residents rate their lake as being "moderately used," 31 percent also report that the quality of their lake experience as degraded in some way. A large percentage of respondents cite increasing numbers of people using the lake as the primary reason for this change. This suggests that without proper direction and controls, development will continue to impact quality of life for many lakeshore residents in Price County.

Lake Management Actions

Taking responsibility for the impacts of development means taking action and implementing management

decisions aimed at minimizing those impacts. Several examples of such actions include: installing stronger zoning controls and lake ordinances, conducting a study of how land-use affects groundwater and surface water resources, or introducing better boating/swimming safety programs.

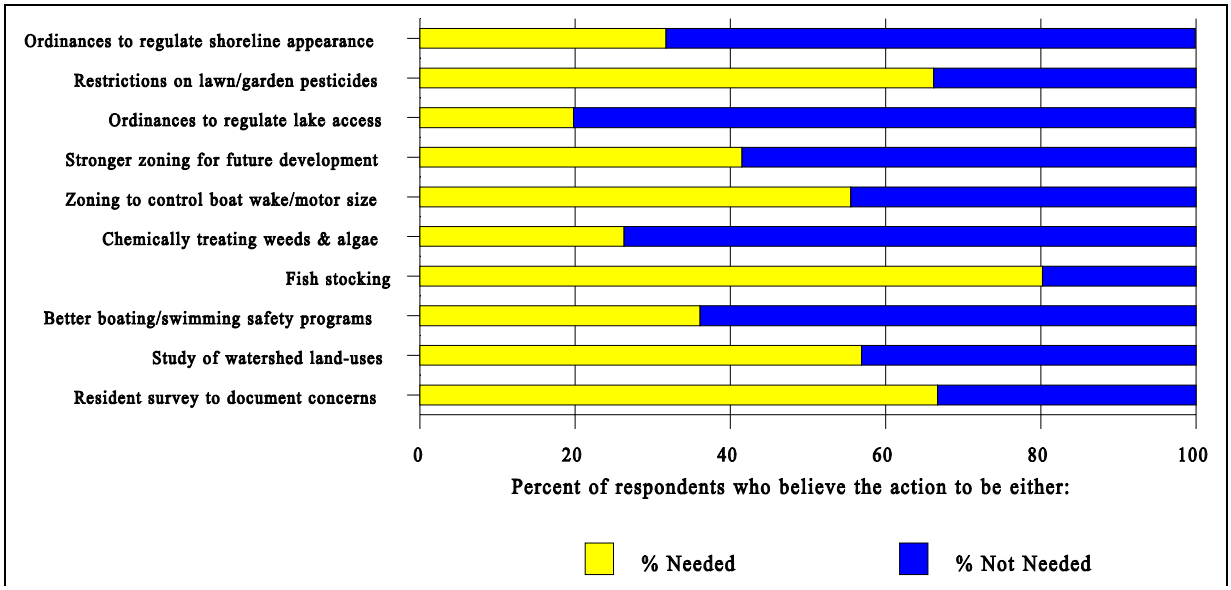


Figure 3 indicates whether residents feel actions of this nature are needed or not needed on their lake. For instance, most people believe the fishery could be improved by having their lake stocked with fish. On the other hand, most residents are against chemically treating weeds and algae and most agree that lake access does not have to be regulated.

Additional management actions receiving substantial support include a survey of lakeshore residents and restrictions on the use of lawn/garden pesticides around lakes. *Table 26* documents how the majority of residents feel about these potential management options.

Table 26. Ranking of resident views on management actions according to majority opinion by lake.

	Resid	Study	Better	Stock	Che	Zonin	Strong	Ordina	Restric	Ordin

Lake	ent Survey	of watershed land uses	boating/swimming safety programs	ing of fish	mically treating weeds & algae	g to control boat wake/ motor size	er zoning for future development	nces to regulate lake access	tions on lawn-garden pesticides	ances to regulate shoreline appearance
But.	Not	Not	Not	Slight	Not	Not	Not	Not	Not	Not
Soo	Need	Need	Not	Very	Not	Not	Not	Not	Need	Not
Solberg	Need	Not	Not	Need	Not	Not	Not	Not	Not	Need
Pike	Need	Need	Not	Need	Not	Need	Need	Not	Need	Not
Long	Need	Not	Not	Need	Not	Need	Not	Not	Need	Not
Wilson	Need	Need	Not	Need	Not	Not	Need	Not	Need	Not
Schnurs	Need	Slight	Not	Not	Not	Very	Not	Not	Not	Not
Musser	Need	Not	Not	Very	Not	Not	Not	Not	Need	Not
Round	Need	Need	Not	Need	Not	Need	Not	Not	Need	Not
Hult.	Not	Not	Not	Need	Not	Very	Need	Need	Need	Need
Spirit	Need	Not	Not	Need	Not	Very	Not	Not	Not	Not
Turner	Need	Need	Need	Need	Not	Slight	Slight	Not	Need	Slight

Very=The action is very needed.
Need=The action is needed.
Slight=The action is slightly needed.
Not=The action is not needed.

Shoreland Regulations

Approximately 78 percent of survey respondents feel that lakeshore residents should be regulated to some degree. What's more, 61.8 percent feel that if lakeshore

residents are regulated, then *all* people who live within the boundaries of the watershed should be regulated. Most people recognize that negligent activities such as the over-use of fertilizers and pesticides will ultimately affect the quality of water in their lake despite where the location of these activities originate.

A contradictory finding is the fact that most residents do not favor supporting zoning regulations that would reduce long-term impacts of lakeshore development. Residents were asked to what extent they would support changes in zoning regulations such as increasing setbacks and minimum lot sizes and decreasing the amount of permitted shoreline vegetation removal. Most were *not* in favor of these changes which would make regulations more strict *(Table 27)*. Although respondents recognize the need for regulation, especially on land adjacent to water, they are also hesitant in relinquishing power to make land-use decisions as they see fit.

Table 27. Resident opinions of potential changes to existing shoreland zoning regulations.

	Strongly Against	Against	Favor	Strongly Favor
Hypothetical Change	----------*Percent of Respondents*----------			
Increase the minimum shoreland lot size from 150 feet.	5.7%	69.2%	22.4%	2.7%
Increase the minimum shoreland building setback from 75 feet.	5.3%	81.8%	11.6%	1.3%
Reduce the amount of shoreland vegetation that can be cut along the shoreline below 30 feet from every 100 feet.	7.3%	82.7%	9.0%	1.0%

Threats to Water Quality

Residents were given a list of factors potentially affecting the quality of their lake water such as fertilizer/pesticide run-off, improper disposal of household chemicals, septic systems, and erosion. In each case, the majority of respondents dismissed each factor as *not* impacting water quality in their lake. If anything, only 38.7 percent cite lake pollution stemming from improperly functioning septic systems as

either a “major” or “moderate” cause of water quality problems. Therefore, the consensus of opinion appears to be that there are no major problems currently affecting lakes in Price County.

Directing Future Change

Respondents were asked to outline any changes they would like to see made on their lake. An overwhelming number of people cite either reduction of or increased regulation of personal water craft, or jet skis. Of the 197 residents who specifically called for change, 45.1 percent indicated concern about the growing numbers of jet skis. Many people perceive jet ski use to be a pervasive problem on lakes, however, more objective observers believe that users should be more courteous and safe when participating in this type of recreation. *Table 28* displays a list of pertinent issues and changes raised by area residents and visitors.

Proposed Change	Percent of Respondents in Agreement
Reduce number of or increase regulation of jet skis	45.1%
Improve fishery	41.2%
Enhance water quality	26.9%
Enforce lake ordinances	18.3%
Conduct routine inspections of septic systems	3.6%
Enforce boating regulations	3.6%
Outlaw spear fishing	3.6%
Outlaw powerboats	3.0%
Relax zoning regulations for lakeshore homes	2.5%
Restrict motor size	2.0%
Restrict public access	1.5%
Increase number of waterfowl	1.0%
Increase the depth of the lake	1.0%
Reduce number of people living around lakes	.5%

In an attempt to document local stewardship of area lakes, respondents were asked to describe their adherence to a series of actions beneficial to water quality. *Table 29* indicates that in most cases, residents are already taking appropriate actions or the suggested practice isn't applicable in their situation. This encouraging finding provides evidence of an environmental awareness substantiated by actions like keeping fertilizer and pesticide use low, composting leaves, and keeping grass clippings on the yard after mowing.

Table 29. Resident adherence to management actions that help reduce pollution entering lakes.

Management Action	Already do this	Willing to do this	Unwilling to do this	Not applicable
	Percent of Respondents			
Compost leaves and grass clippings	69.7%	3.4%	20.4%	6.5%
Leave grass clippings on the yard after mowing	90.4%	.3%	2.4%	6.8%
Rake leaves away from drainage ditches	6.1%	.3%	1.0%	92.5%

Table continued, next page..

Management Action	Already do this	Willing to do this	Unwilling to do this	Not applicable
	Percent of Respondents			
Use a lawn fertilizer that doesn't contain	1.7%	5.1%	7.8%	85.4%

phosphorous				
Attend a public meeting on how to protect water quality	23.4%	54.2%	21.4%	1.0%
Clean up dog waste	26.0%	1.4%	4.5%	68.5%
Modify roof gutters to divert rain water across grass	49.5%	4.1%	17.3%	29.2%
Pump septic system at once every two years	62.4%	7.3%	25.1%	5.2%
Apply chemical fertilizers and pesticides only once per year	9.2%	1.7%	2.4%	86.7%
Stop using chemical fertilizers and pesticides	2.0%	3.1%	8.2%	86.7%

As more people realize the importance of such actions and begin to implement them on their own property, negative impacts to area lakes will be reduced.

CONCLUSION

Price County respondents place the highest value on lake qualities which are under greatest pressure. Numbers of people using lakes, wildlife viewing, fishing, solitude, and scenic quality are

being affected by trends in growth. Concern for these valued qualities corroborates the need for increased public education and comprehensive planning to protect lake aesthetics, critical wildlife habitat, and reduce potential user conflicts.

Most residents and visitors recognize the need to regulate land use most directly related to water quality such as septic effluent, lawn fertilizer, and pesticide use on lakeshore property. They are less supportive of increased zoning restrictions on shoreline alterations and housing setbacks to protect lake qualities they ranked as *most* important.

In contrast, similar questions posed to property owners in adjacent counties (Sawyer and Oneida counties) show *significant support* for increased regulation of lakeshore property. This comparison suggests that public support for regulation in Price County may increase as development pressure continues to escalate.

Environmental awareness, as measured by survey participants' knowledge of existing zoning regulations and understanding of long-term cumulative human impacts on values such as lake aesthetics, wildlife habitat, and water quality, indicates the need for continued education by local agencies and organizations.

When it comes to managing and caring for lakeshore properties, findings from the Price County Lakes Project point to voluntary alternatives as a means to enhance existing regulations. Examples might include conservation practices such as maintenance of shoreland buffers using native vegetation, use of rock rip-rap *only* where appropriate for erosion control, or riparian and littoral management to protect critical habitat for fish and wildlife. Other voluntary options include tax incentives for shoreland property owners, riparian easements, deed restrictions, entry of land into conservancy or land trust, or formation of lake property owners associations and conservation groups.

In the past 30 years, development of lakeshore properties has equaled or surpassed that of the previous 100 years. There is reason to believe all of Price County's remaining privately owned lakeshore will be developed by the first half of the next century. Protecting and conserving lake ecosystems can *only* be accomplished with strong support from educated citizens working together to build and promote environmental stewardship.